Prepared for
Department of the Navy
Commander, Naval Air Systems Command

in accordance with
Chief of Naval Operations Instruction 5090.1B

pursuant to
National Environmental
Policy Act Section 102(2)(C)

Draft Environmental Impact Statement

Disposal and Reuse of Naval Weapons Industrial Reserve Plant Calverton, New York

February, 1997

DISTRIBUTION STATEMENT A
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Please contact the following person
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LESTER, PA 19113-2090

IN REPLY REFER TO

11010
March 17, 1997

TO: ALL INTERESTED OFFICIALS, GOVERNMENT AGENCIES, SPECIAL INTEREST GROUPS, AND CONCERNED INDIVIDUALS

Attached for your review is the Draft Environmental Impact Statement (DEIS) for the Disposal and Reuse of the Naval Weapons Industrial Reserve Plant (NWIRP), Calverton, New York. The DEIS has been prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality Regulations implementing NEPA (40 CFR 1500-1508) and the Chief of Naval Operations Instruction OPNAVINST 5090.1B. The DEIS addresses the environmental consequences of the proposed Community Reuse Plan for the NWIRP as prepared for the Calverton Air Facility Joint Planning and Redevelopment Commission.

The Department of the Navy will hold a public hearing to inform the public of the DEIS findings and to solicit comments. The hearing will be held on Thursday, April 17, 1997, beginning at 7:30 p.m., at the Ramada East End, 1830 Route 25, Riverhead, New York. Please call the point of contact below or the Ramada in the case of inclement weather.

Federal, state and local agencies and interested parties are invited and urged to attend or be represented at the hearing. Oral statements will be heard and transcribed by a stenographer; however, to assure the accuracy of the record, all statements should be submitted in writing. All statements, both oral and written, will become part of the public record on this action and will be given equal consideration.

Additional copies of the DEIS have been placed in the Riverhead Free Library, 330 Court Street, Riverhead, New York.

Written comments on the DEIS should be mailed to the address noted below and must be postmarked not later than May 9, 1997 to be part of the official record.

This public hearing and comment period shall also serve as an opportunity for members of the public to express their views on the effect of the proposed Reuse Plan on the property.

Additional information may be obtained by contacting Mr. Kurt Frederick, (Code 202) Northern Division, Naval Facilities Engineering Command, 10 Industrial Highway, MSC 82, Lester PA 19113, telephone: 610-595-0728, facsimile: (610) 595-0778.

David L. Spritke
Director, Planning Division
By direction of the
Commanding Officer

EXECUTIVE SUMMARY

S.1 Purpose and Need

As a result of Northrop Grumman Corporation's decision to vacate the site, the US Navy has determined that it will consider disposal of the Naval Weapons Industrial Reserve Plant (NWIRP) Calverton, located in the towns of Riverhead and Brookhaven on Long Island, New York, by transferring the facility to the town of Riverhead's Community Development Agency (CDA).

The transfer of this property has been authorized by special legislation (Public Law 103-C337). The 2,923 acres (1,169 hectares) lying within the fence and in the town of Riverhead, where aircraft assembly and testing facilities once operated, may be transferred to the town. It is estimated that approximately 238 acres (96 hectares) will not be transferred at the time of disposal. These lands are presently undergoing investigation and cleanup as part of the Navy's Installation Restoration Program. Special legislation has also been developed for the potential transfer of the 3,137 acres (1,255 hectares) outside the fence, once consisting of flight operations buffer zones, to the New York State Department of Environmental Conservation (NYSDEC). These lands are legislatively mandated to remain in their natural state.

The proposed disposal of NWIRP Calverton is considered a major federal action, therefore an Environmental Impact Statement (EIS) must be prepared. This EIS must address the impacts of likely reuse related to NWIRP Calverton's potential disposal. Therefore, the town of Riverhead created the Calverton Air Facility Joint Planning and Redevelopment Commission (Planning Commission) to develop likely reuse scenarios for the Navy property. The Planning Commission's goals for the reuse plan were to attract private investment; maximize job creation; increase base taxes; and enhance regional quality of life. Based on the general themes of industrial reuse, commercial tourism, and residential development, three scenarios were developed. The preferred alternative selected by the Town Board is called the Calverton Enterprise Park Reuse Plan (Reuse Plan). Two other alternatives considered by the Town Board are called the Calverton Enterprise Park/Raceway and the Peconic Village alternatives. This EIS has been prepared to comply with the requisite analyses under NEPA and the New York State Environmental Quality Review (SEQR) Act.

Public input has been solicited and a public scoping meeting was held in April 1996 to identify significant issues that would be addressed in the EIS. These issues centered on extent and remediation of contamination at the facility; future growth effects on wetlands, Long Island Pine Barrens, surface and ground waters, and community character; and potential traffic, noise, infrastructure, and economic impacts of reuse.

S.2 Description of the Proposed Action and Alternatives

Council on Environmental Quality (CEQ) regulations direct that reasonable alternatives to the proposed action be evaluated in an EIS, even if these alternatives are not within the jurisdiction of the agency. This EIS considers three locally developed alternatives.

The alternatives considered in this EIS represent a reasonable range of alternative development intensities and resulting impacts that could occur with reuse. The EIS also addresses the no action alternative, presented and developed as the future baseline condition against which the impacts of the three action alternatives are compared.

S.2.1 Calverton Enterprise Park Reuse Plan - the Preferred Alternative

Figure S-1 (Calverton Enterprise Park Reuse Plan) depicts the conceptual site plan for the alternative's major land use elements: an industrial business park; a theme park, aviation/aircraft use; commercial recreation; public golf course; open space; and infrastructure acreage. Table S-1 reflects these land uses and their associated sizes, summarized as follows:

- The **industrial business park** of 887,500 square feet (sq ft) (82,538 square meters [sq m]) would be a combination of existing industrial facilities and newly constructed buildings on 282 acres (114 hectares), with a passive recreation area near the center.

- The **theme park** (approximately 434 acres [176 hectares]) proposed for the northwest portion of the site could consist of a single park or a set of attractions, with parking, a campground, and a 63-acre (26-hectare) hotel/conference center area planned as complementing facilities. A 32-acre (13-hectare) service retail area of about 100,000 sq ft (9,300 sq m) is also envisioned.

- The **aviation use** (a general aviation and cargo airport) is consistent with the community's long-term vision for the Reuse Plan. The aviation use would require approximately 853 acres (346 hectares), or 29 percent of the lands within the fence.

- A 191-acre (67-hectare) parcel in the northeastern portion of the site would accommodate such **commercial recreational** facilities as a family entertainment center, skating rinks, and sports stadium. Approximately 6,000 - 8,000 seats are planned for the sports stadium, which would require 54 acres (22 hectares).

- An 18-hole **pubic golf course** just south of the hotel/conference center and opposite the theme park is proposed on an estimated 166 acres (67 hectares).

Calverton Enterprise Park Reuse Plan

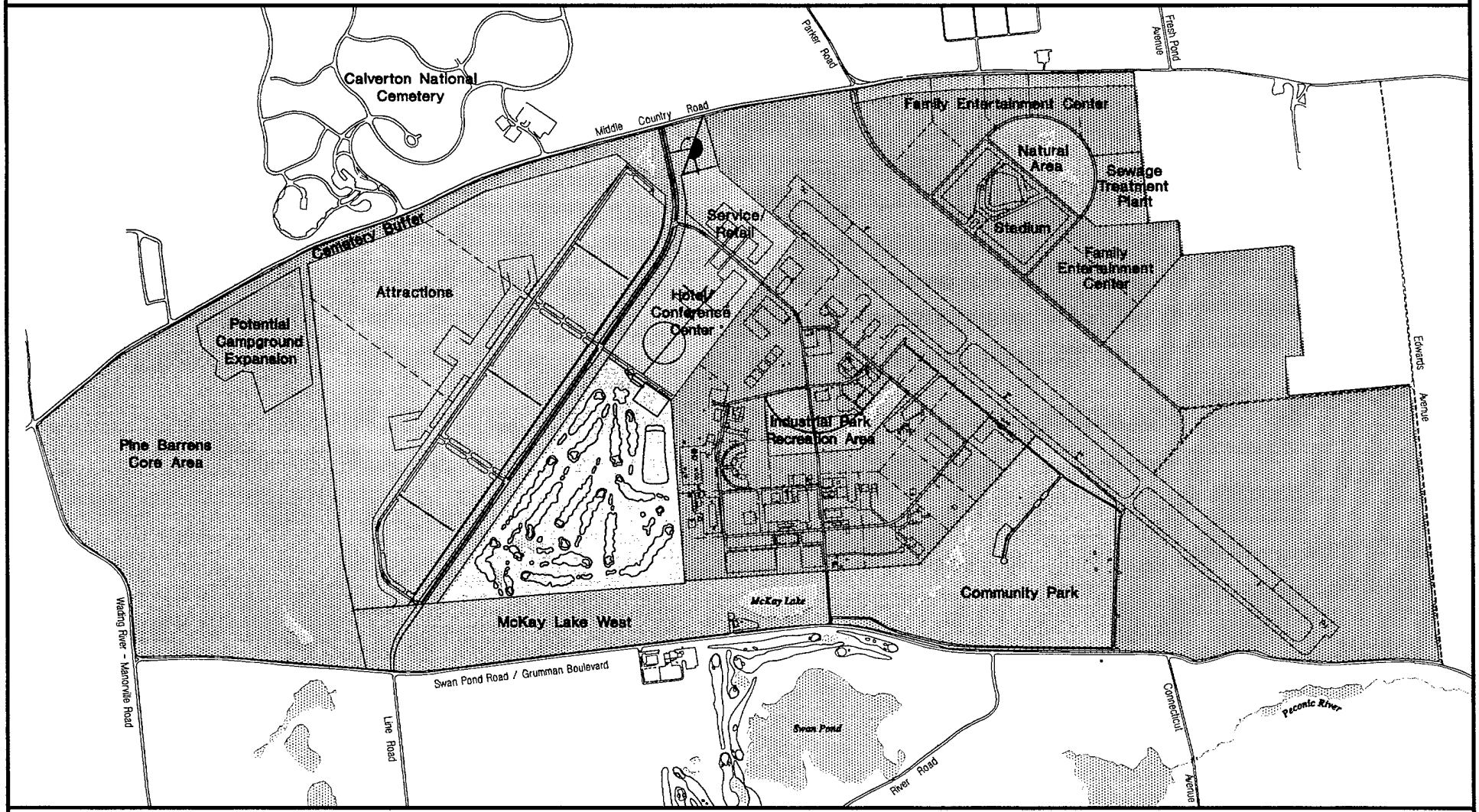


Figure S-1

Table S-1

Calverton Enterprise Park Reuse Plan Land Uses

Land Use	Land Coverage		Amount of Development
	Acres	Hectares	Units of Measure[2]
Industrial Business Park	282	114	887,500 sq ft (82,538 sq m)
Theme Park			
Attractions	434	176	2.5 million visitors/year
Hotel/Conference Center	63	26	400 rooms
Service Retail	32	13	100,000 sq ft (9,300 sq m)
Subtotal	529	214	
Aviation/Aircraft Use	853	346	400 flights/day (a); 200,000 sq ft (18,600 sq m) (a)
Commercial Recreation			
Stadium	54	22	6,000 - 8000 spectators/event
Family Entertainment Center	137	55	300,000 visitors/year
Subtotal	191	77	
Public Golf Course	166	67	18 holes
Open Space (Designated)			
Pine Barrens Core	438	177	
McKay Lake (west)	137	55	
Community Park	183	74	
National Cemetery Buffer	24	10	
Industrial Park Recreation Area	27	11	
Natural Area	27	11	
Other Open Space	48	19	
Subtotal	884	358	(na)
Infrastructure - Sewage Treatment Plant	18	7	(na)
Totals	2,923	1,184	

Notes: Land use acreage and amount of development are approximate based on estimates made for a long-term (20-year) development plan that is subject to change. Numbers may not total exactly due to rounding and metric conversions. [1]Scale of development as defined in the Reuse Plan; where scale of development was not defined in the Reuse Plan, (nd) means not defined; where assumptions were necessary for analysis and were made, (a) means assumed; (na) means not applicable. [2]Units of measure - sq ft = square feet; sq m = square meters.
Source: Adapted from HR&A, 1996.

- About 32 percent of the area within the fence would be the designated **open space component**, approximately 884 acres (358 hectares), an estimated 166 of which belong to the public golf course. These acres, proposed for a wide range of active and passive recreational uses, would accommodate a 438-acre (177-hectare) Pine Barrens Core Preservation Area; 137 acres (55 hectares) of natural undisturbed lands; a 183-acre (74-hectare) Community Park; a 150-ft (48-m) buffer (24 acres or ten hectares) along NYS 25; the 27-acre (18-hectare) passive recreational park at the center of the industrial core; and a 27-acre (11-hectare) natural area in the northeast sector to serve as an endangered species habitat.

A 20-year development timeframe is anticipated and it is estimated that successful implementation of the Reuse Plan could generate the equivalent of 3,175 full-time jobs. Total construction costs (on and off-site improvements) would be about $484 million (1995$).

S.2.2 Calverton Enterprise Park/Raceway Alternative

The Calverton Enterprise Park/Raceway Alternative (Figure S-2, Calverton Enterprise Park/Raceway Alternative) would retain many of the Calverton Enterprise Park's land uses, differing primarily in that an automobile raceway replaces the aviation and aircraft uses. To accommodate the raceway, the service retail area and the industrial park recreational area are eliminated, and the industrial business park area is reduced to approximately 217 acres (88 hectares) from 282 acres (114 hectares). Table S-2 reflects the primary land use components of this alternative.

The raceway complex would occupy about 835 acres (338 hectares) within the existing fence line of NWIRP Calverton, encompassing much of the site's eastern side, including the existing runway, adjacent open areas, and lands east of the runway. The race circuit itself would be about 3.5 mi (six km) in length. Approximately 69,000 sq ft (6,417 sq m) and 73,400 sq ft (6,826 sq m) would be dedicated to manufacturing/warehouse space and office space, respectively. The manufacturing/warehouse space would include about 21,000 sq ft (2,018 sq m) for a driving school and race car preparation area.

S.2.3 Peconic Village Alternative

Peconic Village (Figure S-3, Peconic Village Alternative) is designed as a planned mixed-use community, incorporating the following land use elements: industrial business park; hotel/conference center; commercial/retail; residential; public golf course; civic facilities; open space; and infrastructure. These land uses are reflected in Table S-3.

Calverton Enterprise Park / Raceway Alternative

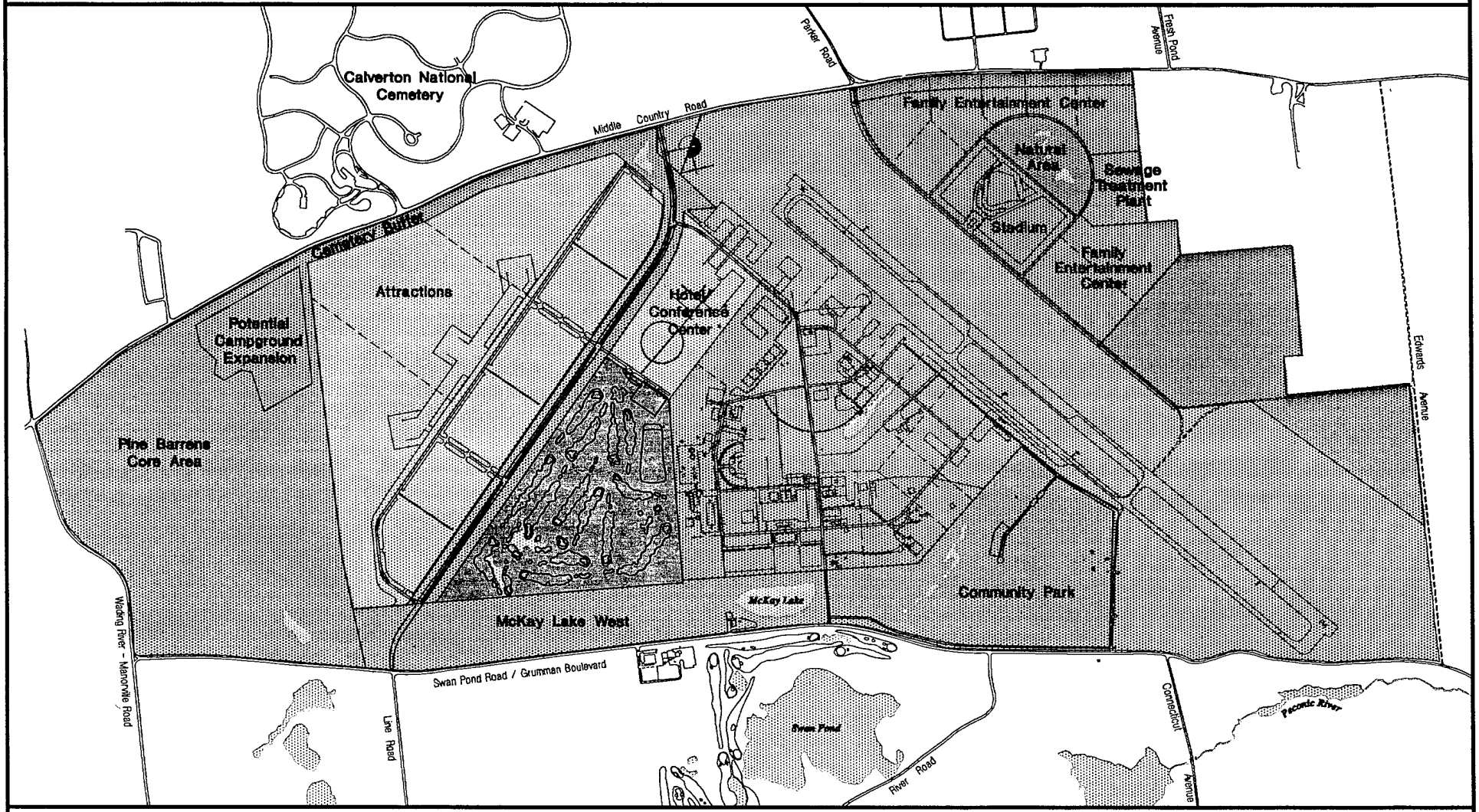


Figure S-2

Table S-2

Calverton Enterprise Park/Raceway Alternative Land Uses

Land Use	Land Coverage		Amount of Development
	Acres	Hectares	Units of Measure[2]
Industrial Business Park	217	88	682,900 sq ft (63,510 sq m)
Theme Park			
Attractions	434	176	2.5 million visitors/year
Hotel/Conference Center	63	26	400 rooms
Subtotal	497	201	
Automobile Raceway	835	338	racing event - 21,000 spectators/day (a); 142,400 sq ft (13,243 sq m)
Commercial Recreation			
Stadium	54	22	6000 - 8000 spectators/event
Family Entertainment Center	137	55	300,000 visitors/year
Subtotal	191	77	
Public Golf Course	166	67	18 holes
Open Space (Designated)			
Pine Barrens Core	438	177	
McKay Lake (west)	137	55	
Community Park	183	74	
National Cemetery Buffer	24	10	
Natural Area	27	11	
Other Open Space	190	77	
Subtotal	999	405	(na)
Infrastructure - Sewage Treatment Plant	18	7	(na)
Total	2,923	1,184	

Notes: Land use acreage and amount of development are approximate based on estimates made for a long-term (20-year) development plan that is subject to change. Numbers may not total exactly due to rounding and metric conversions. [1]Scale of development as defined in the Reuse Plan; where scale of development was not defined in the Reuse Plan, (nd) means not defined; where assumptions were necessary for analysis and were made, (a) means assumed; (na) means not applicable. [2]Units of measure - sq ft = square feet; sq m = square meters.
Sources: Adapted from HR&A, 1996; Project Calverton, Inc. 1995.

Table S-3

Peconic Village Alternative Land Uses

Land Use	Land Coverage		Amount of Development
	Acres	Hectares	Units of Measure[2]
Industrial Business Park	185	75	582,000 sq ft (54,126 sq m)(a)
Hotel/Conference Center	75	30	400 rooms
Commercial/Retail	105	43	190,000 sq ft (17,763 sq m)
Residential			
Assisted Living	40	16	688 units
Senior Housing	618	250	1,350 units
Private Golf Course	192	78	18 holes
Subtotal	850	344	
Public Golf Course	168	68	18 holes
Civic Facilities	55	22	50,000 sq ft (4,650 sq m) (a)
Open Space (Designated)			
Parks	90	37	
Natural Area/Open Space	865	350	
Pine Barrens Core	438	177	
Setback	35	14	
Subtotal	1,428	578	(na)
Infrastructure			
Sewage Treatment Plant	18	7	
Boulevard and Roads	39	16	
Subtotal	57	23	(na)
Total	2,923	1,184	

Note: Land use acreage and amount of development are approximate based on estimates made for a long-term (20-year) development plan that is subject to change. Numbers may not total exactly due to rounding and metric conversions. [1]Scale of development as defined in the Reuse Plan; where scale of development was not defined in the Reuse Plan, (nd) means not defined; where assumptions were necessary for analysis and were made, (a) means assumed; (na) means not applicable. [2]Units of measure - sq ft = square feet; sq m = square meters.
Source: Adapted from HR&A, 1996.

Peconic Village Alternative

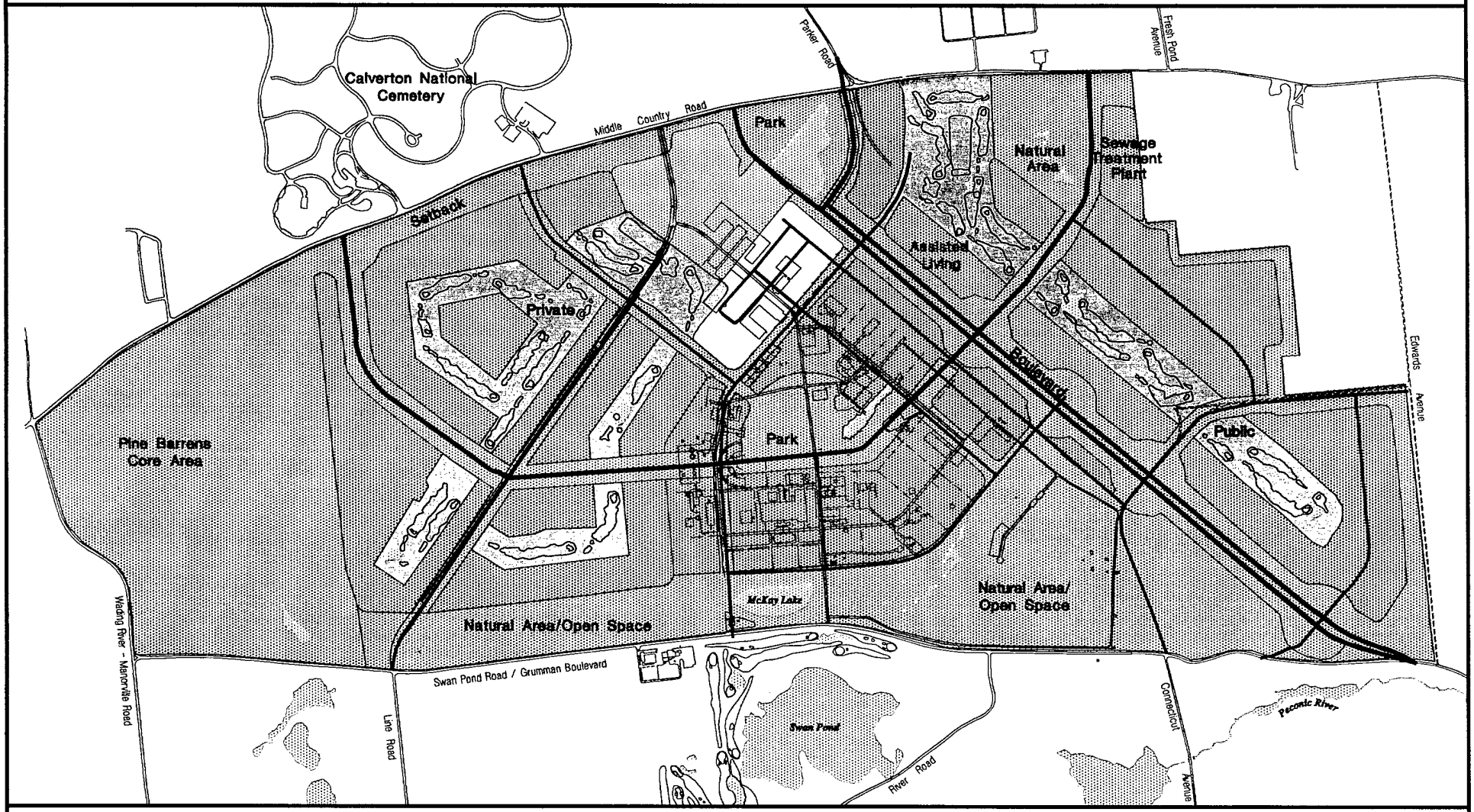


Figure S-3

This alternative differs from the Calverton Enterprise Park Reuse Plan in that its focus is residential. The residences, both senior housing and assisted living units, would be for people 55 and above, situated on the eastern and western sides of the site.

The industrial business park would be smaller than under the Reuse Plan (about 185 acres [75 hectares] as opposed to 282 acres [114 hectares]), but the uses would be similar to those previously described.

S.2.4 No Action Alternative

The no action alternative is presented and developed as the future baseline condition against which the impacts of the proposed action and its alternatives are measured. This EIS defines the no action alternative as the retention of NWIRP Calverton by the US government in a caretaker status. No reuse or redevelopment would occur at the facility. Continued federal ownership of NWIRP Calverton would have no benefit to the Navy, as the Navy would incur continued liability for an asset that has been defined as having no functional, operational, or strategic value, or to the community or region, since such ownership would prevent any possibility of a viable, productive (re)use of the land.

Furthermore, because of the special legislation for disposal of NWIRP Calverton to the Town of Riverhead, the no action alternative is considered impracticable for the Navy to implement.

S.3 Affected Environment, Impacts of Proposed Action and Alternatives, and Mitigation

S.3.1 Land Use and Zoning

NWIRP Calverton is situated primarily in the Town of Riverhead and in the Town of Brookhaven, Suffolk County, New York. The property can be divided into two broad land use areas: the 2,923 acres (1,184 hectares) "within the fence" formerly leased by Northrop Grumman Corporation (Grumman) for mission-related activities, and the undeveloped 3,137 acres (1,271 hectares) "outside the fence" that were originally buffers associated with aircraft testing operations and currently used for recreation, agricultural, and conservation purposes under a Cooperative Agreement between the Navy and the New York State Department of Conservation (NYSDEC).

The 73 government-owned structures within the fence are concentrated in the central and southern part of the site, bounded by the two concrete aircraft runways on the northeast and northwest. The western, northeastern, and northwestern areas of the site within the fence remain essentially undeveloped as fields or forested land.

There are three buffer zones outside the fence totaling 3,137 acres (1,255 hectares). The north buffer zone (610 acres or 244 hectares) contains agricultural land leased to a local farmer; the combined southeast and southwest buffer zones (2,527 acres [1,011 hectares]) are predominantly forested. With the exception of the outleased land, these acres are part of the Cooperative Agreement. A northwest buffer area was transferred to the Veteran's Administration in December 1977 for use as a national cemetery.

Lands around NWIRP Calverton are generally sparsely settled, reflecting the presence of the buffers and the area's historical agricultural economy. Existing housing close to the site is single-family, centered primarily along Route 25 (Middle Country Road). The regional population centers of Wading River, Wildwood, and Riverhead are some distance away.

Although as a federal property, NWIRP Calverton is exempt from local zoning, future private reuse of "within the fence " portions of the site would be subject to land use and zoning restrictions of the Town of Riverhead. The buffer zones will be transferred to NYSDEC under the aforementioned special legislation and will remain undeveloped natural areas exempt from local zoning in both Riverhead and Brookhaven.

The Central Pine Barrens is a 100,000-acre (40,000-hectare) area in central and eastern Long Island that includes the towns of Riverhead, Brookhaven, and Southampton (Central Pine Barrens Joint Planning and Policy Commission [CPBJ&PC], 1995). The Central Pine Barrens Comprehensive Land Use Plan was prepared to establish a set of policies, programs, and standards to protect, preserve, and enhance the functional integrity of the "Central Pine Barrens" ecosystem of Long Island. Within the 100,000 acres (40,000 hectares), there are two zones with different protection goals:

- Core Preservation Area (CPA) - Comprised of 52,500 acres (21,000 hectares), the core area is designed to protect and preserve the ecologic and hydrologic functions of the Pine Barrens by minimizing impacts by prohibiting or redirecting new development.

- Compatible Growth Area (CGA) - The Pine Barrens Plan designated this 47,500-acre (19,000-hectare) area to discourage piecemeal and scattered development and to encourage appropriate patterns of compatible residential, commercial, agricultural, and industrial development.

Most of the fenced area of NWIRP Calverton is designated as CGA. Approximately 438 acres (177 hectares) in the western portion of the site have been designated as part of the CPA. The southeast and southwest buffer zones are part of the CPA; the northern buffer is part of the CGA.

No Action Alternative

Under the no action alternative (representing future baseline conditions), NWIRP Calverton would be retained in ownership by the federal government. No reuse or redevelopment would occur at the facility. Land and facilities within the fence would be vacated and closed in accordance with *Base Realignment and Closure Facility Layaway and Caretaker Standards* (Naval Facilities Engineering Command, September, 1994). Buffer zones outside the fence would also remain in federal ownership; disposal to the NYSDEC would not occur. It is assumed that the Cooperative Agreement between the Navy and the NYSDEC pertaining to the buffer zones would be maintained and that the land would continue to be used for conservation, recreation, and education.

Calverton Enterprise Park Reuse Plan

Implementation of the Calverton Enterprise Park Reuse Plan for NWIRP Calverton would result in the development of a multi-use enterprise park that has at its core a major industrial complex and a general aviation/cargo airport, with other uses including a theme park and attractions; commercial recreation family entertainment center; stadium; golf course; and a variety of open spaces. The buffer zones would remain in their existing natural (undeveloped) state and would be transferred to the NYSDEC.

Current town "Defense Institutional" zoning that allows agriculture, national cemetery, and naval weapons testing facility uses has no specifications for such development issues as density, floor area ratios (FARs), setbacks, etc. Therefore, implementation of the Reuse Plan would require that the Town of Riverhead prepare and adopt new zoning for the site, or portions thereof, based on the uses adopted as part of the Reuse Plan. In 1994, the Comprehensive Economic Development Task Force, a body created by the Town of Riverhead to identify issues of significance relating to the reuse of NWIRP Calverton recommended that a Planned Unit Development (PUD) District be the operative zoning district for the property pursuant to Section 263 of the Town Law. Implementation of the PUD would be based on a Comprehensive Development Plan for the site and through the adoption of a PUD District into the Town of Riverhead Zoning Ordinance. Once transfer of the buffer zones to the NYSDEC is complete, it is assumed that the Town of Riverhead and Brookhaven would appropriately rezone these lands.

The Town of Riverhead has adopted a Pine Barrens Overlay District that prescribes allowable uses and intensities and that effectively renders the CPA designation inapplicable in the town. However, the Reuse Plan has designated these western lands as Pine Barrens CPA, consistent with the Pine Barrens Plan. The remaining lands within the fence (2,485 acres or 1,006 hectares) are designated CGA. Wording of the local Overlay District document indicates that the industrial and aviation uses of the Reuse Plan would likely be allowed as pre-existing uses within the CGA. Modifications to these facilities as part of the Reuse Plan would need to be done in compliance with the Overlay District development standards for the CGA.

Calverton Enterprise Park/Raceway Alternative

This alternative would retain many of the land uses of the Reuse Plan, and land use effects for those uses would be essentially the same as the ones described in the foregoing subchapter. The most significant difference between this alternative and the Reuse Plan is that an automobile raceway complex of approximately 835 acres (338 hectares) would replace the air cargo/general aviation use (835 acres [346 hectares]). The automobile raceway would occupy much of the same terrain as the airport proposed in the Reuse Plan. This alternative retains the industrial business park use and the existing 10,000-ft (3,048-m) runway.

Although there is no explicit land use incompatibility between the raceway and the industrial park, noise would affect the adjacent properties in the industrial core during race events. Based on the noise analysis (Subchapter 4.6.3), it is estimated that there would be significant but short-term noise levels experienced both within and outside the fence during the scheduled racing events. During these events, these estimated noise levels would exceed the Town of Riverhead's maximum permissible levels for residential, commercial, and industrial land uses.

Peconic Village Alternative

Although this alternative includes some of the land use features of the other two (the industrial business park, hotel conference center, golf course(s), and open space), the site would be developed primarily as an age-restricted residential community containing an estimated 688 units of assisted living and 1,350 units of senior housing to accommodate a total of 2,889 residents (688 in assisted living and 2,201 in senior housing).

Approximately 260 acres (105 hectares) of new building and paved areas would be expected. Combined with the existing development, it is estimated that a total of 690 acres (280 hectares) would be developed as buildings and/or paved areas. Any new development in the 438 acres (177 hectares) designated Pine Barrens CPA or in the adjacent CGA would be consistent with the Pine Barrens Plan. Open spaces (all land excluding buildings and parking areas) would comprise a total of 2,233 acres (904 hectares) or about 76 percent of the site. It is assumed that, as with the Reuse Plan, the town would adopt a new PUD zone for implementation if this alternative were to be developed.

S.3.2 Socioeconomics

Socioeconomic data are presented in Chapter 3 for the towns of Riverhead, Brookhaven, and Southampton, and for the larger context of Suffolk County (Figure S-4, Major Municipalities of Long Island). Population growth in Suffolk County has been modest from 1990 to 1995. Brookhaven,

Major Municipalities of Long Island

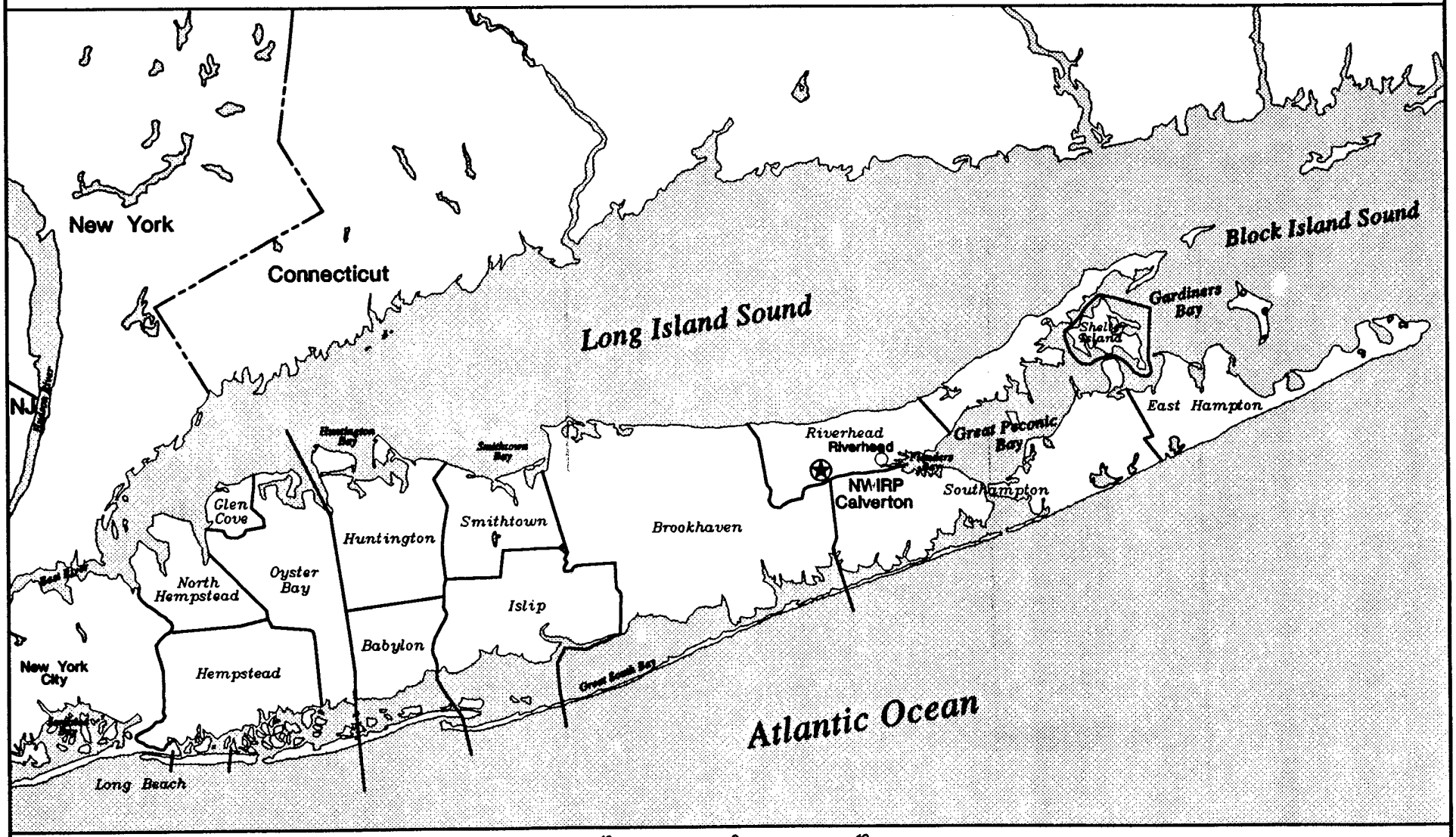


Figure S-4

with 86 percent of the population of the three municipalities, experienced the greatest growth during this period. Brookhaven also has a much younger demographic profile than Riverhead or Southampton, though in general the county is experiencing a gradual aging of the population.

Median household and family incomes in the three municipalities are lower and the percentage of persons in poverty is higher than the county as a whole. Housing in the study area is primarily single-family detached homes, and mean household size is declining there. Employment in Services is greatest, followed by Retail Trade and Manufacturing. Unemployment in Riverhead and Southampton is slightly lower than in the county as a whole, and in Brookhaven slightly higher.

No Action Alternative

Under the no action alternative, the Navy would vacate and close NWIRP Calverton. There would be no permanent maintenance staff, and no redevelopment of the site, hence there would be no demographic impacts and no new income or taxes generated.

Calverton Enterprise Park Reuse Plan

There would be no direct demographic impacts from the Reuse Plan since the plan has no residential component. The estimated increase of 3,175 jobs under the Reuse Plan represents only 0.5 percent of the 1995 Suffolk County resident labor force and would be unlikely to cause an in-migration of new workers. Total projected annual earnings for the 3,175 jobs in 1995 dollars is $81.3 million in year 20. Total direct and indirect employment for the alternative is estimated at 6,726 jobs, with indirect employment representing 52.8 percent, or 3,551 jobs. Total earnings are projected at $151.9 million.

In addition to permanent jobs, temporary jobs associated with construction activity and indirect employment resulting from earnings circulating in the region would be generated. Based on estimated construction costs of $484 million, it is possible to predict that an average of 4,865 direct construction jobs with an estimated $307 million in total earnings would be created; further analysis suggests that an additional 5,785 jobs would be created in other industries, thus generating a total of 10,650 direct and indirect jobs from construction.

Substantial fiscal benefits would be derived from development of the site under the Reuse Plan. This development would be newly entered onto the tax rolls for either property taxes or payments in lieu of taxes (PILOT). Estimated new revenue totals $3.8 million in property taxes, $12.7 million in sales taxes, and $2.8 million in income taxes. Total annual estimated tax revenues at full build-out in year 20 are $19.4 million (rounded).

Calverton Enterprise Park/Raceway Alternative

Similar to the Reuse Plan, there would be no direct demographic impacts from this alternative since there is no residential component. The estimated increase of 2,199 jobs represents less than 0.5 percent of the 1995 Suffolk County resident labor force and would be unlikely to cause an in-migration of new workers. Total projected annual earnings in 1995 dollars is $53.6 million in year 20. Total direct and indirect employment for the Enterprise Park/Raceway Alternative is estimated at 4,612 jobs, with indirect employment representing about 52 percent, or 2,413 jobs. Total earnings are projected at $102 million. Compared to the Reuse Plan, this alternative would create an estimated 976 fewer direct jobs and would be about $52 million dollars less expensive to construct.

In addition to permanent jobs, temporary jobs associated with construction activity and indirect employment resulting from earnings circulating in the region would be generated. Based on estimated construction costs of $432 million, it is possible to predict that an average of 4,344 direct construction jobs with an estimated $274 million in total earnings would be created with implementation of this alternative; further analysis suggests that an additional 5,165 jobs would be created in other industries, thus generating a total of 9,509 direct and indirect jobs from construction.

Fiscal benefits from the Enterprise Park/Reuse Alternative would be substantial, as with the Reuse Plan. Projections of real property, sales, and income taxes for this alternative are $3.4 million, $12.9 million, and $1.9 million (rounded), respectively.

Peconic Village Alternative

This alternative is the only one that would introduce new residents to the site and to the region. The estimate is for a total of 2,889 residents aged 55 and older, 688 residents in 688 units of assisted living and 2,201 in 1,350 units of senior housing. The estimated total number of employees at the site would be 1,923, less than both the Reuse Plan and the Enterprise Park/Raceway Alternative. The non-residential components of this alternative would not be expected to induce new resident in-migration to the region.

Total projected annual earnings for the proposed 1,923 jobs in 1995 dollars is $49.4 million at full build-out in year 20. Total direct and indirect employment for the Peconic Village Alternative is estimated at 3,809 jobs, with indirect employment representing 49.5 percent, or 1,886 jobs. Total earnings are projected at $90.7 million.

In addition to permanent jobs, temporary jobs associated with construction activity and indirect employment resulting from earnings circulating in the region would be generated. Based on estimated construction costs of $406.8 million (again less than both the Reuse Plan and Enterprise Park/Raceway Alternative), it is possible to predict that 4,089 direct construction jobs and 5,165 indirect jobs would be created with implementation of this alternative, with an estimated $245 million in total earnings ($132 million for direct and $113 million for indirect employment).

Fiscal benefits from the Peconic Village Alternative are projected to be $8.3 million (rounded) in real property taxes, $2.3 million (rounded) in sales taxes, and $1.7 million in income taxes.

Table S-4 reflects a comparison of the major socioeconomic impacts among the three action alternatives.

S.3.3 Community Facilities and Services

The area surrounding NWIRP Calverton is served by a number of school systems, health care facilities, and public safety and emergency services, though none is located in the one-mi (1.6-km) study area itself. There is one park, the Robert Cushman Murphy County Park, within the study area, and four others close to the site. Two private facilities, a golf club and the Nassau County Boy Scout facility, are located immediately to the south and north of NWIRP Calverton, respectively.

No Action Alternative

Under the no action alternative there would be no new development at NWIRP Calverton and therefore no new demand for community services.

Calverton Enterprise Park Reuse Plan

No new housing units would be developed under this alternative and no new residential development is likely to be induced; therefore there would be little or no effect upon services focused on a residential population, namely schools and health services.

Emergency services of police, fire and ambulance would likely see additional demands. These demands would relate to the new developments on site and to the visitors drawn to them, although the probability that fully developed Enterprise Park would have its own security force would present minimal increases in demand on Town of Riverhead and Suffolk County Police (Grattan, and Michael, June 17 and June 20, 1996). The substantial new tax revenues anticipated over the 20-year development period would assist in covering costs of any expanded service requirements.

The Reuse Plan proposes development of substantial designated open space, park, and recreational facilities, totaling 884 acres (358 hectares). The theme park attractions would provide a major regional recreational facility. In addition, a commercial recreation center at the northeastern portion of the site would provide a family entertainment center, skating rink, and a sports stadium, all representing a major increment to existing recreational facilities in the region.

Additionally, the buffer lands outside the fence (3,138 acres [1,241 hectares]) to be given to NYSDEC would be legislatively mandated to remain in their natural State for conservation and recreational purposes.

Table S-4

Comparison of Economic and Fiscal Impacts Among the Three Action Alternatives

Category	Calverton Enterprise Park Reuse Plan	Calverton Enterprise Park/ Raceway Alternative	Peconic Village Alternative
Employment Impacts			
Permanent			
Direct Employment	3,175	2,199	1,923
Direct Annual Earnings	$81.3 million	$53.6 million	$49.4 million
Indirect Employment	3,551	2,413	1,886
Indirect Annual Earnings	$70.7 million	$48.4 million	$41.3
Temporary Construction*			
Direct Annual ConstructionEmployment	243	217	204
Direct Annual ConstructionEarnings	$7.9 million	$7.0 million	$6.6 million
Indirect Annual Employment	289	258	243
Indirect Annual Earnings	$7.5 million	$6.7 million	$5.7 million
Fiscal Impacts			
Wage/Sales Tax Revenue	$15.6 million	$14.8 million	$4.0 million
Real Property Tax Revenue	$3.8 million	$3.4 million	$8.3 million
Subtotal	$19.4 million	$18.2 million	$12.3 million

Note *: Economic and fiscal impacts are estimates based on long-term (20-year) alternative development plans that are subject to change. Construction activity is assumed to occur over 20 years.

Calverton Enterprise Park/Raceway Alternative

Regarding services associated with residential populations, no direct or indirect impacts on school services are anticipated because there would be no new residents on the site and no new induced population is anticipated. Because the raceway would attract an estimated increase of 500,000 visitors to the site per year, there is the potential for an increased demand on health services. However, the available health facilities and services would be adequate to cope with the temporary visitor population and workers at the site.

As with the Reuse Plan, provision of private security and emergency services on site under the Enterprise Park/Raceway Alternative, together with the increased local tax base resulting from development of NWIRP Calverton, would support the small increments in public safety and emergency service capacity that may be required.

This alternative would provide a major increase in the availability of parks and recreation facilities in the region, including an increment of 999 acres (405 hectares) of designated new open space, park, and recreation land. The theme park attractions and the commercial recreation area described under Reuse Plan would remain the same, augmented by the raceway. Buffer lands, as previously pointed out, would go to NYSDEC and remain in their natural state.

Peconic Village Alternative

This alternative is the only alternative that introduces a residential component with a total resident population of 2,889. Schools, however, would not be impacted, as residents would be aged 55 and over, and new employment (1,923 jobs) would not be likely to induce new residents of other age groups to the area. Anticipated impacts to health care services, particularly geriatric services, would be greater than for either the Reuse Plan or Enterprise Park/Raceway Alternative. Although no plans for cooperative arrangements with area hospitals have yet been developed, no significant impacts on health care facilities are expected due to declining demand for hospital beds, the scale of existing area health care facilities, and the small increment this new population represents relative to the overall regional population.

No major problems are anticipated regarding public safety and emergency services. The Peconic Village alternative adds a small number of new residents to the area, but only 61 percent of the employment anticipated under the Reuse Plan. Further, large numbers of seasonal and event visitors to the site would be eliminated because the land use components attracting them are eliminated. Increases in the local tax base would be expected to support increments in services that may be required.

Implementation of the Peconic Village Alternative would also substantially increase parkland recreation facilities in the area, providing a total of 1,428 acres (578 hectares) of designated open space, parkland, and two golf courses.

S.3.4 Transportation

The project site is located on Long Island in Suffolk County, New York, approximately 80 miles east of mid-town Manhattan and over 50 miles west of Montauk Point. Regional access to the site is provided by NYS Route 495 (Long Island Expressway), which runs east-west. Local roadway circulation is provided through several rural arterials that surround the site. Key study area roadways include Middle Country Road (Route 25), Manorville/Wading River/Schultz Road, Edwards Avenue, and William Floyd Parkway (Route 46).

The quality of traffic flow through an intersection is described by the intersection's level of service (LOS). Traffic data were collected at seven locations for this analysis (Figure S-5, Traffic Count Locations). Each intersection was also inventoried to determine the capacity of the intersection and its approaches, as specified by the Transportation Research Board's *Highway Capacity Manual* (HCM), 1994. Capacity analyses were performed at all seven locations.

Vehicle trips generated under each alternative were developed based on trip generation rates in *Trip Generation* (ITE, 1991) and a number of other sources and assumptions. Table S-5 reflects trips generated during am and pm peak periods and total daily trips for each action alternative and for NWIRP Calverton at the time the decision was made to close the facility.

Table S-5

Generated Vehicle Trips

Time Period	NWIRP Calverton[1]	Calverton Enterprise Park Reuse Plan	Calverton Enterprise Park/Raceway Alternative	Peconic Village Alternative
Weekday				
AM	1410	2,693	2,096	1,885
PM	1410	4,161	3,707	2,038
Daily Trips	2820	42,856	38,553	19,919
Saturday				
Peak Hour Enter	60	1,737	4,061	776
Peak Hour Exit	60	3,145	3,399	739
Daily Trips	150	33,834	46,498	14,213

[1]Note: Trips estimated for NWIRP Calverton at time of decision to close (1994).

Traffic Count Locations

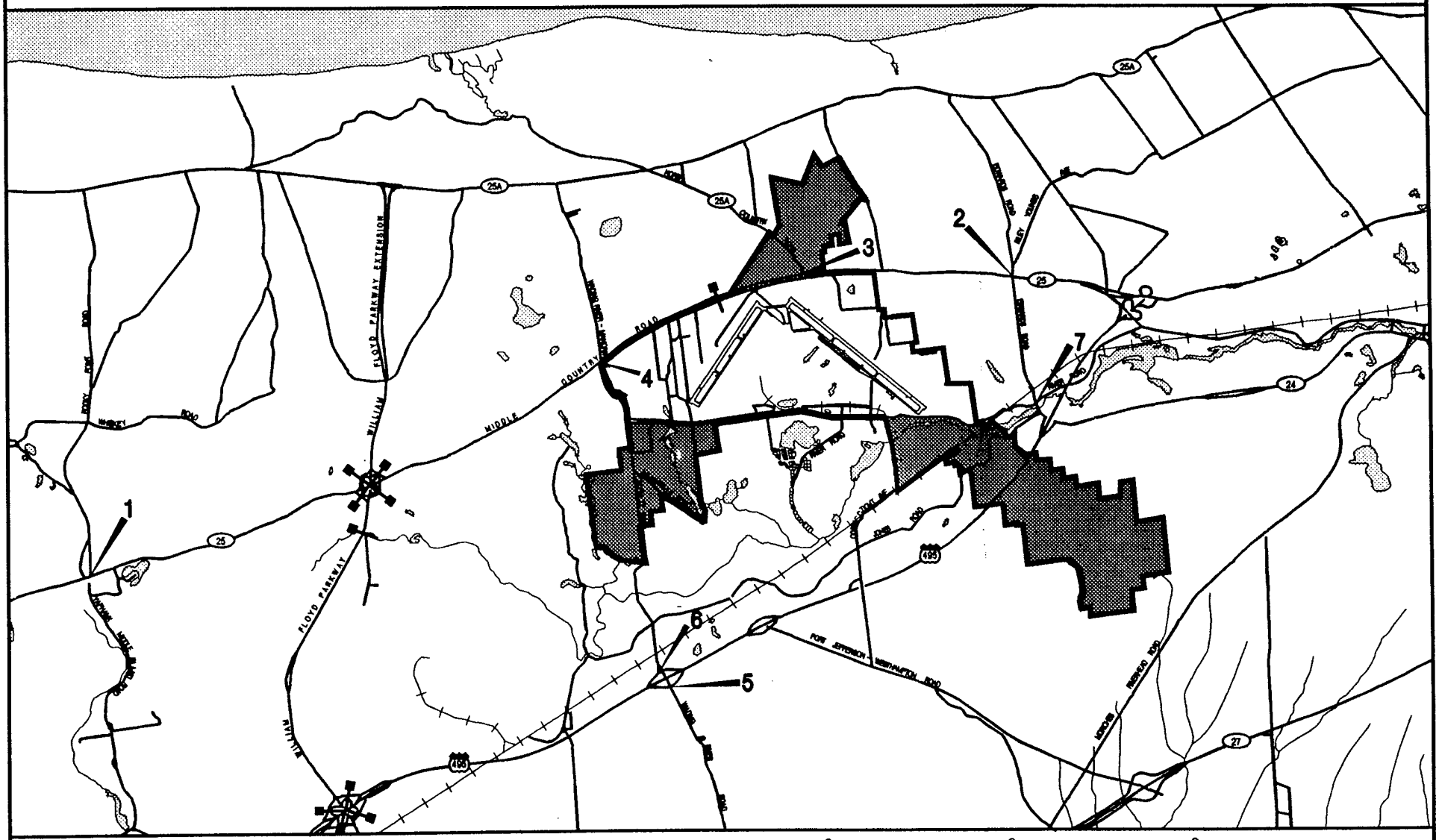


Figure S-5

No Action Alternative

The future baseline traffic network uses existing (1996) volumes as a baseline, provides 2.5 percent per year background growth (provided by NYSDOT [Thornwell, June 7, 1996]), and adds trips to account for the specific developments in Riverhead and Brookhaven.

The significant background traffic growth, along with traffic generated by the future developments in Riverhead and Brookhaven, would result in most of the signalized intersections operating at or above capacity under the future no action conditions. Extensive delays and congestion would result. Operations at the unsignalized intersections at Schultz Road-Long Island Expressway and River Road-Edwards Avenue would remain at acceptable levels. Analysis of weekend conditions indicates that the signalized intersections would operate at or near capacity.

Calverton Enterprise Park Reuse Plan

The Reuse Plan would generate considerable additional trips, creating a dramatic increase in congestion levels that would significantly impact all of the study area intersections during both weekday and weekend analysis conditions.

Mitigation, including widening of approaches, provision of turn lanes, and signalization changes, has been suggested for three intersections: Middle Country Road and Edwards Avenue (Location 2); Middle Country Road and North Country Road (Location 3); and Middle Country Road and Manorville Road (Location 4). The mitigated conditions result in operation at levels similar to future baseline conditions.

Calverton Enterprise Park/Raceway Alternative

The Calverton Enterprise Park/Raceway Alternative would generate fewer weekday vehicle trips than the Reuse Plan. In spite of the fact that weekday impacts to the study area intersection are less than the Reuse Plan, continued poor operation at the study area intersections is expected, although the v/c ratios are marginally improved compared to the Reuse Plan for weekdays. The racetrack component of this alternative and the scheduled weekend events result in a substantially greater impact on the Saturday peak than the Reuse Plan. Extensive delays and congestion can be expected as racetrack-, stadium-, and theme park-generated traffic simultaneously travel to and from the site.

Mitigative measures for this alternative would be the same as under the Reuse Plan, with the same anticipated results.

Peconic Village Alternative

Although this alternative generates fewer trips and operations are somewhat improved over the Reuse Plan, poor operations are expected to continue under this alternative similar to the future baseline condition. Operation at the study area intersections remains poor, with most lane group movements operating at LOS "F," even though the v/c ratios are marginally improved in comparison to the Reuse Plan.

Mitigative measures for this alternative would be the same and under the Reuse Plan, with the same anticipated results.

S.3.5 Air Quality

The US Environmental Protection Agency (USEPA), under the requirements of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, established primary and secondary standards known as the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO); sulfur dioxide (SO_2); nitrogen dioxide (NO_2); ozone (O_3); particulate matter (dust, dirt, soot, smoke, and liquid droplets); and lead (Pb). Suffolk County, where NWIRP Calverton is located, is presently designated by USEPA as a severe nonattainment area (i.e., not meeting the NAAQS) for ozone. The county is in attainment for the other criteria pollutants.

No Action Alternative

Average hourly CO concentrations were predicted for the peak am and pm one-hour traffic periods. Results show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm for either the am or pm peak periods under the no action alternative. Further, under this alternative all currently operational functions at NWIRP Calverton would be stopped. Therefore, there would be no stationary source emissions.

Calverton Enterprise Park Reuse Plan

Results of the microscale air quality analysis for the Reuse Plan show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm. Stationary source emissions would result from the use of boilers in existing and newly constructed buildings on the site. The Reuse Plan anticipates that the currently permitted steam plant on base would be used for the industrial business park. Any individual emissions source built to meet specific future facility requirements would need to be built in compliance with CAA-related air permitting regulations to ensure that no adverse air quality impact would occur.

Preventive measures such as use of water to control dust during demolition and construction would

be used to minimize fugitive dust from on-site construction activities. Mobile source emissions generated from construction-related vehicles and equipment would not be significant and would be short-term in nature.

Calverton Enterprise Park/Raceway Alternative

Results of the microscale air quality analysis for the Calverton Enterprise Park/Raceway Alternative also show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm. Impacts from stationary sources and construction activities in this alternative would be similar to the Reuse Plan.

Peconic Village Alternative

The CO modeling for two representative intersections that would be affected by implementation of the Peconic Village Alternative shows no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm. Since this alternative is primarily residential in nature, major land use components such as a theme park, an airport, etc., would not be part of this plan. Therefore, impacts from the stationary sources and construction activities related to this alternative would be less than those associated with the other two action alternatives.

S.3.6 Noise

The methodology for predicting future noise levels from mobile sources is based on the assumption that existing noise levels are dominated by, and are a function of, existing traffic volumes, and that future noise levels can be determined based on the proportional increase in traffic (on a logarithmic basis) associated with a project. Aviation noise levels are measured in a similar fashion.

A noise measurement survey was conducted in the study area (Figure S-6, Noise Monitoring Locations). Receptors were selected based on noise sensitivity, such as residential and open space use. All receptors were adjacent to streets where there could be increased in traffic due to implementation of the Reuse Plan. At all monitoring locations, the predominant source of noise is vehicular traffic. The measured noise levels are common for residential areas, reflecting the level of vehicular traffic present.

No Action Alternative

Because of both anticipated annual traffic growth and specific developments planned in the vicinity of the study area that would also increase traffic volume, there would be increases in peak hour noise levels from existing conditions to the future no action condition. These increases are predicted to range from 2 to 7 dBA at the six study sites. The corresponding 24-hour equivalent noise level

(L_{eq}[24]) and day-night noise level (L_{dn}) would range from 0 to 5 dBA.

Calverton Enterprise Park Reuse Plan

Peak hour L_{eq} shows that at only three sites, Sites 2, 4, and 5, the increase in noise levels due to traffic would be greater than 3 dBA (the level at which sound becomes perceptible to most people) compared to the no action condition on weekdays. At Sites 2, 3, 4, 5, and 6, the largest increase in weekday noise levels would be between 11 pm and 12 midnight because of vehicles departing the theme attractions. On weekends, the sites that would experience increases in noise levels greater than 3 dBA would be Sites 2, 4, and 5. The peak hour L_{eq} at Site 3 is two dBA. At Sites 2, 3, 4, and 5, the largest increase in noise levels during a weekend would be between 11 pm and 12 midnight.

The Federal Aviation Administration (FAA)-preferred computer model, Integrated Noise Model (INM, version 5.0), was utilized to predict the noise impact from the forecasted high-, mid-, and low-range aircraft operations under the Reuse Plan. Aircraft noise levels are typically expressed in terms of decibels. In general, residential land uses are not normally compatible with outdoor Day-Night Average Sound Level (DNL) above 65 dBA.

The modeling results indicate that the areas with noise levels above 65 dBA are contained primarily within the airport runway buffer zones for all operational ranges, except that high-range activities would result in a 65 dB contour extending outside the northern buffer zone, encompassing an area of 18 acres (seven hectares). The noise levels in this area would therefore exceed the FAA-recommended standard of 65 dBA under high-range operations only.

Increased noise levels during construction would vary widely depending on the specific activities, and would be greatest though short-lived during the early stages of construction. Noise levels from such mechanical equipment at the site under the Reuse Plan are not anticipated be significant.

Calverton Enterprise Park/Raceway Alternative

Peak hour L_{eq} analysis for this alternative shows that only at Sites 2, 4, and 5, would increases in noise levels be greater than 3 decibels over the course of the day and night. At Sites 2, 3, 4, and 5, the largest increase in noise levels during a weekday would be between 11 pm and 12 midnight. On weekends, the increase in noise levels due to traffic would be greater than 3 dBA at Sites 2, 4, and 5. At Sites 2, 3, 4, and 5, the largest increase in noise levels during a weekend would be between 11 pm and 12 midnight.

The noise levels near the racetrack can be expected to increase 20 dB or more, considered a significant increase in noise level. However, these predicted noise impacts are based on a set of conservative assumptions that represent a potential worst case peak hour operational scenario and do not incorporate potential noise attenuation derived from the presence of barriers, berms, vegetation and trees, building walls, etc. Moreover, based on the current anticipated racing schedule,

Noise Monitoring Locations

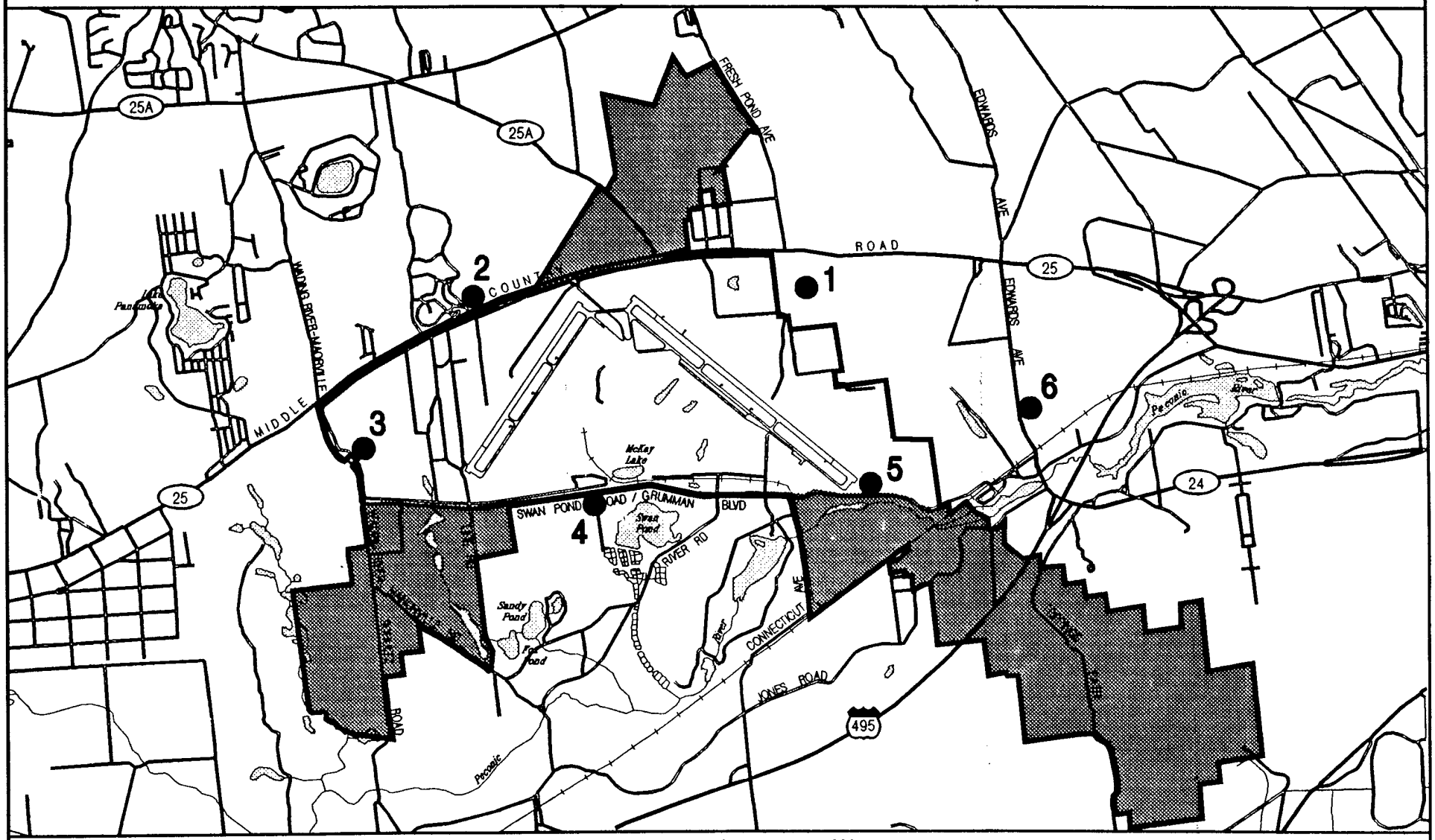


Figure S-6

the total number of racing event hours over an entire year would be 108 hours, or 1.2 percent of the year. Therefore, race event noise impact, though significant with respect to generated noise levels, is of short duration and infrequent occurrence. Finally, races would be scheduled in the daytime when noise impacts are generally less disruptive than at night.

Peconic Village Alternative

The peak hour L_{eq} analysis shows at Sites 4 and 5, increases in noise levels greater than 3 dBA would take place over the course of day and nighttime hours. On weekends, noise levels at Sites 4 and 5 would be greater than 3 dBA. The USHUD criteria for acceptable noise levels at housing developments is an L_{dn} of 65 dBA, which would be exceeded at Sites 4 and 5 under this alternative.

S.3.7 Infrastructure

Infrastructure involves such systems as water supply, storm drainage, sanitary sewer, electricity, gas, and steam distribution.

No Action Alternative

Under the no action alternative, there would be limited demand for utilities since the facility would be closed and no permanent maintenance staff would be retained; however, a small security force would remain. All unused existing utility systems would be abandoned in place and permanently closed.

Calverton Enterprise Park Reuse Plan, Enterprise Park/Raceway, and Peconic Village Alternatives

Projected impacts on infrastructure elements for the three action alternatives are summarized as follows:

- Water supply - Total projected water use in all cases would be less than existing permit limits. Ultimately according to the Reuse Plan, to meet the full demands of reuse, the Town of Riverhead Water District would be extended to serve the site and the extension would be integrated with the existing water distribution network.

- Storm drainage - Development of areas that are currently unpaved would result in an increase in the amount of on-site impervious surfaces for all alternatives, which would in turn increase the total volume and rate of stormwater discharge and would require new storm sewer construction, including recharge basins. Incremental construction would require State General Stormwater Discharge Permits to address stormwater

runoff from industrial uses, including a plan for minimizing pollutants in runoff.

- Sanitary Sewer - Future sanitary flow is expected to exceed historic volumes of wastewater treated via the existing Sewage Treatment Plant (STP) and septic system. Improvements and additions to the existing sanitary sewer system would be expected to provide adequate capacity for all alternatives.

- Electricity - Electricity would be provided to the site by LILCO or PASNY for all three alternatives.

- Gas - Although there is a four-in (ten-cm) cut and capped gas main extending onto NWIRP Calverton that presumably could provide gas to the site, none of the alternatives specifically indicate this possibility. Natural gas would be available, if necessary, to supply energy to on-site facilities under any of the alternatives.

- Steam Distribution - Steam would continue to be supplied to buildings in the industrial core from an existing steam plant currently undergoing a major boiler replacement. It is anticipated that there would be ample steam available for future heating and industrial use.

S.3.8 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA) provides that federal agencies take into account the effect of their actions on any district, site, buildings, structures, or objects included in or eligible for inclusion in the National Register of Historic Places.

The cultural resources survey conducted at NWIRP Calverton (TAMS and Historical Perspectives, Inc., 1996) identified three structures built within the past 50 years that could be considered eligible for the National Register of Historic Places: Plant 6 and Plant 7 (built in 1952), excellent examples of military-industrial architecture of wide-span steel frame and precast concrete panel curtain wall construction; and the Anechoic Chamber, a prototypical research, development, testing, and evaluation facility (built in 1968) for the testing of aircraft electronic and radar systems.

Based on the field survey five areas within the fence at NWIRP Calverton were identified as areas of high potential for finding prehistoric resources.

In accordance with the NHPA, the Navy has requested the concurrence of the New York State Historic Preservation Office with the above findings of eligibility and sensitivity.

No Action Alternative

Under future baseline (no action) conditions, there would be no new construction or alteration in the area of the historic buildings. Closure of NWIRP Calverton would follow the standards and procedures for mothballing facilities published in *Base Realignment and Closure Facility Layaway and Caretaker Maintenance Standards* (Naval Facilities Engineering Command, September 1994), thus there should be no adverse effect on the historic structures.

Calverton Enterprise Park Reuse Plan

Both Bldgs 6 and 7 would be part of the industrial park, and assuming that any exterior renovations are made in accordance with the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, there would be no adverse effect on these structures. The interior of the Anechoic Chamber is intrinsic to its significance; if renovations to either the interior or exterior of the Anechoic Chamber are carried out according to the aforementioned standards and guidelines, there would be no adverse effect on the chamber either.

Under the Reuse Plan, archaeological resources of high sensitivity may be disturbed in the area of the industrial business park and the commercial recreation area. A Phase 1B archaeological survey would be needed before any development occurs to fully determine potential effect in high sensitivity areas.

Calverton Enterprise Park/Raceway Alternative

Exactly the same considerations relate to exterior and interior renovations of Bldgs 6 and 7 and the Anechoic Chamber as were detailed under the Reuse Plan.

Future development in the industrial business park would likely differ from the Reuse Plan, but any ground disturbance in the areas of high sensitivity would still require that a Phase 1B archaeological survey be performed to fully determine potential effect.

Peconic Village Alternative

The same considerations for exterior and interior renovation apply to Bldgs 6 and 7 as under the prior two alternatives, as they are proposed for use in the industrial business park and civic facilities, respectively. Under this alternative the Anechoic Chamber would be demolished to accommodate the senior citizen assisted living housing. This action would have an adverse effect because it involves the physical destruction, damage, or alteration of all or part of the property (36 CFR 800.9[b]1). Building recordation, including large-format photographs and measured drawings of the building, would constitute proper mitigation.

Archaeological resources of high sensitivity may be disturbed in the areas of assisted living housing, commercial use adjacent to the east runway, the senior housing area directly east of the industrial

core, and in the area of the STP. A Phase 1B archaeological survey would be needed before any development occurs to fully determine potential effect of development in these areas of high sensitivity.

S.3.9 Topography, Geology, and Soils

Given the gently sloping relief of the NWIRP fenced-in area, none of the action alternatives would significantly affect existing topography. Construction of the proposed uses within each alternative would not likely require extensive regrading, excavation, or filling. Further, because no deep excavations would be required, no direct impacts to geologic resources are anticipated.

NWIRP Calverton lies within two soil associations: the Haven-Riverhead association and the Plymouth-Carver association (USDA, 1975). Approximately three-quarters of the fenced-in area and the northern buffer zone fall within the Haven-Riverhead association, containing soils that are typically deep, nearly level to gently sloping, and well-drained. Development as proposed in the alternatives is generally considered compatible with the soils association, because of its good drainage and the ease of excavation. In places where there may be a high water table or where soils are on steep slopes, construction procedures to reduce effects on groundwater and on soils would need to be implemented. A soil erosion and sediment control plan would be prepared prior to construction to address these issues.

The Pine Barrens Plan (Volume 1, Chapter 5, CPBJP&PC, 1995) defines a set of standards and guidelines for land use that would be applicable to all of the alternatives. The lands proposed for development for each alternative are within the CGA of the Central Pine Barrens.

S.3.10 Water Quality and Hydrology

Most of NWIRP Calverton is located within the Peconic River drainage basin. The Peconic River is the largest stream in Suffolk County and lies just south of NWIRP Calverton. Surface water on the site generally moves in a southerly direction towards the Peconic River. Most of the bodies of water on NWIRP Calverton are a combination of a pond and wetland, ranging in size from about one-quarter to ten acres (one-tenth to four hectares).

Segments of the Peconic River and three of its tributaries near NWIRP Calverton are designated "scenic" under the New York State Wild, Scenic and Recreational Rivers System Act (Title 27 of Article 15 of the Environmental Conservation Law). For each river under the Act, a river area width, or "scenic corridor," delineated from either river bank is subject to regulation. Within the regulated area of this scenic corridor, new multiple-family dwellings, commercial, and industrial uses are not permitted. The Peconic Estuary also falls under the purview of the National Estuary Program (NEP), designed to promote long-term planning and management in nationally significant estuaries that are

threatened by pollution, development, or overuse (LIRPB, 1993).

Three major aquifers underlie NWIRP Calverton. From nearest the ground surface in descending order, these are the Upper Glacial Formation, Magothy, and Lloyd Sand aquifers. The water table beneath NWIRP Calverton lies within the Upper Glacial Formation Aquifer. Groundwater serves as the source of drinking water for population residing within a four-mi (6.4-km) radius of NWIRP Calverton (Halliburton NUS, 1992).

NWIRP Calverton lies completely within one of the nine Special Groundwater Protection Areas (SPGAs) established by the Long Island Regional Planning Board (LIRPB). SPGAs are considered critical environmental areas (CEAs) pursuant to SEQR and carry specific requirements for land use activities and groundwater protection. No part of the NWIRP Calverton fenced area where actual reuse would occur lies within the 100-year floodplain of any river or stream.

No Action Alternative

Under the no action alternative, water quality and hydrologic resources would not be adversely affected. The existing Calverton Sewage Treatment Plant (STP) would not be operating; therefore discharges would be eliminated. Further, additional stormwater runoff would not be produced, nor would recharge to underground aquifers be affected, because there would be no changes to the amount or type of impervious surfaces at the site.

Calverton Enterprise Park Reuse Plan

The Reuse Plan, as well as the other alternatives, would be subject to SPDES regulations for control of stormwater and for the existing and future new STP. Specific impacts of the Reuse Plan on surface waters would depend on site-specific development for each of the major land use categories (e.g., industrial business park, commercial recreation area, theme park, etc.). Construction activities associated with development of the Reuse Plan would be subject to the State construction site general permit issued under the SPDES program.

Stormwater pollution prevention plans (SWP3s) would need to be prepared prior to a formal approval for general permit coverage. Given the scope of potential redevelopment at NWIRP Calverton, it is likely that areas of ten acres (four hectares) or more would be disturbed (an estimated potential increase in impervious surfaces would be about 320 acres [130 hectares] at full build-out). Therefore, temporary or permanent sediment basins would need to be provided until final site stabilization. However, use of alternative natural recharge areas and/or drainage systems that would cause less disturbance of the site may be encouraged per the Pine Barrens Plan. Those alternatives include, but are not limited to, the use of natural swales and depressions and/or the installation of perforated pipe, vertical drains or dry wells.

With regard to groundwater, the industrial business park, airport, and commercial uses have the potential for accidental pollution of groundwater (and surface water) or endangerment of public health. These uses would be required to prepare Spill Contingency Plans. Nitrates from fertilizers that would be used on the golf course of the Reuse Plan are also of potential concern. Nitrate leaching lends itself to control by best management practices (BMPs), including applying slow release nitrogen sources, reducing the total yearly amount of nitrogen fertilizer applied, and other similar controls.

A portion of the Peconic River scenic corridor traverses the site; it is estimated that approximately 526 acres (213 hectares) of land within the fence would be restricted from development. Redevelopment of these lands would be inconsistent with the scenic corridor regulations and could not be developed as proposed.

The portion of the Peconic River Scenic Corridor on NWIRP Calverton was specifically discussed in the Pine Barrens Commission Findings Statement for the Central Pine Barrens Plan, essentially stating that the Commission would support and recommend that the northerly boundary of the scenic river area within the CGA of NWIRP Calverton be moved to a point coterminous with the Core Preservation Area boundary line, under certain conditions (compliance with Pine Barrens Plan and improvement of the Calverton STP, [Subchapter 4.10.2]). If the conditions were met, the scenic corridor could be relocated outside the fenced-in area and would therefore pose no restriction to Reuse Plan implementation.

Estimated wastewater treatment demands of the Reuse Plan would require a new STP (probably groundwater-discharging), proposed for the northern area of the site. The Peconic Estuary Program's Comprehensive Conservation and Management Plan (CCMP) recommends that new groundwater-discharging STPs be avoided in the Peconic River area, and considered only 1) if best available denitrification technology is used; 2) if the project is associated with significant, natural resources, and/or surface water quality benefits; and 3) if additional analysis shows that impacts on the Peconic River would be negligible.

The Final Pine Barrens Comprehensive Land Use Plan also addresses the issue of wastewater discharges. Based on the proposed location of the new STP, flow from the STP discharge would be to the north, away from the Pine Barrens, and thus compatible with the Plan's requirement that STP discharges "shall be outside and down gradient of the Central Pine Barrens...where deemed practical."

Calverton Enterprise Park/Raceway Alternative

Specific impacts of the Enterprise Park/Raceway alternative on surface waters would depend on site-specific development within each of the major land use categories, as for the Reuse Plan. Development would need to be designed to meet all surface water regulations of the town of Riverhead, the County of Suffolk, and NYSDEC for water quality, industrial waste discharges, sewage discharges, and stormwater.

Because many of the land uses are similar to the Reuse Plan, issues concerning potential groundwater effects would be similar. The standards and guidelines of the Pine Barrens Plan, BMPs identified for the Reuse Plan, and protective measures and policies defined in the SGPA Plan requiring compliance would be applicable to this alternative as they are for the Reuse Plan. The same constraints regarding the Peconic River scenic corridor and the new STP also apply.

Peconic Village Alternative

Senior housing is the primary land use in this alternative. Because the industrial park, commercial uses, golf course(s), and infrastructure (STP) remain as land use components, however, potential for impacts to the groundwater would exist for this alternative. The industrial business park user(s) would be required to prepare spill plan(s) for review and approval by NYSDEC. The Pine Barrens Plan, BMPs, and SGPA protective measures and policies would also apply.

The constraints regarding the scenic corridor and the required new STP that applied to the other two alternatives are also applicable to the Peconic Village Alternative.

S.3.11 Terrestrial and Aquatic Environment

NWIRP Calverton, located within the Long Island Pine Barrens, is home to many plant and animal species, some of which are classified as endangered or threatened by New York State (Central Pine Barrens Joint Planning and Policy Commission [CPBJP&PC], 1995). The buffer areas outside the fence provide habitat for many plants and animals.

Most of NWIRP Calverton, other than the developed lands within the fenced area and the agricultural areas in the buffer zones, supports forest dominated by pitch pine and upland oaks (Figure S-7, Generalized Vegetation Cover). Vegetation exists in three categories: improved; semi-improved; and unimproved.

Twenty-five wetlands, wetland complexes, and deep water habitats totaling 251 acres (102 hectares) have been identified on NWIRP Calverton property (Myers and Gaffney, 1989). TAMS identified two additional potential wetlands during their field reconnaissance in May 1996. An impounded stretch of the Peconic River is the only one lacustrine (lake)-type deep water habitat.

Terrestrial wildlife on NWIRP Calverton includes a large population of whitetail deer, ring-necked pheasants, bobwhite, quail, cottontail rabbits, woodchucks, gray squirrels, raccoon, red fox, opossum and weasel occur (Myers and Gaffney, 1989), and a variety of songbirds. The Peconic River, McKay Lake, and seven pond/wetlands are known to support fisheries (Myers and Gaffney, 1989).

As of 1991, no federally listed threatened or endangered species were known to reside within a four-mi (six-km) radius of NWIRP Calverton (Halliburton NUS, 1995, as cited in CF Braun, 1995). However, several plants, amphibians, insects, fish and birds listed by the State of New York as threatened, endangered, rare, or of special concern do occur on the site. Of the 52 species identified as threatened, endangered, or species of concern on NWIRP Calverton by the New York Natural Heritage Program, six species (three plant and three animal) are located within the fenced area (O'Neill, 1996).

No Action Alternative

Under this alternative, the maintained and semi-maintained management areas would no longer be maintained and would soon become successional old field, with the encroachment of woody vegetation resulting in a gradual loss of grassland habitat. The only impact to wildlife within the fenced area would likely be the continued overpopulation of deer. If this alternative were selected, a deer management program should be set up to determine the appropriate herd size for the available food sources on site and the herd should be culled accordingly.

Calverton Enterprise Park Reuse Plan

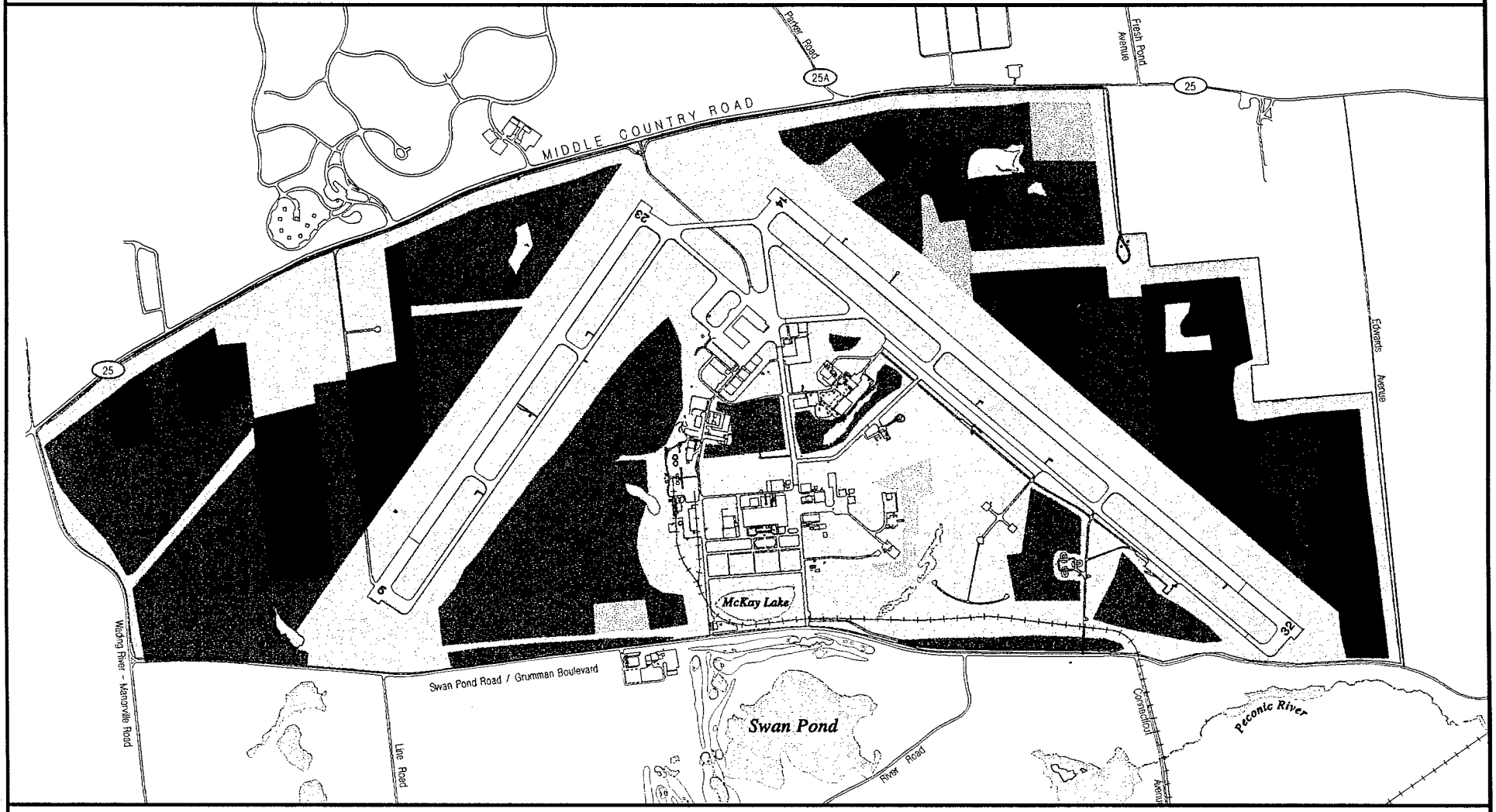
Approximately two-thirds of the 856 improved and semi-improved acres (342 hectares) of grassland within the fence would be developed under this alternative. The remaining one-third will be either parkland or conserved as natural area. Three conservation areas totaling 580 acres (232 hectares) would not be impacted by the proposed development (Myers and Gaffney, 1989). The greatest impact vegetatively would be the destruction of tracts of forest land that, although not highly diverse, do provide habitat for a large portion of the wildlife that exists on site, including three State-listed threatened and endangered animal species.

Seven distinct wetland areas are located within the main development footprint of the Reuse Plan, between the two runways (Wetlands 4, 5, 6, 7, 8, 10, and 27; Figure S-8 [Wetlands]). In addition, two wetlands (Wetlands 2 and 3) are located in the northeastern corner of the site, in the vicinity of the proposed 27-acre (11-hectare) natural area.

All disturbances to wetlands with an area of at least 12.4 acres (five hectares), or smaller if they have unusual local importance as determined by NYSDEC, require a permit from the US Army Corps of Engineers (COE) and approval from NYSDEC. Although all potentially impacted wetlands are less than 12.4 acres (five hectares), NYSDEC has jurisdiction over four of the seven wetlands within the core area (Wetlands 4, 5, 6, and 8) and the two wetlands (2 and 3) in the vicinity of the proposed natural area. Therefore, coordination with both NYSDEC and the COE is anticipated.

Analysis for any proposed project under the Reuse Plan that would affect wetlands must consider avoiding impacts to wetlands as described in the *Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination*

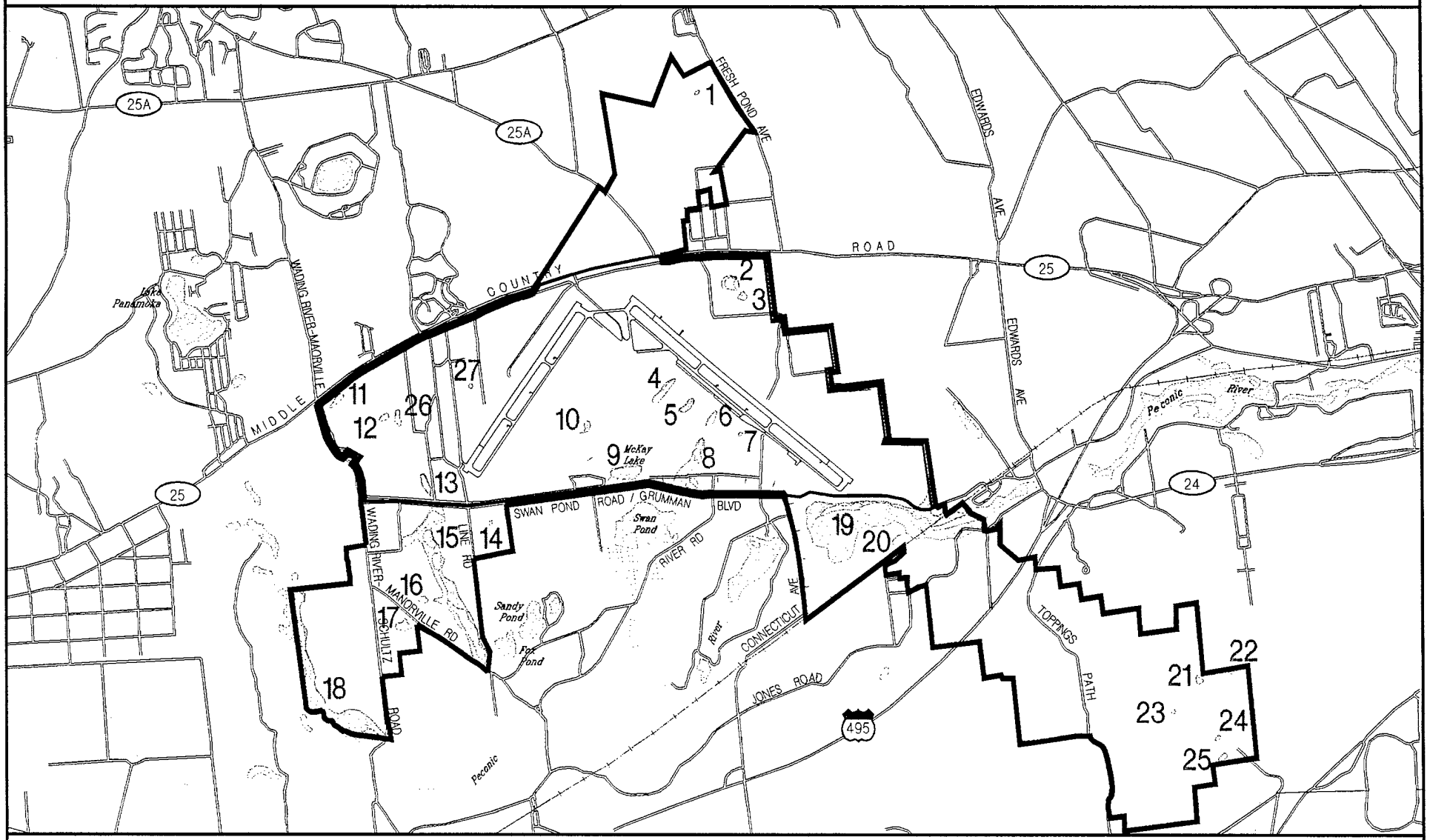
Generalized Vegetation Cover



Source: CF Braun Engineering Corp., 1995.

Figure S-7

Wetlands



Wetlands
Open Water
Property Boundary
Fenceline

4000 0 4000
Scale in Feet
1000 0 1000
Scale in Meters

N

Figure S-8

of Mitigation under the Clean Water Act Section 404 (b)(1) Guidelines.

The amount of vegetation lost directly correlates to the amount of habitat lost to bird, mammal, fish, amphibian and insect populations. The surrounding woodland and grassland communities can potentially absorb the additional vacating population, but there would still be a loss of wildlife due to road crossing and the inability to move during construction phases.

Four of the six locations of state-listed threatened and endangered species are in the Pine Barrens Core Area and would not be directly impacted by development. One of the remaining two locations is within the area planned for a community park, and the last location is in the northeast portion of the site, where commercial and recreational uses are planned around a natural area. The ultimate recipient of the property would have to consult with the NYSDEC regarding locations for any significant construction activity potentially affecting the habitats.

Calverton Enterprise Park/Raceway Alternative

The raceway component of this alternative would include fencing, removable concrete barriers, tire walls, and semi-permanent bleachers, resulting in a greater impact to the surrounding habitat than the aviation alternative. The remaining impacts from this alternative, including the impacts from the theme park, golf course, and the commercial recreation, are similar to those discussed for the Calverton Enterprise Park Reuse Plan.

The vegetation impacts will be similar for this alternative as for the Reuse Plan. The raceway alternative would lose 27 acres (11 hectares) of natural area, a loss of wildlife habitat, for use as an industrial park, but there would be less habitat loss in the southeastern portion of the development. The natural area, dominated by hardwood-pine forest, would be impacted by development.

The same wetland areas described for the Reuse Plan are located within the core area of this alternative. The 45-acre (18-hectare) industrial park recreation area would have a greater impact on the 2.2-acre (0.9-hectare) wetland present (Wetland 4), than the Reuse Plan, if the wetland were not properly protected. All disturbances to wetlands would require a permit from the COE.

Peconic Village Alternative

The development acreage for this alternative is less than for the other two alternatives; however, although the overall footprint of development would have less impact on the forests in the northeastern section of the development, there would be more impact on the central and southeastern portions of the site. More designated open space and natural areas remain overall under this alternative.

S.3.12 Petroleum and Hazardous Materials

NWIRP Calverton ceased operations in February 1996. Hence, no hazardous waste is currently being generated. During its operation from 1952 to 1996, NWIRP Calverton generated wastes classified as hazardous under federal and New York State regulations from aircraft maintenance, assembly and support operations throughout the installation. The waste was collected, stored, and periodically transported to the permitted hazardous waste storage facility where it was consolidated and prepared for shipment to a permitted Treatment, Storage and Disposal (TSD) facility. All halogenated and non-halogenated solvents were sent to an off-site facility for reprocessing and kiln burning. Industrial wastewater was treated on-site at the Industrial Wastewater Treatment Plant (Halliburton NUS, 1995).

A series of studies conducted to evaluate past disposal sites and practices at NWIRP Calverton has resulted in identification of a number of sites with environmental concerns. Surface soil, sediment, groundwater, and surface water contamination by such contaminants as metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polyaromatic hydrocarbons (PAHs), phthalates, and polychlorinated biphenyls (PCBs) were found in varying degrees and combinations at the sites. Groundwater investigations resulted in removal of two wells from service because of volatile organic contamination. Well service was reinstated after the Northrop Grumann Corporation installed an activated carbon treatment system to address the VOC contamination (US Navy, August 1995). Service of these wells was reinstated after the Grumman Corporation installed an activated carbon treatment system to address the VOC contamination.

The Town of Riverhead's Community Development Agency (CDA) was given authority to receive title to NWIRP Calverton from the US Navy via Public Law 103-c337. A Finding of Suitability to Transfer (FOST) must be issued before property transfer, involving identification of uncontaminated property as defined by the Community Environmental Response Facilitation Act (CERFA). If release or disposal of hazardous substances, hazardous wastes, and/or petroleum products is confirmed in an area, Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and/or RCRA requirements must be met prior to property transfer.

The majority (99 percent) of NWIRP Calverton is uncontaminated property. Most of the areas of concern are located in the fenced area (Zone I) (Figure S-9, Environmental Baseline Survey Zones) where the majority of maintenance and operation activities occurred. Investigations and corrective actions for these areas are ongoing. Zones II, III, and V include several small areas where additional evaluation is required, and Zone V contains one area where hazardous substances or petroleum products have been stored, but no release has occurred. Since NWIRP Calverton ceased operations in February 1996, no additional areas of concern are anticipated.

Environmental Baseline Survey Zones

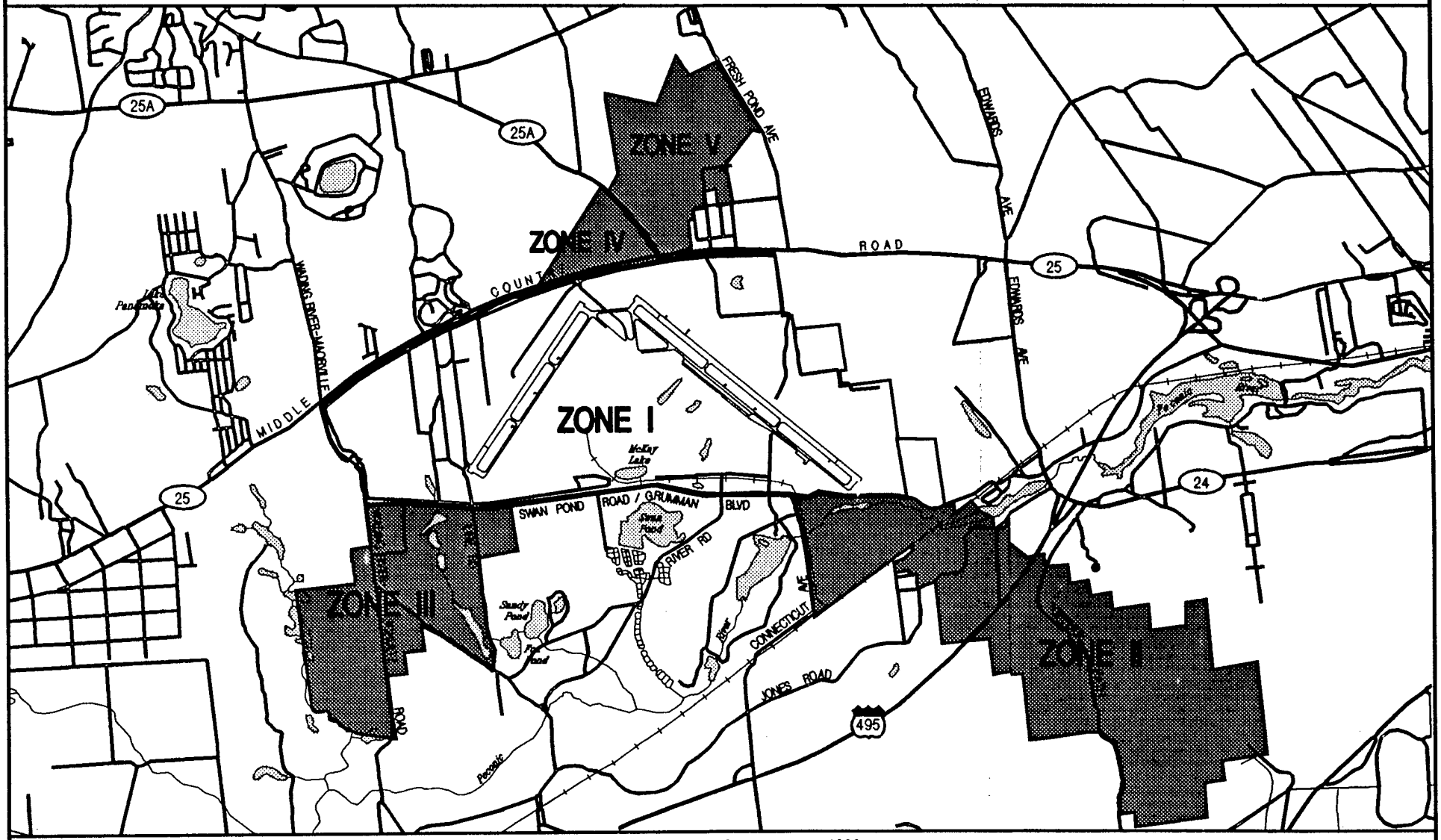


Figure S-9

No Action Alternative

Under the no action alternative the US Government would retain ownership of NWIRP Calverton in a caretaker status. The Navy would continue to provide for cleanup of contaminated sites as identified in the EBS (US Navy, October 1995) and the *Phase II Field Sampling Plan* (US Navy, 1996). Use of hazardous materials would cease, with the exception of maintenance operations, due to the cessation of all mission-related activities.

Calverton Enterprise Park Reuse Plan

Under this alternative, some hazardous substances would be generated by operation and maintenance activities of theme park, aviation/aircraft operations, and the industrial business park. Herbicides and pesticides would be used for grounds maintenance, particularly for the golf course. The amount of hazardous substances that might be generated cannot be quantified at this time as the specific nature of the industries is not yet known. Hazardous substances users would be subject to inspection by the Suffolk County Fire Department and would be required to file information on hazardous material usage with Suffolk County Department of Health Services and NYSDEC.

Volatile organic contaminants have been detected in the production wells at concentrations above drinking water standards. A groundwater treatment system has been installed and has been operating for several years. Water quality would be monitored to ensure contaminants are removed from the system prior to use. Any reuse, modification, renovation, and/or demolition of buildings would have to address the issues of lead-based paint and asbestos.

Calverton Enterprise Park/Raceway Alternative

The Calverton Enterprise Park and Automobile Raceway alternative would have hazardous waste generation related to the operation and maintenance of park components similar to that of the Calverton Enterprise Park alternative. Operation of a raceway would generate petroleum substances during routine maintenance and operation. Associated raceway uses in the industrial business park would also use such materials as solvents and degreasers and would generate petroleum-based waste products.

Peconic Village Alternative

The hazardous waste generated under this alternative would be limited to that which is generated by operation and maintenance of the facilities and herbicides/pesticides for maintenance of the grounds and golf courses.

S.3.13 Cumulative Impacts of the Preferred Action

The preferred action, the Calverton Enterprise Park Reuse Plan, would mean development of 2,923 acres (1,184 hectares) to accommodate six major land use elements and their supporting infrastructure. Cumulative impacts upon the study area as a result of this development over the 20-year build-out period would include the following:

- Substantial fiscal benefits: total annual estimated tax revenues would be $19.4 million (rounded);
- Significant increase in recreational facilities: substantial designated open space, park, and recreational facilities (theme park and commercial recreation center) would represent a major increment to existing recreational facilities in the region;
- Increases in traffic: additional vehicular trips at full build-out would create a dramatic increase in congestion levels at area intersections that could be somewhat mitigated by selective lane widening, installation of turn lanes, and signalization changes; and
- Development of formerly improved and semi-improved areas and related impacts to terrestrial environment: approximately two-thirds of 856 acres (342 hectares) of grassland within the fence would be developed under this alternative, resulting in loss of habitat and the need to protect identified wetlands.

There would be very little cumulative impact on area demographics; community facilities and services such as health services and fire and police protection; air quality; topography, geology, and soils; and water quality and hydrology. Cumulative impacts due to increases in noise levels resulting from increased traffic would occur. The noise impact of aircraft operations associated with the Reuse Plan would exceed a DNL of 65 dBA, the FAA standard, in an area estimated to be about 18 acres (seven hectares).

S.4 Relationship of Proposed Action to Federal, State, and Local Plans, Policies, and Controls

As presently envisioned, the Reuse Plan conflicts with the existing Peconic River scenic corridor boundary; proposed development would not be permitted within the currently defined corridor. Although the Town of Riverhead's Pine Barrens Overlay District language appears to conflict with requirements of the Pine Barrens Land Use Comprehensive Plan, the Reuse Plan land uses would be consistent with the Pine Barrens Plan. The proposed action is generally consistent with other relevant federal, state, and local plans, policies, and controls, assuming that remaining remediation of site contamination at NWIRP Calverton occurs as planned, historic mitigation is performed in accordance

with applicable guidance and standards, and wetlands are appropriately protected.

S.5 Unavoidable Adverse Effects, Relationship Between Local Short-term Uses, and Enhancement of Long-term Productivity, and Irreversible and Irretrievable Commitments of Resources

The additional vehicular traffic generated by the preferred alternative at full build-out in 20 years would create dramatic increases in congestion at all study area intersections within the vicinity of NWIRP Calverton. Potential mitigation measures for these impacts would include approach widening, installation of turn lanes, and signal modifications. Development of acreage for some of the land use elements would result in loss of habitat and the need to protect wetlands and threatened and endangered species.

Short-term construction and demolition-related effects on traffic levels, air quality and noise would be unavoidable, but impacts could be diminished by phasing of construction, limiting hours of construction, and similar measures. There are no other unavoidable adverse effects as a consequence of the proposed reuse of the property.

Irreversible and irretrievable commitments of resources would be made in terms of added quantities of debris to disposal sites as a result of demolition, the commitment of resources (construction materials and land) to the proposed site uses, and the long-term use of resources, such as energy, water, sewage treatment, landfill capacity, and road use. On balance, proposed reuse of the property is considered a productive use of the property that does not negatively impact long-term productivity.

S.6 Summary Statement of Environmental Significance

Implementation of the proposed Reuse Plan for NWIRP Calverton is considered to have significant environmental impacts with respect to traffic conditions. The additional vehicular traffic generated by the preferred alternative would create considerable traffic delays at intersections within the vicinity of the site. Aircraft-generated noise in the Reuse Plan would exceed FAA noise level standards under the high-range operation scenario in an 18-acre area adjacent to the northern buffer zone. A summary impact matrix for the proposed Reuse Plan and its alternatives is presented in Table S-6.

Table S-6

Summary Impact Matrix - Disposal and Reuse Alternatives for NWIRP Calverton

Evaluation Parameter	Calverton Enterprise Park Reuse Plan	Calverton Enterprise Park/Raceway Alternative	Peconic Village Alternative
Land Use and Zoning	Industrial and aviation land uses are compatible with existing zoning. The Town of Riverhead would need to adopt a Planned Unit Development District (PUD) for implementation of the Reuse Plan.	It is assumed that the Town of Riverhead would need to adopt a Planned Unit Development District (PUD) for implementation of this alternative, as with the Reuse Plan.	It is assumed that the Town of Riverhead would need to adopt a Planned Unit Development District (PUD) for implementation of this alternative, as with the Reuse Plan.
Socioeconomics	- Creation of estimated 3,175 direct jobs and 3,551 indirect jobs. - Total earnings (direct and indirect) are projected to be $152 million.	- Creation of estimated 2,199 direct jobs and 2,413 indirect jobs. - Total earnings (direct and indirect) are projected to be $102 million.	- This is the only alternative that would introduce new housing and new residents: estimated 2,889 residents in 688 units of assisted living; 1,350 units of senior housing - Creation of estimated 1,923 direct jobs and 1,886 indirect jobs. - Total earnings (direct and indirect) are projected to be $90.7 million.
Community Facilities	No major adverse impacts foreseen in meeting anticipated growth in demand for services. Benefits would be derived in region from increased employment and income.		
Transportation	Additional vehicular trips generated by Reuse Plan would exacerbate the future no action condition, where traffic conditions are expected to deteriorate due to projected growth in the area. Roadway improvements would be required to mitigate these impacts.	Weekend peak traffic due to raceway events would be substantially greater than the Reuse Plan under this alternative. Otherwise, impacts would be similar to those described for the Reuse Plan.	This alternative has less impact than either of the other two alternatives, particularly on the weekends.
Air Quality	No violations of federal or State standards for 1-hour and 8-hour averaging periods.		
Noise	Increases in noise from mobile sources would exceed FHWA standards at certain locations, and increased aviation noise would exceed FAA standards under the high-range operation scenario.	Increases in noise from mobile sources would exceed FHWA standards at certain locations, and increased noise from the raceway component would exceed Town of Riverhead standards.	Increases in noise from mobile sources would exceed FHWA standards at certain locations.

Table S-6

Summary Impact Matrix - Disposal and Reuse Alternatives for NWIRP Calverton

Evaluation Parameter	Calverton Enterprise Park Reuse Plan	Calverton Enterprise Park/Raceway Alternative	Peconic Village Alternative
Infrastructure	A new sewage treatment plant (STP) is proposed for all alternatives. The Town of Riverhead would extend its water supply to the site to meet potable water needs. All other infrastructure elements are assumed to be adequate.		
Cultural Resources	Three structures potentially eligible for the National Register of Historic Places could be altered or renovated. Adherence to appropriate standards and guidelines would be appropriate mitigation. A Phase 1B archaeological survey would be needed to determine potential impacts in identified areas of high archaeological sensitivity.	The same considerations and mitigations apply to the Enterprise Park/Raceway Alternative as to the Reuse Plan.	The same considerations and mitigations apply to two of the three buildings and to the archaeological sites as under the Reuse Plan. The third building would be demolished under this alternative and would require recordation as mitigation.
Natural Resources	There would be a loss of vegetation and habitat under all alternatives. Wetlands could be impacted and would have to be protected under all alternatives. Any proposed project must consider the avoidance of wetland impacts; only after impacts have been avoided to the greatest extent practicable would other mitigative measures be considered and implemented.		
Petroleum and Hazardous Substances	- Industrial users may generate hazardous materials - amounts cannot be quantified as the nature of those users is unknown. - If used, groundwater would be treated prior to usage to prevent adverse health effects from volatile organic contaminants.	- Similar hazardous waste generation would occur under this alternative as under the Reuse Plan. - Operation of the raceway and associated functions would use and generate petroleum substances and use of degreasers and solvents.	- Hazardous waste generated under this alternative would be limited to that generated by operation and maintenance of the facilities and herbicides/pesticides for maintenance of grounds and golf course.
Cumulative Impacts of the Preferred Action	Cumulative impacts include substantial fiscal benefits to the area; significant increases in recreational facilities and open/parkland space; increases in traffic; loss of vegetation and habitat; and potential impacts to wetlands.		
Note: Estimates are based on long-term (20-year) alternative reuse plans that are subject to change.			

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1 PURPOSE AND NEED

The Naval Weapons Industrial Reserve Plant (NWIRP) Calverton is situated on approximately 6,060 acres (2,424 hectares) on the eastern end of Long Island, New York (Figure 1-1, NWIRP Calverton Location). NWIRP Calverton was a Government Owned Contractor Operated (COGO) facility where the Grumman Corporation (Grumman) assembled and tested military aircraft to accomplish the plant's mission. The overall property consists of two main land use areas:

- approximately 2,923 acres (1,184 hectares) "within the fence" (totally within the Town of Riverhead) where the infrastructure and facilities to assemble and test aircraft were constructed and operated; and

- approximately 3,138 acres (1,241 hectares) "outside the fence" (lying in both Riverhead and the Town of Brookhaven) where several buffer zones were established to minimize encroaching development and to reduce impacts of flight testing operations on the surrounding communities.

Figure 1-2 (Major Municipalities of Long Island) shows the location of the site with reference to the major municipalities of eastern Long Island. The Naval Air Systems Command of the US Navy may dispose of the "within the fence" property to the town of Riverhead and transfer the "outside the fence" property to the NYSDEC. The purpose of this Environmental Impact Statement (EIS) is to evaluate the potential effects of disposal and reuse of NWIRP Calverton. Reuse alternatives were developed locally.

1.1 Disposal Legislation

If the disposal of lands within the fence at NWIRP Calverton occurs, it will be accomplished via special legislation (Public Law 103-c337). This special legislation specifies that disposal shall be to the town of Riverhead. Other special legislation has also been developed for the disposal of lands outside the fence (buffer zones) at NWIRP Calverton to the New York State Department of Environmental Conservation (NYSDEC). These lands have been legislatively mandated to remain in their natural state.

The disposal of NWIRP Calverton is considered a major federal action; therefore, it has been determined that an Environmental Impact Statement (EIS) be prepared. This Draft Environmental Impact Statement (DEIS) has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental Quality (CEQ) Regulations on Implementing NEPA Procedures (40 CFR 1500-1508); and the Environmental and Natural Resources Program Manual, Chief of Naval Operations Instruction (OPNAVINST) 5090.1B. This DEIS has also been

prepared pursuant to New York State Environmental Quality Review Act (SEQRA - 6 NYCRR Part 617).

1.2 Disposal Procedures

The essential difference in the disposal of NWIRP Calverton compared to other BRAC actions is the specific transfer of the property directly to the Riverhead CDA that may occur without consideration. Since conveyance of the property is being done outside of BRAC, all of those rules, regulations, and customs do not apply; however, some of the procedures remain essentially the same and are listed below:

- First, the Navy has prepared this EIS to assess the effects of disposal and reuse as in other BRAC actions.
- Following publication and review of this DEIS, the Navy will prepare a Final EIS for public review and comment.
- Based on the analysis in the FEIS, the Secretary of the Navy will issue a Record of Decision (ROD).
- Property that has been identified as contaminated (about 238 acres [96 hectares]) will continue to undergo clean-up as part of the Navy's Installation Restoration (IR) program. Preparation of a Finding of Suitability to transfer (FOST) must precede the conveyance of this area (about 20 - 30 acres) following remediation.

1.3 Public Involvement

On March 26, 1996, the Navy published a Notice of Intent (NOI) in the Federal Register officially announcing that it would prepare an EIS in accordance with NEPA to study the impacts of disposal and reuse of the former NWIRP Calverton. On April 10, 1996, the Navy hosted a public scoping meeting at the Ramada Inn - East End, on Route 25 in Riverhead, NY. The purpose of the meeting was to solicit public input on significant issues related to the Reuse Plan that should be addressed in the EIS. The meeting was advertised in the Federal Register as part of the NOI and in two local papers (*Newsday* [Nassau and Suffolk editions] on March 27, 1996 and *Suffolk County Life* on April 3 and April 10, 1996). At the public meeting, Navy personnel presented a briefing about the EIS

NWIRP Calverton Location

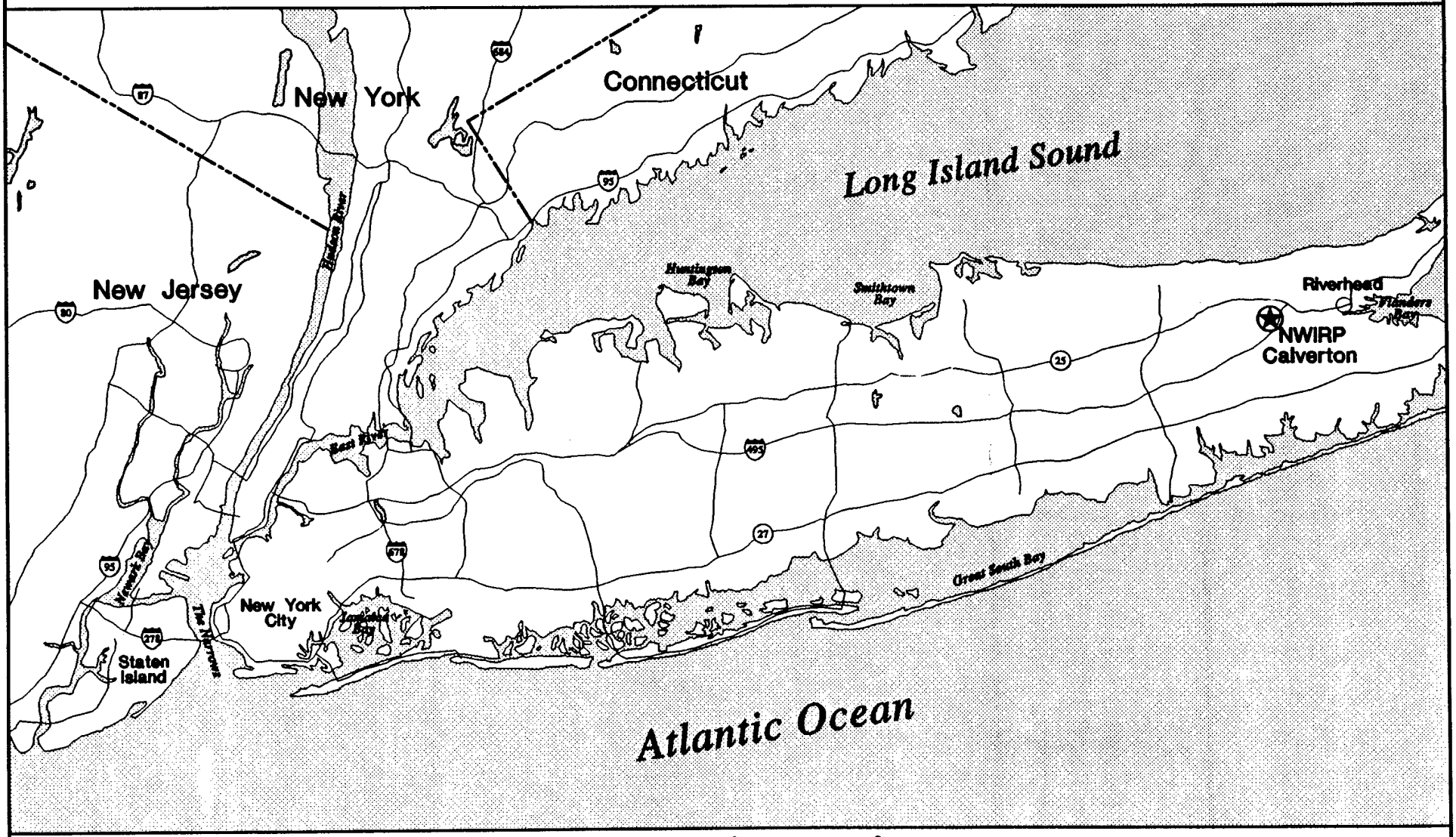


Figure 1-1

Major Municipalities of Long Island

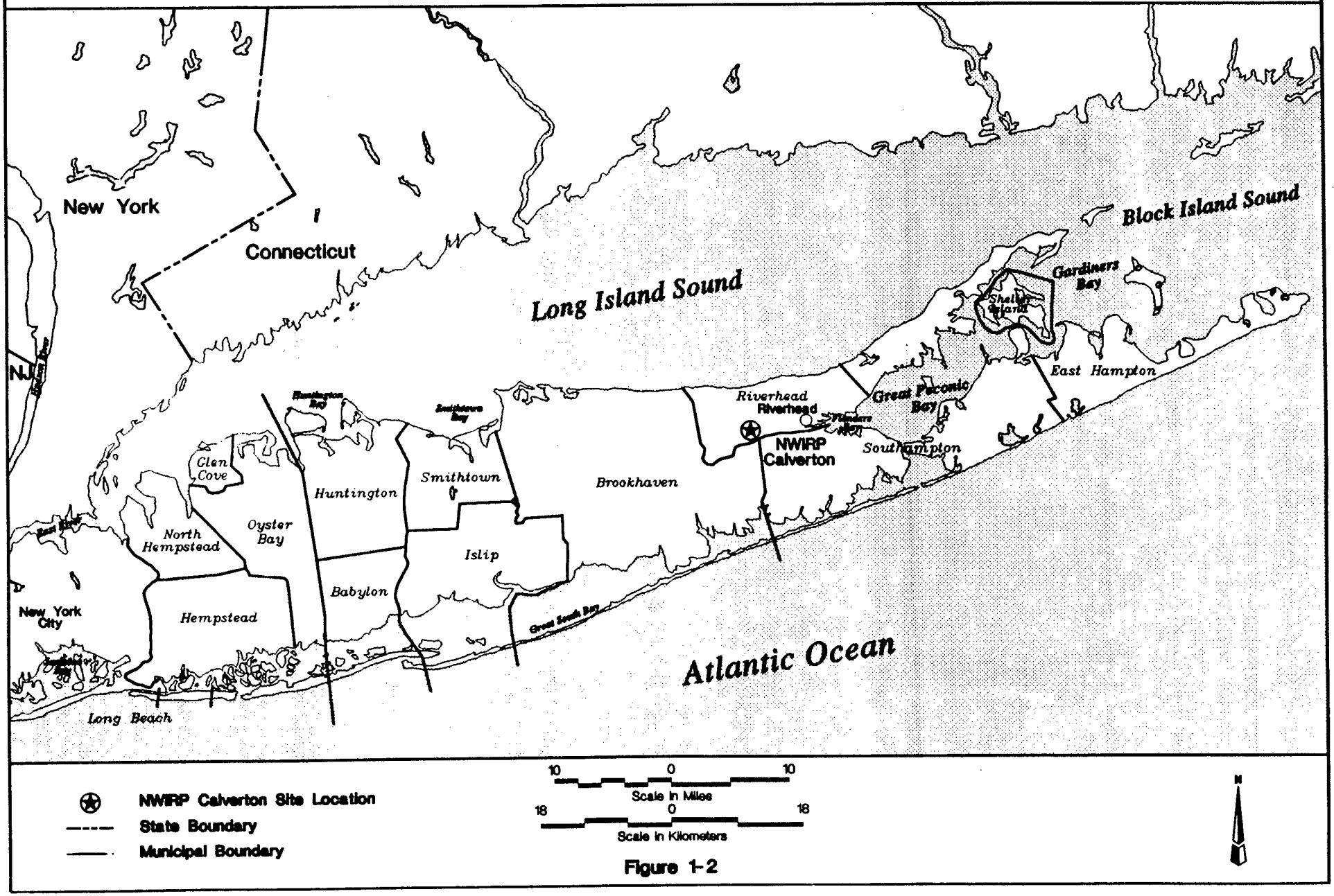


Figure 1-2

process and the schedule for completing the study. The following known areas of concern were identified:

- Effects of NWIRP Calverton disposal and reuse on the natural environment including wetlands, surface and groundwater, noise, and pine barrens ecology;
- Responsibility for the cleanup of hazardous waste on the site;
- Effects of future growth on community facilities, infrastructure, and transportation systems; and
- Effects of reuse on potential historic structures.

Commentors at the scoping meeting of April 10, 1996 expressed concerns on the following issues:

- Remediation and extent of contamination at the facility;
- Future growth effects on wetlands, pine barrens, surface and ground waters, and community character;
- Traffic impacts of the Reuse Plan;
- Noise impacts of Reuse Plan;
- Future infrastructure requirement for Reuse Plan; and
- Economic impacts of the Reuse Plan.

All scoping comments were accepted from the NOI through the scoping meeting and up to May 1, 1996 (correspondence was to be postmarked by that date). The comments were used to refine the issues and analyses conducted as part of this EIS.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter provides a detailed description of the proposed action and its alternatives. The proposed action is the disposal of NWIRP Calverton by the US Navy. The EIS considers three likely reuse scenarios for reuse of the site that were developed locally. The preferred alternative is called the Calverton Enterprise Park (Subchapter 2.3) and was developed by the town of Riverhead's Planning Commission. The two other locally developed alternatives evaluated are:

- the Calverton Enterprise Park/Raceway; and
- the Peconic Village.

These alternatives provide a range of development (land uses and intensities) that result in impacts that could occur with disposal and reuse of NWIRP Calverton. The mixture of different land uses and development intensities in the alternatives allow for an impact analysis that would encompass the most likely long-range reuse plans as envisioned by the local community.

This EIS also addresses the no action alternative in Subchapter 2.6. The no action alternative is the retention of NWIRP Calverton by the US government in a caretaker status. No reuse or redevelopment would occur at the facility under this scenario.

2.1 NWIRP Calverton

NWIRP Calverton is in the towns of Riverhead and Brookhaven. The focus of the reuse planning process is the area "within the fence," found about seven miles (mi) (11 kilometers [km]) west of Riverhead's downtown. The original site, acquired in 1952, was 4,500 acres (1823 hectares). The site, mainly farming and some residential, was chosen for its large size and its proximity to Bethpage, where sub-assembly of planes was already being done by Grumman.

By the time Grumman signed the Navy lease in 1954, the acquisition of a buffer zone was anticipated. In 1960, after two years of condemnation proceedings and litigation with the surrounding community, additional property was condemned for the buffer zone acquisition. NWIRP Calverton presently has a total of approximately 6,061 acres (2,455 hectares). Figure 2-1 (NWIRP Calverton) shows the shape of the buffer zones in relation to the core area within the fence.

When first built, the government-financed $23.5 million facility included two runways, two large manufacturing buildings and five additional support buildings with 611,000 square feet (sq ft) (56,823 square meters [sq m]). Several structures were added over the next four decades to meet changing technology needs for testing increasingly sophisticated electronic systems in the aircraft and changing

demands in the defense industry for new products and research and development. NWIRP Calverton was the first facility in the United States built primarily for assembly and testing of jet aircraft.

There are presently about 1,100,000 sq ft (102,300 sq m) of industrial, office, and support facilities on site. Based on data from the US Navy, NWIRP Calverton presently contains a total of 84 government-owned buildings (73 within the fence; 11 outside the fence). Within the fence the site includes these primary facilities:

- final assembly and manufacturing center;
- numerous hangar facilities;
- 10,000-ft (3,048-m) runway;
- auxiliary 7,000-foot (ft) (2,134 m) runway;
- secondary sewage treatment system;
- water distribution system and fire prevention system; and
- central steam plant.

These facilities are contained within the core area of the site (Figure 2-2, Core Area of NWIRP Calverton).

In 1987, Grumman had a total of 23,000 employees on Long Island; by 1994, the number had shrunk to 9,500 with 1,500 employed at Calverton (Bernstein, 1994). Grumman was still the largest employer in Riverhead at the time and the annual tax revenues to the town were approximately $1.5 million. However, by July 1992, only one aircraft, the E2-C Hawkeye, remained in production. NWIRP Calverton officially closed February 15, 1996.

2.2 Development of Reuse Alternatives

As described in Chapter 1, the Town of Riverhead CDA was given authority to receive title to NWIRP Calverton from the US Navy via Public Law 103-c337. The CDA is empowered to foster local economic development under the New York State General Municipal Law. The Riverhead Town Board created the Calverton Air Facility Joint Planning and Redevelopment Commission (Planning Commission) to assist and advise the Town Board on the reuse of NWIRP Calverton. The Planning Commission includes representatives from the Town of Riverhead, surrounding towns, Suffolk County, New York State, the First Congressional District, and the US Navy.

The alternatives were developed for the Planning Commission by Hamilton, Rabinovitz & Alschuler, Inc. (HR&A). Under contract to the Town of Riverhead, HR&A prepared a report that developed, identified, and evaluated alternative reuse plans. The study was funded with financial support from the Office of Economic Adjustment - Department of Defense, and the New York State Department of Economic Development.

NWIRP Calverton

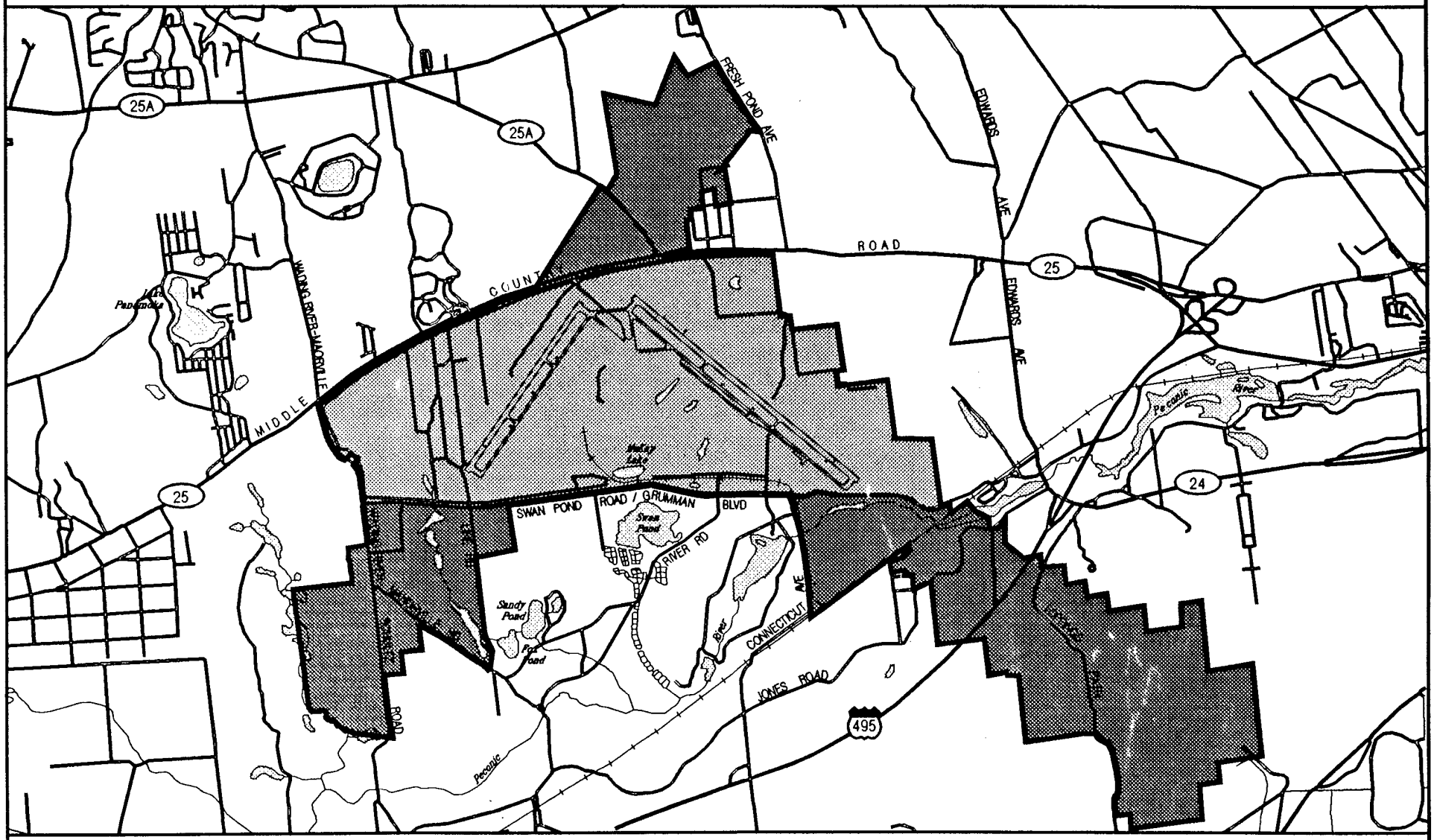


Figure 2-1

Core Area of NWIRP Calverton

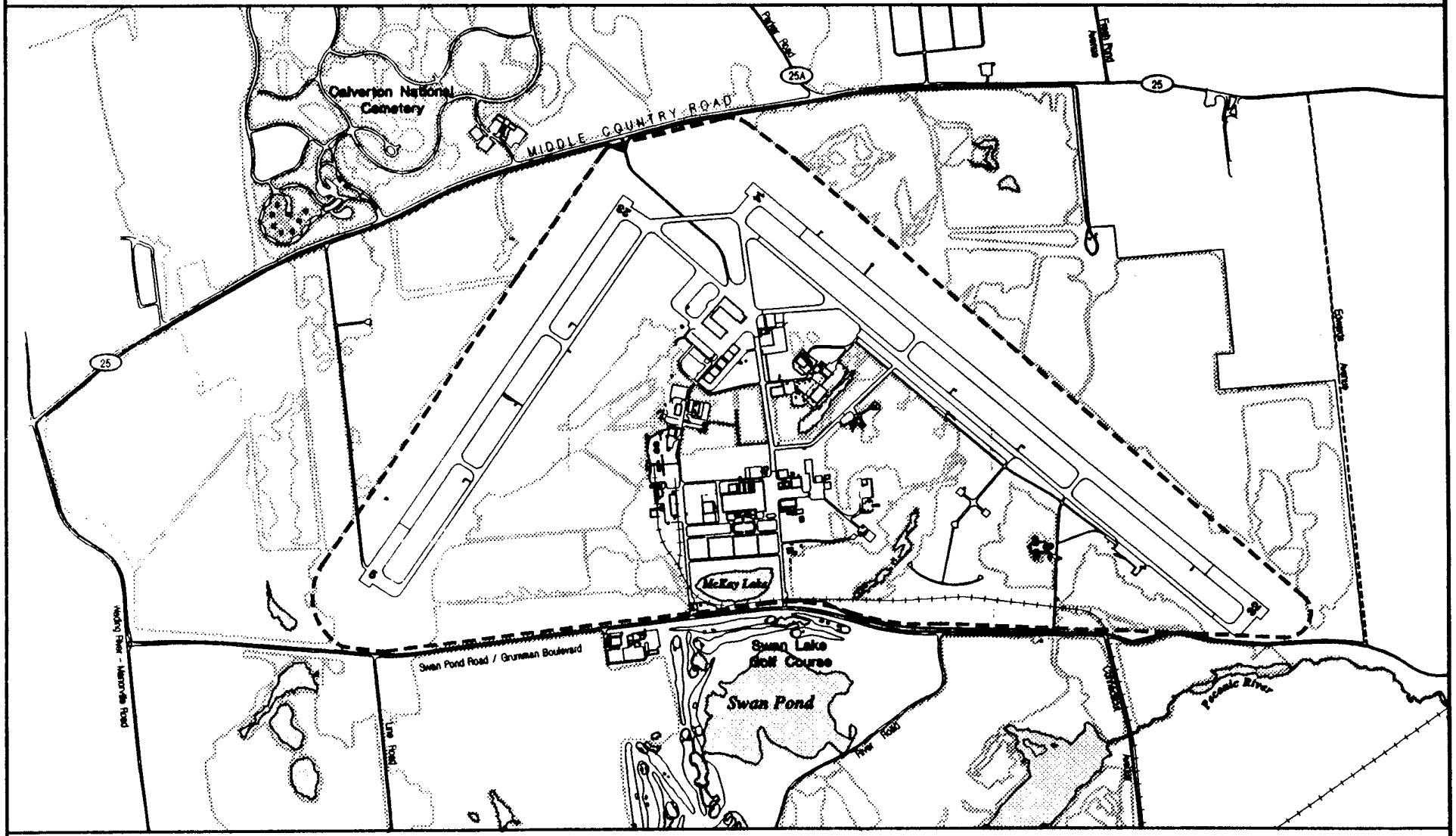


Figure 2-2

The process of preparing the alternative reuse scenarios, as they are called in the reuse strategy report, started in October 1995 at a set of public forums. Goals for the study were established by the Planning Commission and included:

- attract private investment;
- maximize job creation;
- increase tax base; and
- enhance regional quality of life.

Combined with the local meetings, several themes emerged that suggested to HR&A and the CDA several possible reuse scenarios:

- industrial reuse;
- commercial tourism; and
- residential development.

Based on these broad themes, land uses were then identified and preliminary site plans were prepared and reviewed with the Planning Commission in November 1995. Based on the ideas from this meeting, three reuse scenarios were developed and refined. Certain elements of particular alternatives were also subject to further discussion with and modification by the Planning Commission.

In February 1996, the alternative reuse plans were presented to the Planning Commission for review. Based on the Planning Commission's recommendation, the Riverhead Town Board was formally to approve, disapprove, and/or modify the recommended reuse plan. The Town Board has chosen, though unofficially at present, the Calverton Enterprise Park Reuse Plan (Reuse Plan) as the preferred alternative. Upon legal adoption of the reuse plan as the community preferred plan, the Town of Riverhead will prepare and adopt zoning consistent with the uses envisioned in the recommended plan.

For the purposes of preparing the impact analysis in Chapter 4, certain assumptions and modifications have been made to the alternatives as defined in the HR&A report. These changes are described under the appropriate section of each alternative. Acreages of the proposed land uses within each alternative have been calculated so that the area within the fence totals to 2,923 acres (1,184 hectares) for all alternatives. The amount of proposed development, where specifically identified in the Reuse Plan, (e.g., 887,500 sq ft 82,536 sq m), has been used as the basis for the impact analysis. Where the amount of development was not specifically identified, necessary and appropriate assumptions were made about development intensity generally consistent with the Riverhead zoning ordinance or an accepted professional standard.

2.3 Calverton Enterprise Park Reuse Plan

This alternative has been identified by the Town of Riverhead as its preferred alternative reuse plan; it was designed to:

- create a marketable image for the site;
- establish a flexible blueprint for implementation; and
- provide a basis for investment.

The main land use elements and associated size of the Calverton Enterprise Park are listed in Table 2-1. The reuse plan is shown in Figure 2-3 (Calverton Enterprise Park Reuse Plan).

The reuse plan as described in this EIS assumes that an aviation and aircraft use will be the ultimate use (over a 20-year timeframe) of the eastern runway; it supplants the use of the same acreage for sports-oriented event grounds as defined by HR&A. The sports-oriented grounds had been considered a potential viable use in the short-term (five to ten years) and the aviation and aircraft use was considered the potentially long-term viable future use (ten to twenty years) for the runway.

Should the Calverton Enterprise Park prove to be successful, it could have the capacity to generate the equivalent of 3,175 full-time jobs within the 20-year timeframe. It is also estimated that total construction costs (on and off-site improvements) for this alternative would be about $484 million (1995 $). As part of this cost off-site improvements for the road system surrounding the site and for improved access to the Long Island Expressway (LIE) have been estimated to be approximately $33 million (HR&A, 1996).

2.3.1 Industrial Business Park

The industrial business park incorporates the use of the existing industrial facilities on the site as well as the construction of new industrial facilities on 282 acres (114 hectares). To fit the aviation use (and associated facilities) in this alternative, 65 acres (26 hectares) of the industrial core, as originally conceived in the Reuse Plan, were incorporated into the aviation component. There would be a total of approximately 887,500 sq ft (82,538 sq m) of space in the industrial business park. In the future, expansion of industrial activity would be accomplished by assigning land within and next to the core to a mixed-use industrial reuse classification. It is assumed that half the total space would be housed within existing structures; the other half would be new infill development. Figure 2-3 shows the parcelization of the industrial core to locate existing buildings and provide services to vacant land for the new infill development. Parcel sizes generally range from five to 15 acres (two to six hectares).

Calverton Enterprise Park Reuse Plan

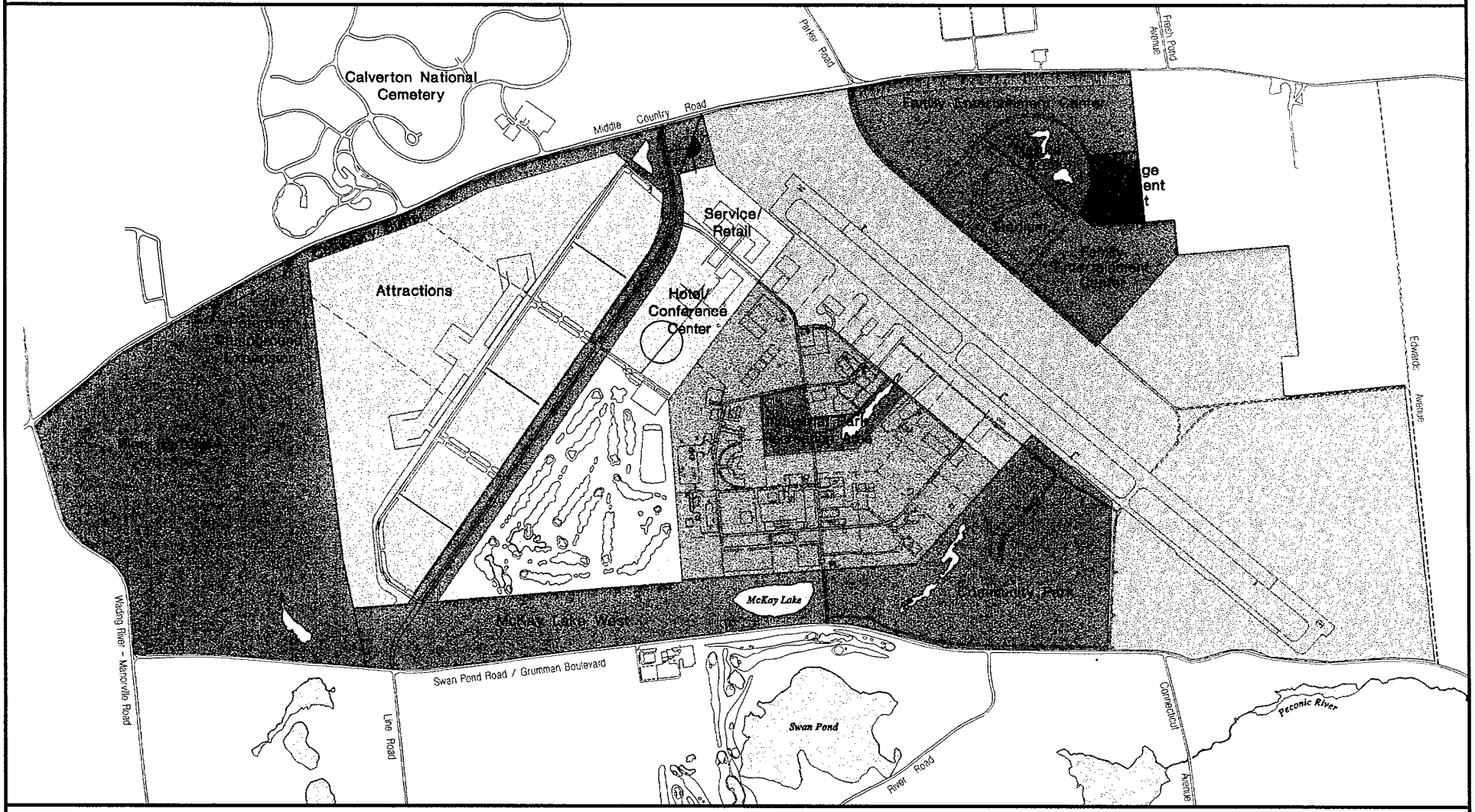


Figure 2-3

Table 2-1

Calverton Enterprise Park Reuse Plan Land Uses

Land Use	Land Coverage		Amount of development[1]
	Acres	Hectares	
Industrial Business Park	282	114	887,500 sq ft (82,538 sq m)
Theme Park			
Attractions	434	176	2.5 million visitors/year
Hotel/Conference Center	63	26	400 rooms
Service Retail	32	13	100,000 sq ft (9,300 sq m)
Subtotal	529	214	
Aviation/Aircraft Use	853	346	400 flights/day (a); 200,000 sq ft (18,600 sq m) (a)
Commercial Recreation			
Stadium	54	22	6,000 - 8000 spectators/event
Family Entertainment Center	137	55	300,000 visitors/year
Subtotal	191	77	
Public Golf Course	166	67	18 holes
Open Space			
Pine Barrens Core	438	177	
McKay Lake (west)	137	55	
Community Park	183	74	
National Cemetery Buffer	24	10	
Industrial Park Recreation Area	27	11	
Natural Area	27	11	
Other Open Space	48	19	
Subtotal	884	358	(na)
Infrastructure - Sewage Treatment Plant	18	7	(na)
Totals	2,923	1,184	

Notes: Land use acreage and amount of development are approximate based on estimates made for a long-term (20-year) development plan that is subject to change. Numbers may not total exactly due to rounding and metric conversions. [1]Scale of development as defined in the Reuse Plan; where scale of development was not defined in the Reuse Plan, (nd) means not defined; where assumptions were necessary for analysis and were made, (a) means assumed; (na) means not applicable.
Source: Adapted from HR&A, 1996.

The industrial core could initially be serviced by the existing utilities. However, ultimately new and/or upgraded utilities would likely be needed. Access to the industrial core from the north would be provided via a new north-south connector. From the south, access from Swan Pond/Grumman Boulevard is moved to the east of McKay Lake. Presently, access to the site from the south is just to the west of McKay Lake.

A 27-acre (11-hectare) passive recreation area is proposed near the center of the industrial core. It would surround the existing pond near Plant 7.

2.3.2 Theme Park

The theme park portion of the site is approximately 529 acres (214 hectares) in the northwest portion of the site. The overall notion is a regional theme park such as Paramount or Six Flags with a potential attendance of 2.5 million visitors per year (HR&A, 1996).

Attractions

The theme park (434 acres or 176 hectares) could consist of a single park or set of attractions, for example, an animal preserve and amusement rides. It could include major nighttime entertainment uses such as concerts and fireworks. An open-air concert facility would be compatible with this development. The Reuse Plan also envisions some form of temporary campgrounds to accommodate visitors to the park. As displayed in Figure 2-3, the site may be divided to accommodate a set of attractions, such as several smaller amusement parks or a recreation vehicle (RV) campground.

Visitor parking would be contained within this district and would be found along the existing 7,000-ft (2,134-m) runway. Parking for 8,000 to 10,000 automobiles would be available to respond to the demands of a single or multiple use.

Access to this area would be from NYS Route 25 via the proposed north-south connector that would link NYS Route 25 to Swan Pond/Grumman Boulevard. A secondary means of access from NYS Route 25 is proposed, about one mile east of the intersection of NYS Route 25/Wading River Road.

Hotel/Conference Center

This 63-acre (26 hectare) area is designed to complement the development of the destination attractions and is situated near the northern gateway to the site. The Reuse Plan calls for a 400-room facility and ultimately, that the hotel/conference center operators would likely want substantial control of, or access to, the proposed public golf course (Subchapter 2.3.5).

Service Retail

As a complementary use, future development in the service retail area would include such uses as convenience stores and business services. Setback from NYS Route 25, this 32-acre (13 hectares) area would contain about 100,000 sq ft (9,300 sq m) of space.

2.3.3 Aviation/Aircraft Use

An aviation use is considered as the ultimate reuse of lands (853 acres or 345 hectares) associated with the 10,000 ft (3,048 m) runway within the 20-year planning horizon consistent with the community's long-term vision for the Calverton Enterprise Park. The interim (one-year to ten-year timeframe) sports-oriented event grounds are not evaluated in this EIS as part of the reuse plan.

An analysis of the potential for civil aviation use of the NWIRP site was undertaken via a series of interviews and the evaluation of regional aviation factors. An inventory of existing and projected demand and capacity for freight/cargo activity and general aviation (GA) services in the area surrounding the site was conducted. Baseline conditions were established from data gathered from federal, state, and local governments. Users (airlines) of these facilities and fixed base operators (FBOs) were also contacted. Agencies and companies were interviewed and were asked to verify or supplement the database with demand/capacity information. Both the available data and interviews showed that a healthy demand exists for additional-based aircraft facilities in the Long Island region.

A system-oriented approach was taken for the six closest airports to gauge potential demand at NWIRP Calverton. Because of the existence of adequate facilities at commercial airports in the region, little potential demand for commercial passenger service is warranted. However, from this review, demand was determined to exist for additional facilities for satisfying air cargo/freight operations and general aviation aircraft in the area. Interviews with fixed base operators and airport managers revealed that many pilots are on waiting lists to either hangar or tie-down their planes. Two regional general aviation facilities, East Hampton and Republic airports, are currently operating at 77 percent and 73 percent of their annual service volumes, or capacity levels, respectively.

Storage Capacity

There is available airspace capacity at key airports, but more important is the issue of storage capacity (i.e., the availability for tying down or hangaring an aircraft). The six nearest airports are projected to experience a major increase (more than 18 percent by the year 2017) in the number of based aircraft. Brookhaven, East Hampton, Mattituck Airbase, and Suffolk County are projected to experience the greatest growth in based aircraft, with increases of 33 percent by the year 2017. The ability of these airports to accommodate this growth will fall short of the demand for storage space.

Based on this research, there is potential for air cargo/freight and general aviation activity at NWIRP Calverton. Accordingly, forecasts of air cargo flights and general aviation (GA) activities were prepared using 1997 as the base year and 2017 as the 20-year planning horizon.

Air Cargo Operations

A projected range of air cargo operations was made for high, mid, and low ranges. The high and low range numbers are derived from studies prepared by the Long Island Regional Planning Board (LIRPB, 1993) and by SH&E, Inc. (1995) in support of the reuse planning effort by the Town of Riverhead. Table 2-2 presents these ranges of air cargo aircraft forecasts.

The mid-range forecast is a hybrid of the projections by the LIRPB (1993) and SH&E (1995). Based on the mid-range scenario of 1,000 total cargo operations in year 2010, average annual growth rates of four percent, three percent, and two percent were used to obtain the high, mid, and low range projections for year 2017. Operations are assumed to occur during the nighttime hours of 10:00 pm and 7:00 am. Some limitations have been identified for NWIRP Calverton as an air cargo facility. First, there is a significant distance between a Calverton aviation facility and the land-based cargo forwarders and carriers' infrastructure at existing New York City airports. Also, the cargo forwarders' operations are closely linked to those of commercial passenger airlines; this commercial passenger activity is not forecast to occur at NWIRP Calverton, making it less likely that cargo forwarding firms would move in great numbers.

Existing data indicates that the largest of cargo-carrying aircraft in service today (the B-747) would not be able to operate fully loaded to transatlantic destinations in Europe with the existing runway of 10,000 ft (3,048 m) and pavement strength of 50,000 pounds (22,680 kg) per wheel. Under these assumptions the runway would need to be at least 11,000 ft (3,353 m). To satisfy operations of the largest and heaviest of aircraft, upgrades in the runway, taxiway and apron pavements would be required, although none are proposed. However, rarely do such aircraft operate at such a high load factor. Aircraft capable of using the existing facility for freight operations under less than fully loaded conditions include B-727s, DC-8s, DC-9s, MD-11s, and B-757s. These are typical large aircraft used for cargo operations.

Table 2-3 presents a range of forecast for the years 2010 and 2017. Forecast-based aircraft were adjusted upward based on an estimated annual growth of 0.6 percent for the year 2010 and 0.4 percent for the year 2017.

For purposes of modeling, the mid-range forecasts were used. The forecasts also assume that no training or recreational flying would be permitted since this type of activity may be better handled at nearby facilities such as Brookhaven Airport.

Table 2-2

Projected Range of the Number of Air Cargo Operations in 2010 and 2017

Aircraft Type (1)	2010			2017		
	High	Mid	Low	High	Mid	Low
Turboprop	2,000	650	200	2,650	850	250
Turbojet	1,000	350	100	1,300	400	100
Totals	3,000	1,000	300	3,950	1,250	350

Note: (1) Typical aircraft in these categories include Turboprop (Cessna Carava) and Turbojet (B-727s, DC-9s and MD-11s. Units represent the number of operations (take offs and landings).

Table 2-3

Range of Forecast-based Aircraft in 2010 and 2017

Aircraft Type	2010			2017		
	High	Mid	Low	High	Mid	Low
Single Engine (SEP)	421	189	84	433	194	87
Multi-Engine (MEP)	39	18	8	40	19	8
Turboprop (TP)	9	4	2	9	4	2
Turbojet (TJ)	2	1	0	2	1	0
Totals	471	212	94	484	218	97

Note: Units represent the number of aircraft.

General Aviation Operations

A forecast of GA activity was also prepared for NWIRP Calverton. The methodology used to derive the projected-based aircraft was based on these assumptions:

- The potential service area was defined as a 20-mi (32-km) radius from the center of NWIRP Calverton;
- Studies and interviews showed the likelihood of several local airports closing in the planning horizon schedule; it was assumed that one-half of all registered aircraft owners found within the service area would move to NWIRP Calverton;
- One-half of the aircraft owners waiting to base at nearby Long Island MacArthur Airport would relocate to NWIRP Calverton; and
- The prospective market area of NWIRP Calverton overlaps that for each of the four nearest airports; it was assumed that 45 percent of all registered owners within the Calverton market area would move there.

Table 2-4 summarizes the forecast activity ranges of general aviation for the year 2010; Table 2-5 provides a forecast for the year 2017. Operational forecasts were derived by multiplying the projected number of aircraft by ranges of operations per based aircraft (assumed to be 700 (high), 400 (mid), and 275 (low) operations).

Air Space Conflicts

Based on interviews and review of existing reports, there is little likelihood for airspace conflict between any nearby facilities and NWIRP Calverton. There are presently two non-precision instrument approaches from the southeast and the northeast at Calverton. An Instrument Landing System/Microwave Landing System (ILS/MLS) or equivalent would need to be installed to accommodate instrument approaches of the aircraft. The Federal Aviation Administration (FAA) stated that neither the air space around nor the established approaches NWIRP Calverton have been relinquished (as of May, 1996).

In summary, an aviation demand for air cargo operations and general aviation activity and a capacity shortfall has been identified for the NWIRP Calverton region. A detailed discussion of the methodology used to evaluate the existing demand and capacity for the aviation use of NWIRP Calverton is included in Appendix B.

Table 2-4

Year 2010 Forecast Annual General Aviation/Corporate Operations

Aircraft Type	High Business Use			Medium Business Use			Occasional Use		
	Total	Day	Night	Total	Day	Night	Total	Day	Night
SEP	294,700	291,750	2,950	75,600	74,850	750	23,100	22,850	250
MEP	27,300	26,900	400	7,200	7,100	100	2,200	2,150	50
TP	6,300	5,650	650	1,600	1,450	150	550	500	50
TJ	1,400	1,250	150	400	350	50	0	0	0
Total	329,700	325,550	4,150	84,800	83,750	1,050	25,850	25,500	350
Note: All figures rounded to nearest 50. Units represent number of operations (takeoffs and landings).									

Table 2-5

Year 2017 Forecast Annual General Aviation/Corporate Operations

Aircraft Type	High Business Use			Medium Business Use			Occasional Use		
	Total	Day	Night	Total	Day	Night	Total	Day	Night
SEP	303,100	300,050	3,050	77,600	76,800	800	23,950	23,700	250
MEP	28,000	27,600	400	7,600	7,500	100	2,200	2,150	50
TP	6,300	5,650	650	1,600	1,450	150	550	500	50
TJ	1,400	1,250	150	400	350	50	0	0	0
Total	338,800	334,550	4,250	87,200	86,100	1,100	26,700	26,350	350
Note: All figures rounded to nearest 50. Units represent number of operations (takeoffs and landings).									

Land Use

The aviation activities for NWIRP Calverton are projected to require approximately 853 acres (345 hectares), or 29 percent of the lands within the fence. Of that amount, about 65 acres (26 hectares) next to the runway in the industrial business core would be used for these aviation-related facilities:

- US Customs and foreign trade zone;
- Cargo carrier operations center;
- FBO/GA corporate development center; and
- GA hangar and tie down storage area.

Some other adjacent land uses of the Calverton Enterprise Park are considered generally compatible with a GA airport (Figure 2-3) with the following limitations:

- the proposed stadium (in the northwest portion of the site) would be limited to about 160 ft (49 m) in height, given its proposed location on the site;
- all new buildings paralleling the runway on its western edge (near the industrial business center) would be limited in height to approximately 70 ft (21 m); and
- buildings in the service retail area at the northwest end of the 10,000 ft (3,048 m) runway would be limited in height to about 20 ft (six m), given the general proposed location.

2.3.4 Commercial Recreational

Family Entertainment Center

The Commercial Recreation District is in the northeastern portion of the site, fronting NYS Route 25. The 191-acre (77-hectare) area would accommodate such activities as a family entertainment center, skating rinks, and a sports stadium. Figure 2-3 shows several conceptual parcelization of the family entertainment center around the stadium; parcels range from approximately eight acres (three hectares) to 29 acres (12 hectares) in size.

Stadium

The sports stadium depicted in Figure 2-3 would seat approximately 6,000 - 8,000 spectators on 54 acres (22 hectares) of property. This use was proposed as complementary to and synergistic with the

theme park district in the western part of the site. It is assumed for this EIS that the development of the stadium occurs within the 20-year timeframe.

NYS Route 25, directly across from Parker Road (NYS Route 25A), would be the primary access road to this district. The new access road would end at a point southeast of the commercial recreation area. From its end, gravel access is proposed to continue to Peconic Avenue to the east and across the runway to the Community Park to the southwest (Figure 2-3) (HR&A, 1996).

2.3.5 Public Golf Course

A 18-hole public golf course is proposed in the western portion of the site, just to the south of the hotel/conference use and opposite the theme park attractions on the other side of the new north-south connector road. The golf course would occupy an estimated 166 acres (67 hectares) and can also be considered part of the open space component.

2.3.6 Open Space

As shown on Table 2-1, the open space component is listed as 884 acres (358 hectares); however, including the public golf course there would be approximately 1,052 acres (426 hectares) of open space at NWIRP Calverton, which is 36 percent of the area within the fence. These open space/natural areas are proposed for a wide range of active and passive recreational uses:

- 438 acres (177 hectares) of Pine Barrens Core Preservation Area;
- 137 acres (55 hectares) of natural undisturbed lands to the north of Grumman Boulevard and west of McKay Lake;
- 183-acre (74-hectare) active Community Park south of the industrial core and fronting on Swan Pond/Grumman Boulevard;
- 150-ft (46-m) buffer (24 acres or 10 hectares) on-site along NYS 25 for one mile opposite the Calverton National Cemetery;
- 27 acres (11 hectares) of a passive recreational park sited in the industrial core;
- 27 acres (11 hectares) of natural area in the northeast sector of the site to serve as endangered species habitat; and
- 48 acres (19 hectares) of miscellaneous open space.

Most of open space area encompasses that portion of the site that provides groundwater recharge to both shallow and deep underlying aquifers (HR&A, 1996).

2.3.7 Infrastructure

Portions of the site are presently served by a wastewater treatment system. A new and expanded wastewater treatment facility requiring 18 acres (7 hectares) of land would be constructed to eliminate the existing surface water discharge to McKay Lake that flows into the Peconic River. The groundwater discharge of the new sewage treatment plant (STP) would be on the northern groundwater divide of the property, where flow is toward Long Island Sound and away from the Peconic River system. This action would eliminate this source of nutrient loading to the Peconic Estuary.

Ultimately, the Town of Riverhead Water District would be extended to provide water to the site.

2.4 Calverton Enterprise Park/RacewayAlternative

This alternative retains many Calverton Enterprise Park land uses; however, a permanent automobile raceway replaces the aviation and aircraft use. To accommodate the raceway option, some other land uses are modified:

- The service retail use (32 acres or 13 hectares) in the northern portion of the site and the industrial park recreation area (27 acres or 11 hectares) near the center of the site are eliminated; and
- The industrial business park area is reduced from 282 acres (114 hectares) to approximately 217 acres (88 hectares).

The primary land use components of this alternative are presented in Table 2-6. The physical layout of the reuse alternative is displayed on Figure 2-4 (Calverton Enterprise Park/Raceway Alternative).

It is estimated that direct employment over the 20-year planning horizon would be 2,199 with full achievement. The total construction costs are estimated to be $432 million (1995 $).

2.4.1 Industrial Business Park

The industrial business park of this alternative incorporates the use of the existing industrial facilities and infill development on the site. Based on the acreage available within the industrial park with the

Calverton Enterprise Park / Raceway Alternative

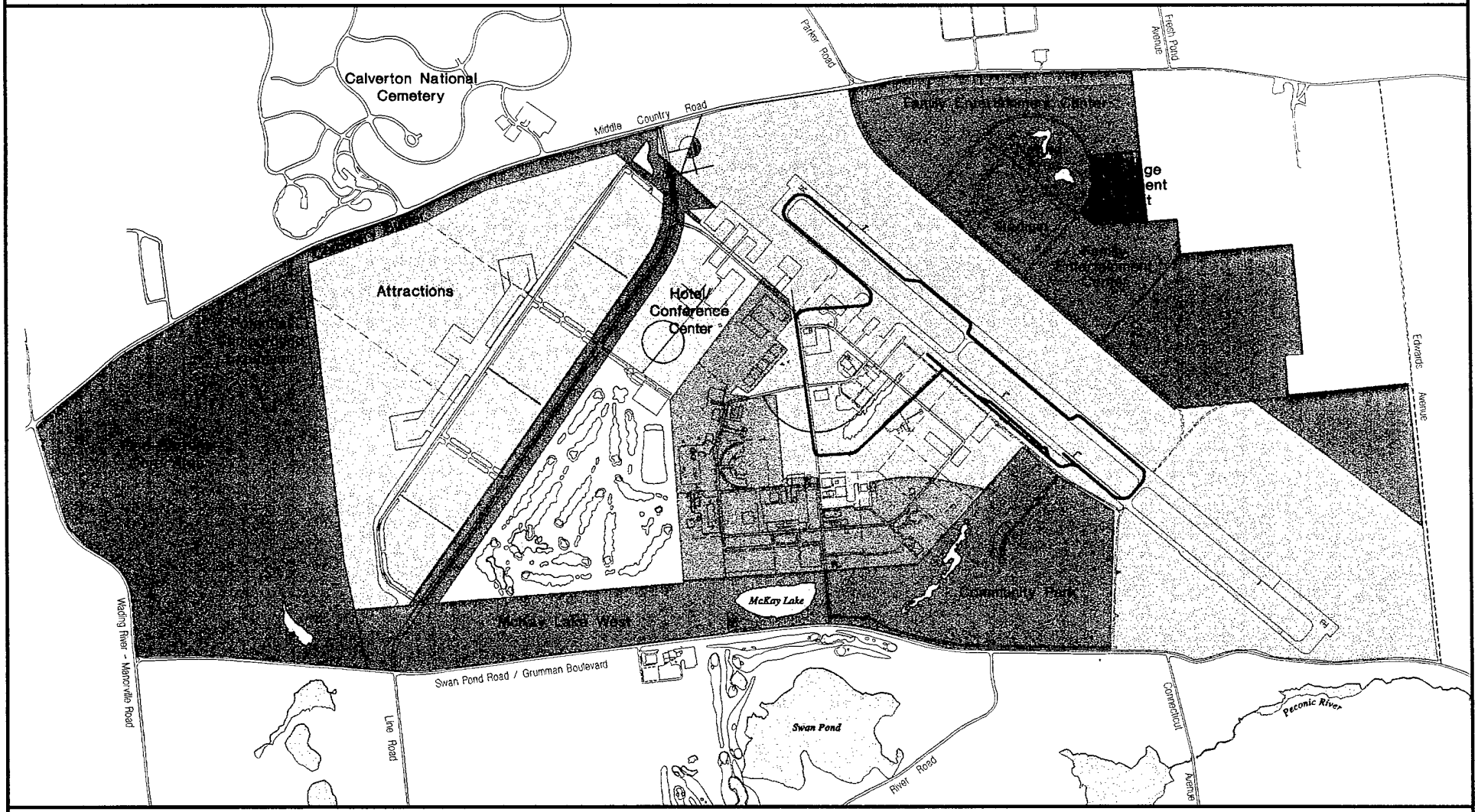


Figure 2-4

raceway present, it is estimated that there would be about 682,900 sq ft (63,510 sq m) of space developed (217 acres developed at comparable density as the reuse plan - 3,147 sq ft/acre). As described in the raceway component later in Subchapter 2.4.3, there would be additional industrial, specialized, and commercial use, but it would be associated primarily with the racing activities.

The passive recreation area of 27 acres (11 hectares) near the center of the industrial core would be eliminated to accommodate the raceway.

2.4.2 Theme Park

The theme park is essentially the same as described previously for the Calverton Enterprise Park Reuse Plan. The hotel/conference center remains. However, the service retail district (32 acres or 13 hectares) and its 100,000 sq ft (9,300 sq m) of retail space in the north central portion of the site would be eliminated.

2.4.3 Automobile Raceway

The race circuit and race industry complex as presented in this EIS is generally based on information provided to the Town of Riverhead by a private proponent of the facility, Project Calverton, Inc.

The motor racing complex would occupy about 835 acres (338 hectares) within the existing fence line of the site. The area would include much of the eastern side of the site, including the runway and adjacent open areas, and lands to the east of the runway. The boundary of the lands to be developed as the raceway was modified for analysis in the EIS; about 135 acres (55 hectares) were eliminated in the western part of the raceway to retain the community park as identified in the Calverton Enterprise Park Reuse Plan. Comparable acreage was added to the east of the runway to maintain a general consistency with the raceway component.

The race circuit would be about 3.5 mi (six km) in length. The proposal also envisions the lease of approximately 69,000 sq ft (6,417 sq m) of manufacturing/warehouse space and 73,400 sq ft (6,826 sq m) of office space. The bulk of the space would be rented out to satellite businesses associated with racing and automobiles.

The road circuit would encompass the area around the northern end of Runway 32-14 and an adjacent area to the east and south. Fencing, removable concrete barriers, and tire walls would be added for race car and spectator safety. Semi-permanent bleachers holding approximately 12,000 spectators would be constructed at strategic viewing points around the race circuit. Additional temporary seating would be brought in for the major events.

Table 2-6

Calverton Enterprise Park/Raceway Alternative Land Uses

Land Use	Land Coverage		Amount of Development[1]
	Acres	Hectares	
Industrial Business Park	217	88	682,900 sq ft (63,510 sq m)
Theme Park			
Attractions	434	176	2.5 million visitors/year
Hotel/Conference Center	63	26	400 rooms
Subtotal	497	201	
Automobile Raceway	835	338	racing event - 21,000 spectators/day (a); 142,400 sq ft (13,243 sq m)
Commercial Recreation			
Stadium	54	22	6000 - 8000 spectators/event
Family Entertainment Center	137	55	300,000 visitors/year
Subtotal	191	77	
Public Golf Course	166	67	18 holes
Open Space			
Pine Barrens Core	438	177	
McKay Lake (west)	137	55	
Community Park	183	74	
National Cemetery Buffer	24	10	
Natural Area	27	11	
Other Open Space	190	77	
Subtotal	999	405	(na)
Infrastructure - Sewage Treatment Plant	18	7	(na)
Total	2,923	1,184	

Notes: Land use acreage and amount of development are approximate based on estimates made for a long-term (20-year) development plan that is subject to change. Numbers may not total exactly due to rounding and metric conversions. [1]Scale of development as defined in the Reuse Plan; where scale of development was not defined in the Reuse Plan, (nd) means not defined; where assumptions were necessary for analysis and were made, (a) means assumed; (na) means not applicable.
Source: Adapted from HR&A, 1996; Project Calverton, Inc. 1995.

During the year, the road course would be the site of six major weekend events centering on the four major road racing sanctioning bodies:

- Championship Auto Racing Teams (CART/IndyCars);
- Sports Car Club of America (SCCA);
- International Motorsports Association (IMSA); and
- National Association of Stock Car Auto Racing (NASCAR).

Local amateur racing events would fill out the racing schedule weekends, about 32 weekends each year. The season would run from late March through early November. Driving schools and community service programs would use the road course on weekdays.

The race complex component would also include a driving school and associated race car preparation uses. It is estimated that these uses would require about 21,700 sq ft (2,018 sq m) of the 69,000 sq ft (6,417 sq m) of manufacturing/warehouse space.

2.4.4 Commercial Recreation

This district of 191 acres (77 hectares) located in the northwest corner of the site and just west of the raceway would remain the same as previously described in the Reuse Plan. The stadium (54 acres or 22 hectares) and family entertainment center uses (137 acres or 55 hectares) within this district are shown on Figure 2-4.

2.4.5 Public Golf Course

Located on the western side of the site, the 18-hole public golf course would remain as described in the Reuse Plan (Subchapter 2.3.5).

2.4.6 Open Space

Designated open spaces comprise a total of 809 acres (328 hectares) under this alternative. As noted previously, the industrial park recreation area (45 acres or 18 hectares) near the center of the industrial core would be eliminated to incorporate the raceway use.

2.4.7 Infrastructure

As in the Reuse Plan, a new and expanded wastewater treatment facility on 18 acres (seven hectares) would be constructed in the northwestern portion of the site.

2.5 Peconic Village Alternative

Peconic Village is designed to be a planned mixed-use residential community on the East End of Long Island. Figure 2-5 (Peconic Village Alternative) shows the conceptual layout of the land uses that comprise this plan. Table 2-7 lists these main land uses, their associated size in acres and hectares and the amount of proposed development (in sq ft and sq m). Because it is planned for residential use, the following land uses that were components of the other alternatives would not be part of this one: a theme park; airport; an automobile raceway; and, commercial recreation (a stadium and family entertainment center)

It is estimated that full achievement of this alternative over the 20-year planning horizon would create 1,923 direct jobs. The total estimated construction cost is estimated to be $407 million.

2.5.1 Industrial Business Park

The industrial park in this alterative would occupy about 185 acres (75 hectares) and it is assumed that uses would be similar to those described for the Calverton Enterprise Park Reuse Plan and Enterprise Park/Raceway Alternative. It is estimated that there would be approximately 582,000 sq ft (54,126 sq m) of mixed use/industrial space developed as part of this alternative.

2.5.2 Hotel/Conference Center

The hotel/conference center use would also be similar to that in the other alternatives, although the site would occupy more acreage (a total of 75 acres or 30 hectares). For purposes of the analysis, a 400-room facility was envisioned in the same general location of the site as in the other alternatives. As noted previously, the theme park would be eliminated.

2.5.3 Commercial/Retail

Commercial retail uses occupying about 105 acres (43 hectares) would be developed in two locations on site: along NYS Route 25 near Parker Road (NYS Route 25A) and in the center of

Peconic Village Alternative

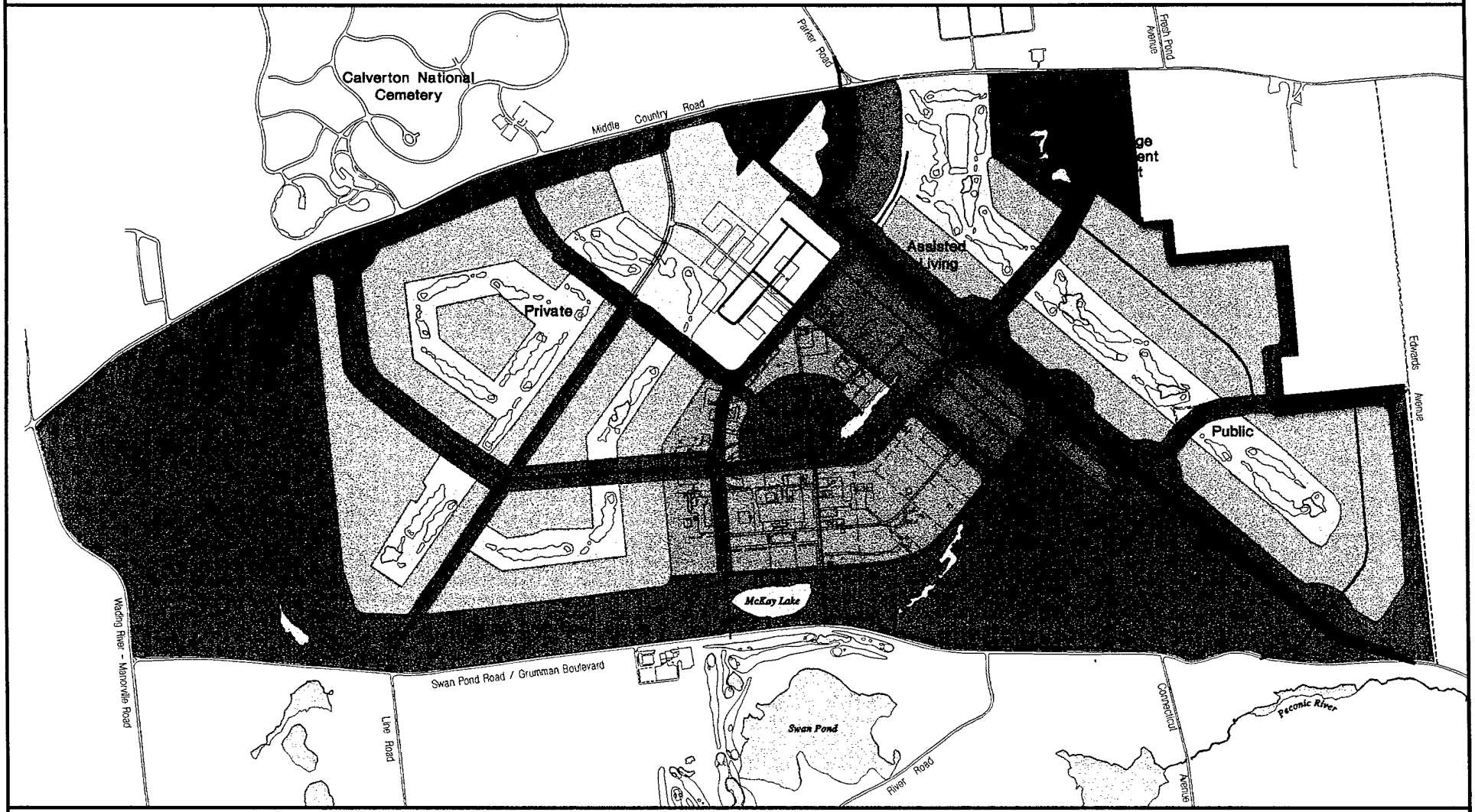


Figure 2-5

Table 2-7

Peconic Village Alternative Land Uses

Land Use	Land Coverage		Amount of Development[1]
	Acres	Hectares	
Industrial Business Park	185	75	582,000 sq ft (54,126 sq m) (a)
Hotel/Conference Center	75	30	400 rooms
Commercial/Retail	105	43	190,000 sq ft (17,763 sq m)
Residential			
Assisted Living	40	16	688 units
Senior Housing	618	250	1,350 units
Private Golf Course	192	78	18 holes
Subtotal	850	344	
Public Golf Course	168	68	18 holes
Civic Facilities	55	22	50,000 sq ft (4,650 sq m) (a)
Open Space			
Parks	90	37	
Natural Area/Open Space	865	350	
Pine Barrens Core	438	177	
Setback	35	14	
Subtotal	1,428	578	(na)
Infrastructure			
Sewage Treatment Plant	18	7	
Boulevard and Roads	39	16	
Subtotal	57	23	(na)
Total	2,923	1,184	

Note: Land use acreage and amount of development are approximate based on estimates made for a long-term (20-year) development plan that is subject to change. Numbers may not total exactly due to rounding and metric conversions. [1]Scale of development as defined in the Reuse Plan; where scale of development was not defined in the Reuse Plan, (nd) means not defined; where assumptions were necessary for analysis and were made, (a) means assumed; (na) means not applicable.
Source: Adapted from HR&A, 1996.

the site along the new north/south boulevard. Data from the local reuse planning process did not include an estimate of how much commercial/retail space was to be developed for this alternative. Based on the amount proposed in the Reuse Plan, it has been assumed that there would be a total of about 190,000 sq ft (17,763 sq m) of space developed, 63,000 sq ft (5,859 sq m) along NYS Route 25 and 127,000 sq ft (11,811 sq m) near the center of the site.

2.5.4 Residential

The homes at Peconic Village would be for retirement use and residents would be 55 years and older. As shown in Table 2-7, housing would consist of senior housing units and assisted living units. Together, it is estimated that there would be 688 units of assisted living on 40 acres (16 hectares) and 1,350 units of senior housing on 618 acres. (250 hectares) The main areas of housing are in the eastern and western sides of the site (Figure 2-5). A private golf course of 192 acres (78 hectares) is planned for the community.

2.5.5 Public Golf Course

A public golf course in the eastern portion of the site would be developed. The 168-acre (68-hectare) facility would be in addition to the private golf course in the western portion of the site.

2.5.6 Civic Facilities

A variety of civic facilities are planned near the center of the site. Occupying about 55 acres (22 hectares) and 50,000 sq ft (4,650 sq m) of space, facilities would include such uses as a community club house, church, post office, and similar civic and service-related functions.

2.5.7 Open Space

Open space uses would comprise approximately 1,428 acres (578 hectares) as listed in Table 2-7. With the two golf courses, open spaces would account for a total of 1,788 acres (724 hectares), or about 61 percent of the site.

2.5.8 Infrastructure

A new wastewater treatment facility on 18 acres (seven hectares) would be constructed in the northeast portion of the site. A new north/south boulevard would encompass about 39 acres (16 hectares) of property. The road would provide access to all portions of the site and connect Swan Pond Road/Grumman Boulevard on the south with NYS Route 25 to the north.

As in the other alternatives the town of Riverhead Water District would ultimately be extended to provide water to the site.

2.6 No Action Alternative

The no action alternative is the retention of NWIRP Calverton by the US government in a caretaker status. No reuse or redevelopment would occur at the facility.

Continued government ownership of the property would have no benefit to the US Navy, as the Navy would incur continued liability for an asset defined as having no functional, operational, or strategic value. Continued federal ownership would also provide no benefit to the local community or region since such ownership would prevent any possibility of a viable, productive (re)use of the land. Consequently, for the purposes of this EIS, the no action alternative is presented and developed as the future baseline condition against which the impacts of the proposed action are measured.

Because of the special legislation which may result in the disposal of NWIRP Calverton to the town of Riverhead, the no action alternative is considered impracticable for the Navy to carry out.

3 AFFECTED ENVIRONMENT

3.1 Land Use and Zoning

3.1.1 Land Use at NWIRP Calverton

NWIRP Calverton is situated primarily in the Town of Riverhead and in the Town of Brookhaven, Suffolk County, New York. It is approximately 80 mi (129 km) east of New York City, 50 mi (80 km) west of Montauk Point, and seven mi (11 km) west of Riverhead's downtown.

NWIRP Calverton encompasses approximately 6,061 acres (2,455 hectares) (Myers and Gaffney 1990). The property can be divided into two broad land use areas:

- "Within the fence" - approximately 2,923 acres (1,184 hectares) in size, this is the central contiguous area leased and operated by Northrop Grumman Corporation (Grumman; formerly Grumman Aerospace Corporation) to perform all mission-related activities;

- "Outside the fence" - three separate parcels (known as the north, southeast, and southwest buffer zones) comprising a total of 3,137 acres (1,271 hectares) were originally purchased as buffers associated with the aircraft testing operations and to minimize encroaching development; these lands are undeveloped and used for recreation, agricultural, and conservation purposes by the New York State Department of Environmental Conservation (NYSDEC) through a cooperative agreement with the US Navy.

Figures 2-1 and 2-2 display the relationship of these lands to one another. In Figure 3.1-1 (General Land Use), general categories of land use are shown for an area of about one mi (1.6 km) around the fenced-in portion of NWIRP Calverton.

NWIRP Calverton Land Use Within the Fence

Presently, NWIRP Calverton contains 73 government-owned structures. The total amount of building space is about 1,100,000 sq ft or 100,000 sq m, including assembly hangars, testing facilities, support services, and administration buildings. In general, the buildings are concentrated in the central and southern parts of the site and are bounded by the two concrete aircraft runways on the northeast and northwest (Figure 2-2). All of these facilities supported the plant's mission - the final assembly and flight acceptance testing of military aircraft. The western, northeastern, and northwestern areas of the site within the fence remain essentially undeveloped as fields or forested land.

The fenced-in portion of the site is accessed via a single main gate located about midway along Grumman Boulevard (or Swan Pond Road), the southern boundary of the fenced-in portion of NWIRP Calverton. A spur of the Long Island Railroad (LIRR) that is no longer in use runs along the site's southern perimeter (in the eastern portion of the site) parallel to Grumman Boulevard before it turns north into the center of the activity above the main gate.

NWIRP Calverton Land Use Outside the Fence

Much of the land immediately surrounding the fenced-in area of NWIRP Calverton is part of three buffer zones that are essentially extensions of the runways and total 3,137 acres (1,255 hectares). (Figure 2-1). Most of a former buffer zone located northwest of the fenced-in area was transferred to the Veteran's Administration for a national cemetery in December 1977. According to the US Navy there are 11 structures in the buffer zones.

The north buffer zone (610 acres or 244 hectares) contains agricultural land formerly outleased to a local farmer. Agricultural outleases are issued for one-year periods with options for four additional annual extensions. At the end of each five-year period, the use of the farmland is re-advertised and competitively bid for the next leasing period (Myers and Gaffney, 1989). The leases cover only the tillable or agriculturally productive portion of the land. These lands have been outleased since 1969. The Federal Aviation Administration (FAA) maintains a Visual Omnidirection Range Tactical Air Control (VORTAC) station in this zone. The VORTAC serves as an aid to general aviation (Myers and Gaffney, 1989).

The southeast and southwest buffer zones comprise 2,527 acres (1,011 hectares) and are predominantly forested. In 1965 the US Navy entered into a Cooperative Agreement with NYSDEC for public recreational use of most of the buffer zone land for hunting, fishing, trapping, dog training, and dog field trials. With the exception of the lands outleased to local farmers, all buffer zone land is covered under the Cooperative Agreement.

Under the existing Cooperative Agreement, NYSDEC has prepared a long-range (ten-year) wildlife management plan to identify development and habitat improvements to be undertaken in the buffer zones. This plan is compatible with the Navy's Forest Resource Management Plan. The plan can be changed or terminated by the parties to the agreement (Myers and Gaffney, 1989).

A substantial amount of use for hunting and fishing in the buffer zones occurs in the spring and fall of the year. The greatest use is during hunting season, usually from October through February. There are seasons for waterfowl, pheasant, quail, grouse, rabbit, squirrel, deer, and woodcock. Deer hunting has both an archery and shotgun season (Myers and Gaffney, 1989).

3.1.2 Land Use in the Surrounding Vicinity

When originally sited, NWIRP Calverton was in an area of about two-thirds open space and one-third farmland, based on a review of 1947 aerial photography. The undeveloped portion of the site was forested and featured small streams, wetlands, and several ponds (NEESA, 1986).

The lands surrounding NWIRP Calverton are generally sparsely settled, reflecting the presence of the buffers and the area's historical agricultural economy (Figure 3.1-1). Regional population centers are located some distance from the site, with settlement situated primarily near the coast (e.g., Wading River, Wildwood) and the Peconic River (e.g., downtown Riverhead).

Single-family houses are scattered around the perimeter of the fenced-in area of the site, primarily along Route 25 (Middle Country Road), the northern boundary. Two more densely settled areas of single-family residences are also located off of Route 25: Kay Road on the western side of the site and Timber Drive along the eastern portion of the site.

Other land uses immediately adjacent to the site along Route 25 (from west to east) include:

- Turf farm (for sale at the time of field reconnaissance);
- Motel;
- Calverton National Cemetery of the Veterans Administration;
- FAA radar installation;
- Commercial office park;
- Two restaurants; and
- Poultry farm.

East of the site along Route 25 there are scattered residences, farms, a warehousing operation, and a gas station.

Development along Swan Pond/Grumman Boulevard is minimal because (1) the undeveloped southern buffer zones encompass a substantial amount of the land along the road; (2) Swan Lake Golf Course, another open space element, is located opposite the site; and (3) Grumman Boulevard is not a major east-west thoroughfare like Route 25. The Peconic River and its tributary streams that contain numerous ponds and wetlands are located south of the site. The Peconic River flows in an easterly direction and lies in close proximity to Grumman Boulevard near the western portion of the site.

South of the site, off of Swan Pond/Grumman Boulevard along the eastern side of Line Road (off of Grumman Boulevard), there are a few commercial/industrial establishments. Along Connecticut Avenue (also south of the site off of Grumman Boulevard), lands on either side of the road are wooded and undeveloped. The property to the east is part of the southeastern buffer zone. The

Peconic River Sportsman's Club holds lands on the western side of Connecticut Road in the vicinity of the site.

Opposite the site to the west along Manorville Road, there are several residences and a commercial business. South of Manorville Road's intersection with Swan Pond/Grumman Boulevard, development is again limited and open space predominates because of the southwestern buffer area that is part of the NYSDEC Cooperative Wildlife Management Area.

The eastern boundary of the fenced-in area of NWIRP Calverton is not defined by a roadway, unlike the three other compass directions. Lands to the east of the site are primarily in agricultural use. Edwards Avenue, about 0.4 mi (0.6 km) east of the site's easternmost boundary, has a variety of adjacent uses including a golf course, sod farm, oil storage and distribution facility, and several commercial operations. Calverton, a small community of residences and businesses, is located around the intersection of Edwards Avenue and River Road just east of the site.

3.1.3 Zoning

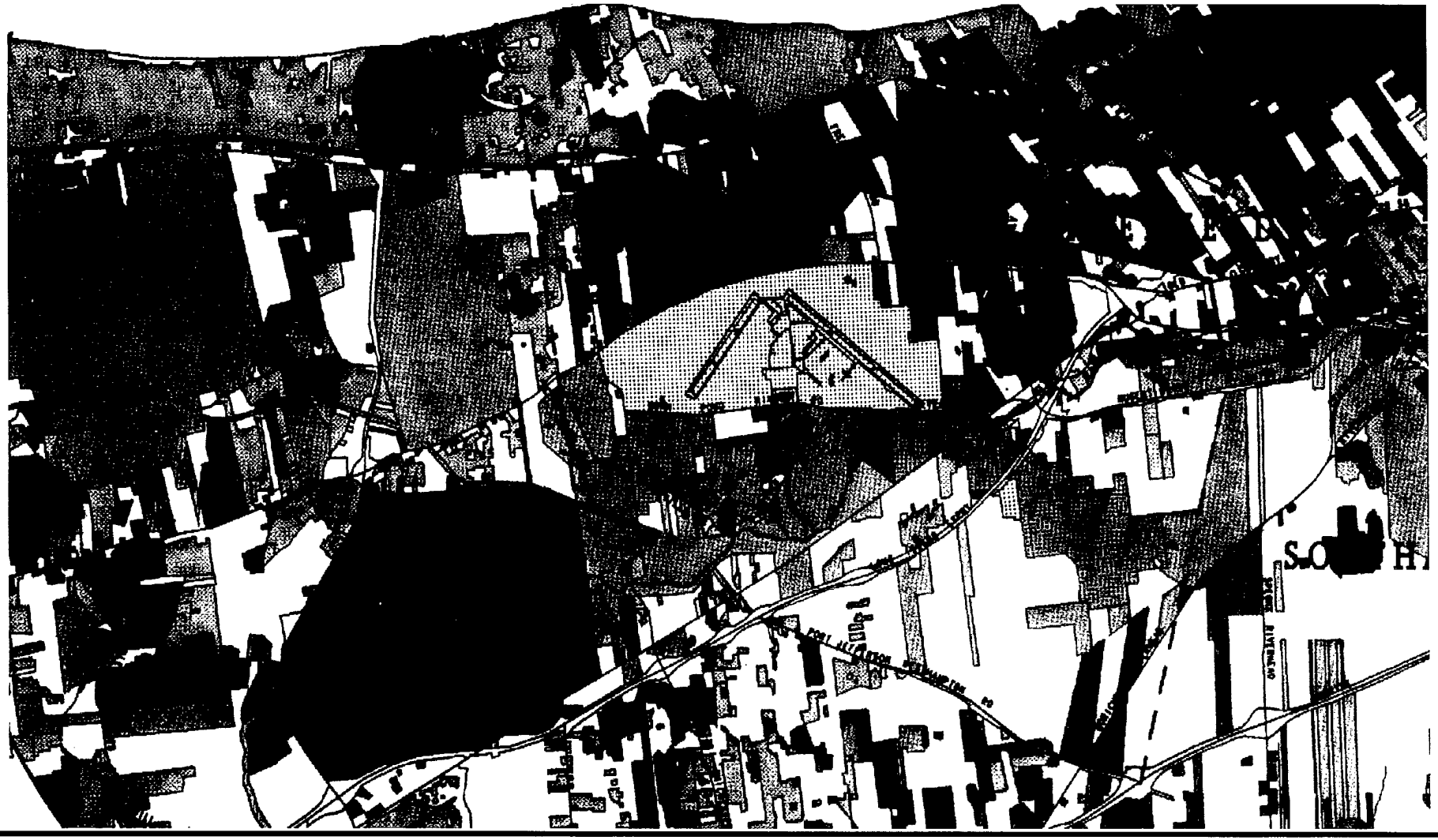
As federal property, NWIRP Calverton is exempt from local zoning. However, the future reuse of the property with private uses would be subject to the land use and zoning restrictions of the Town of Riverhead. As described in Chapter 2, all of the buffer zones in the towns of Riverhead and Brookhaven may be transferred to the NYSDEC and no development will occur on them - they will remain in use for conservation, recreation, and agricultural use. Consequently, as state property managed by the NYSDEC, these buffer lands will remain exempt from local zoning in both Riverhead and Brookhaven. Figure 3.1-2 (General Zoning) displays general categories of zoning for an area about one mi (1.6 km) from the fenced-in area of NWIRP Calverton.

Town of Riverhead

The zoning map of the town of Riverhead shows NWIRP Calverton as "Defense Institutional" land. This designation essentially "grandfathered" and allowed the past use of the site as an aircraft testing and assembly facility. The only permitted uses are agriculture, national cemetery, and naval weapons testing facility. As special uses, airports and utility structures and/or utility rights-of-way are permitted. The site has never been zoned in the traditional sense of defining allowable uses, setbacks, densities, etc.

A variety of zoning districts are present adjacent to the site that reflect and consolidate existing land uses. Along Route 25 to the north of the site the following zoning districts are present (from west to east): Residence A, Residence C, Open Space Conservation, Industrial B (General Industry), Residence C, Business CR (Rural Neighborhood Business), and Industrial A (Light Industry). To the south of the site along Grumman Boulevard, the following zoning districts are present (from west

Generalized Land Use



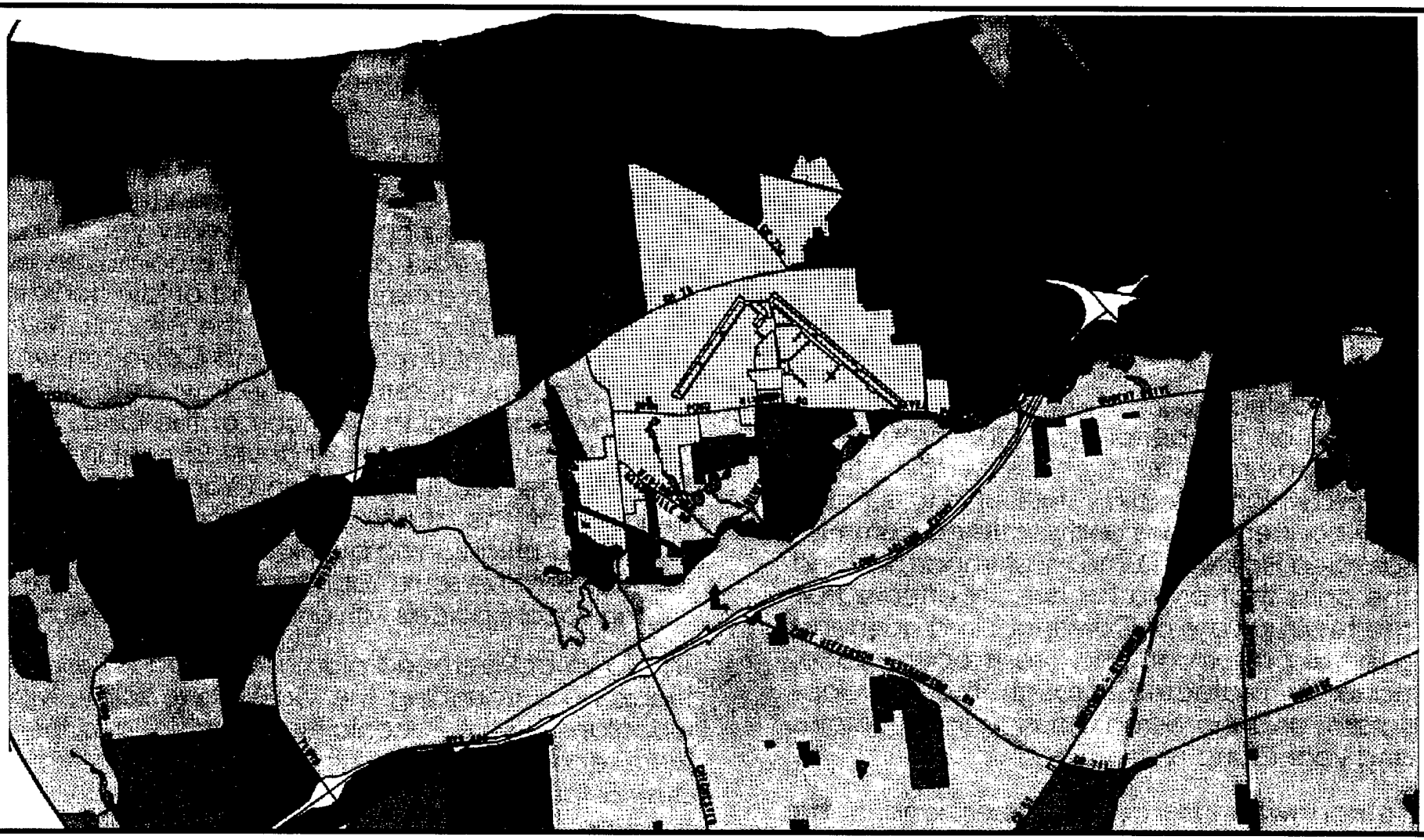
Agri.,Gen Open,Golf,Cemetery
Park/Open Space (Town,County,State)
Utilities
Vacant
Underwater Lands
Airport Lands

Residential - Estates,Low & Med Density
Residential - High Density
Commercial
Institutional
Industrial

Note: "Airport Lands" in legend equates to NWIRP Calverton's fenced-in area
Source: Koppelman, et. al., 1993.

Figure 3.1-1

Generalized Zoning



Residential
Low : <1 Unit Per Acre
Med : 1 Unit Per Acre
High : >1 Unit Per Acre
Commercial
Industrial
Defense Institutional
Open Space
Incorporated Village
Underwater Lands

Source: Koppelman, et. al., 1993.

Figure 3.1-2

to east): Defense Institutional, Office/Service, Open Space Conservation, Natural Resources Protection, and Open Space Conservation. On the western boundary along Manorville Road, the zoning is for Natural Resources Protection. Adjacent to the site on its eastern border, these zones are present (from north to south): Business CR (Rural Neighborhood Business), Industrial B (General Industry), and Industrial A (Light Industry).

Town of Brookhaven

In the Town of Brookhaven, the buffer lands are zoned for residential uses.

3.1.4 Central Pine Barrens Comprehensive Land Use Plan

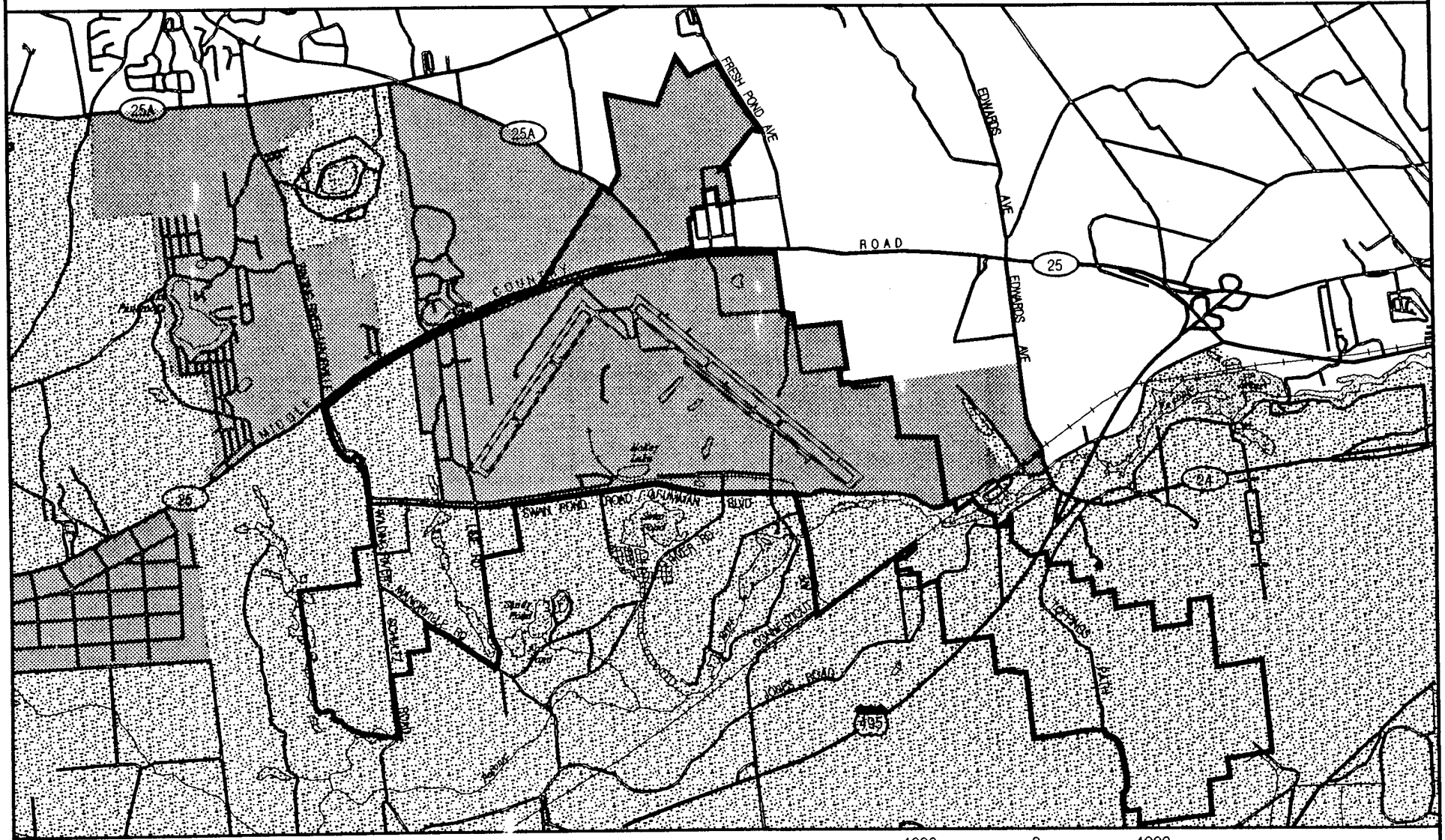
The Central Pine Barrens Comprehensive Land Use Plan was prepared pursuant to the Long Island Pine Barrens Protection Act of 1993 and established a set of policies, programs, and standards to protect, preserve, and enhance the functional integrity of the "Central Pine Barrens" ecosystem of Long Island. The Central Pine Barrens is a 100,000-acre (40,000-hectare) area in central and eastern Long Island that includes the towns of Riverhead, Brookhaven, and Southampton (Central Pine Barrens Joint Planning and Policy Commission [CPBJ&PC], 1995). Within the 100,000 acres (40,000 hectares), there are two zones with different protection goals:

- Core Preservation Area (CPA) - Comprised of 52,500 acres (21,000 hectares), the core area is designed to protect and preserve the ecologic and hydrologic functions of the Pine Barrens. This is to be achieved by preserving the core in its natural state, by promoting compatible agricultural, horticultural, and open space activities, and by minimizing impacts by prohibiting or redirecting new development (CPBJP&PC, 1995).

- Compatible Growth Area (CGA) - The Pine Barrens Plan designed this 47,500-acre (19,000-hectare) area to discourage piecemeal and scattered development and to encourage appropriate patterns of compatible residential, commercial, agricultural, and industrial development. Regional growth is planned to be accommodated in an orderly way and to accommodate a portion of the development directed from the CPA (CPBJP&PC, 1995).

As shown in Figure 3.1-3 (Central Pine Barrens Land Use Areas), most of the fenced-in area of NWIRP Calverton is designated as CGA. Approximately 423 acres (166 hectares) in the western portion of the fenced area (west of runway 05/23) have been designated as part of the CPA. The southeast and southwest buffer zones are part of the CPA; the northern buffer is part of the CGA.

Central Pine Barrens Land Use Areas



Source: CPBJP&PC, 1995.

Figure 3.1-3

3.2 Socioeconomics

The study area for the review of existing socioeconomic conditions is best defined by the geographic availability of appropriate demographic and economic data. Census tracts at the east end of Long Island tend to be large; the NWIRP Calverton site is but part of one large tract in the Town of Riverhead. It is possible to obtain population, household, and housing data at the tract level; however, the tracts do not closely conform to the one mi (1.6 km) radius used in the land use section, and the broader municipal context is more appropriate when considering socioeconomic characteristics and their relationship to community services and employment pools. For these reasons, data are presented for the three adjacent towns of Riverhead, Brookhaven, and Southampton, and for the larger context of Suffolk County (Figure 1-2, Major Municipalities of Long Island).

3.2.1 Population

Population in the three municipalities surrounding NWIRP Calverton exceeded 476,000 in 1990, an increase of ten percent from the 1980 population (Table 3.2-1). Among the three municipalities, Brookhaven accounts for 86 percent of the population and experienced the greatest growth over the decade of the 1980s with an increase of almost 43,000, an increment greater than that of Suffolk County as a whole. While each of the three towns experienced growth during the 1980s, growth slowed in the late 1980s. According to the Long Island Lighting Company (LILCO), growth has been quite modest over the 1990-95 period, at approximately one percent. LILCO estimates growth for the county over the 1990-95 period at 0.4 percent, much slower than the 2.9 percent rate of growth during the 1980s (LILCO, 1995). Official projections of future population for the county were last made by the New York State Data Center in 1985 (New York State Department of Commerce, 1985). At that time, population in the year 2000 was projected to reach 1,527,466. This projection appears to be high, as evidenced by a recent projection by Urbanomics, a consultant to the Metropolitan Transportation Council, forecasting that Suffolk County population would reach only 1,495,200 by the year 2010 (Urbanomics, 1995). Neither Suffolk County nor the Long Island Regional Planning Board has provided more current projections for Suffolk County, nor have the three municipalities.

Table 3.2-2 presents the population's age and ethnic characteristics from the 1990 Census. The two municipalities with the highest population growth rates in the 1980s, Brookhaven and Riverhead, also have the highest proportion of their population under age 18, reflecting the usual demographic profile of newer suburbs. In general, the county is experiencing a gradual aging of the population as the older suburbs in the west are witnessing a parallel maturing of their populations. Among the three towns, Brookhaven has a much younger demographic profile than Riverhead and Southampton, which have twice the proportion in the over-65 age group than Brookhaven.

Table 3.2-1

Population Growth and Estimates

Study Area	1980	1990	# Change 1980-90	% Change 1980-90	Estimate 1995
Brookhaven	365,015	407,977	42,962	11.8	418,171
Riverhead	20,243	23,011	2,768	13.7	23,566
Southampton	43,146	45,351	2,205	5.1	46,380
Suffolk County	1,284,231	1,321,977	37,746	2.9	1,334,468

Sources: US Census, 1990, CPH-3; and LILCO 1995 Long Island Population Survey.

Table 3.2-2

Age and Ethnic Characteristics

Jurisdiction	1990 Population				
	% Under 18	% Over 65	Median Age	% Black	% Hispanic
Brookhaven	27.1	9.6	34.1	3.6	5.5
Riverhead	22.7	20.5	33.9	12.7	2.6
Southampton	19.6	19.0	37.8	8.8	2.6
Suffolk County	24.7	10.7	33.7	6.3	6.6

Source: US Census, 1990, STF 1A.

Table 3.2-3

Income and Poverty Status

Jurisdiction	Median Household Income	Median Family Income	Per Capita Income	Persons In Poverty		Families In Poverty	
				Persons	%	Families	%
Brookhaven	46,339	50,206	16,441	20,621	5.2	3,978	3.8
Riverhead	32,655	41,308	15,643	1,883	8.4	317	5
Southampton	36,859	43,929	20,684	3,290	7.6	552	4.6
Suffolk County	56,986	53,247	18,481	61,389	4.7	11,361	3.3

Note: All data are for 1989.
Source: US Census, 1990, CP-2-34.

The minority populations of the three municipalities are relatively small; in 1990 the proportion that is Black ranges from 3.6 percent in Brookhaven to 12.7 percent in Riverhead, compared to the county rate of 6.3 percent. Similarly, Hispanics, who may be of any race, are represented in relatively small numbers in the three municipalities, in this instance, Brookhaven with 5.5 percent and Riverhead and Southampton both with 2.6 percent. Suffolk County as a whole was 6.6 percent Hispanic in 1990.

3.2.2 Income

Median household and family incomes in the three municipalities are lower than the county as a whole. Table 3.2-3 shows that incomes in Brookhaven, Riverhead, and Southampton are noticeably less than the median for Suffolk County; for example, household income in Riverhead is only 57 percent of that for Suffolk County. In the study area, Riverhead consistently has the lowest income levels for households and families, and on a per capita basis.

Table 3.2-3 also shows poverty rates from the 1990 Census. Again, all the municipalities have a higher percentage of persons in poverty than Suffolk County as a whole. The percent of persons in poverty in Suffolk County was 4.7 percent, compared to 8.4 percent in Riverhead. The number of families in poverty shows lower percentages but a similar distribution among the municipalities and compared to the county. Riverhead recorded five percent of its families in poverty, compared to 3.3 percent for Suffolk County.

3.2.3 Housing

As noted in Land Use (Subchapter 3.1), the great majority of housing in the study area is of a single-family detached character. Although there are some multi-family units, these tend to be low-rise townhouses or garden apartments. A characteristic of the area is the high rate of vacant housing units, particularly in Southampton where vacant units reach 46 percent of the total, largely reflecting the seasonal use of these units for summer recreation.

The 1980s witnessed a substantial increase in the number of housing units in each of the jurisdictions. Table 3.2-4 shows Brookhaven increased its total housing units by 16.5 percent, Riverhead by almost 18 percent, and Southampton by 18.6 percent. Suffolk County, as a whole, increased its total housing stock by 11.5 percent over the decade. Similar shifts are recorded for the number of households in the respective jurisdictions.

In addition to the data presented in Table 3.2-4, based on the LILCO 1995 Population Survey, mean household size continues to decline in the study area. The average for Suffolk County declined from 3.4 persons in 1980 to 3.2 persons in 1990 (a decline of six percent), and to 3.0 persons in 1995 (LILCO, 1995).

Table 3.2-4

Housing and Households

Jurisdiction	Housing Units					Households 1990		Families 1990	
	1980	1990	% Change	Occupied 1990	Vacant 1990	Total	Persons per Household	Total	Persons per Family
Brookhaven	120,774	140,677	16.5	129,092	11,585	129,092	3.07	103,939	3.44
Riverhead	9,158	10,801	17.9	8,736	2,065	8,736	2.55	6,273	3.04
Southampton	28,362	33,622	18.6	18,029	15,593	18,209	2.41	35,202	2.97
Suffolk Co.	431,722	481,317	11.5	424,719	56,598	424,719	3.04	340,593	3.40
Sources: US Census, 1980, 1990 STF 1A; and LILCO, 1995 Long Island Population Survey.									

Table 3.2-5

Housing Characteristics

Jurisdiction	Tenure 1990		Vacancy Rate 1990		1990 Median Housing		Persons per Occupied Unit	
	% Owner	% Renter	% Owner	% Renter	Value	Rent	Owner	Renter
Brookhaven	78.7	21.3	1.8	6.7	$131,300	$690	3.20	2.61
Riverhead	78.1	21.9	3.9	10.0	$157,900	$541	2.56	2.50
Southampton	75.8	24.2	6.1	6.1	$196,300	$618	2.43	2.35
Suffolk	80.1	19.9	1.6	8.3	$165,900	$802	3.16	2.57
Source: US Census, 1990, STF 3A.								

Table 3.2-5 shows that, in 1990, the proportion of occupied housing occupied by owners is highest in Brookhaven at 78.7 percent, slightly higher than in Riverhead and Southampton, but lower than the county rate of 80.1 percent. The percent of renters is highest in Southampton at 24.2 percent. Excluding seasonal vacant units, there is a vacancy rate of housing-for-sale that varies from a low of 1.8 percent in Brookhaven to 6.1 percent in Southampton; these rates compare to a county-wide rate of 1.6 percent. For rentals, only Riverhead's rate of ten percent vacant-for-rent units exceeded the Suffolk County rate of 8.3 percent.

Median housing values in 1990 ranged from $131,300 in Brookhaven to $196,300 in Southampton. The mean for Suffolk County was $165,900. Median monthly contract rent levels in the study area ranged from a low of $541 in Riverhead to $690 in Brookhaven, compared to $802 for Suffolk County. The study area can be characterized as relatively expensive suburban and ex-urban fringe, with a substantial housing component devoted to recreational use.

3.2.4 Employment

The 1990 Census data on employed residents in the study area by industry category are shown in Table 3.2-6. The three municipalities had a combined employed population of 230,629, or 35 percent of Suffolk County's total of 665,182. Among the three municipalities, Brookhaven dominates with over 86 percent of all employment, while Riverhead's employed population is only 48 percent of that of Southampton. Table 3.2-6 also shows the distribution of the employed residents by industrial category in 1990, with Services easily being the largest industrial category, ranging between 35.6 percent of all employment in Southampton to 37.7 percent in Riverhead. Retail Trade is the second highest category, ranging from 15.5 percent in Riverhead to 18.5 percent in Southampton. Manufacturing is the next leading category with a wider range among the municipalities, from 6.4 percent in Southampton to 12.7 percent in Brookhaven. Other notable variations among the municipalities include the stronger emphasis on Construction in Southampton than the other towns; on Manufacturing in Brookhaven; and on Government in Riverhead.

More recent annual employment and unemployment data for the towns and county are available from New York State Department of Labor unpublished sources. These are shown in Table 3.2-7. Riverhead and Southampton are seen to have slightly lower unemployment rates than the county in 1995; Brookhaven was slightly higher.

In Suffolk County, both the labor force and employment levels have been increasing since a loss of over 50,000 jobs during the 1990-91 recession, but in 1995 there were still 32,600 fewer employed residents than in 1990. US Bureau of Labor Statistics data for the county level show recent trends in resident employment for Suffolk County in Table 3.2-8.

Table 3.2-6

Resident Employment Characteristics by Industry

Employment	Brookhaven	Riverhead	Southampton	Suffolk Co.
Total Employment	199,349	10,214	21,066	665,182
Ag. Forest. Fish.	2,462	552	1,106	9294
Percent of Total	1.2	5.4	5.3	1.4
Mining	194	6	13	412
Percent of Total	0.1	0.1	0.1	0.1
Construction	14,255	756	2,379	45,328
Percent of Total	7.2	7.4	11.3	0.7
Manufacturing	25,399	1,059	1,339	96,828
Percent of Total	12.7	10.4	6.4	14.8
Transport & Utilities	16,744	573	1,317	56,557
Percent of Total	8.4	5.6	6.3	8.6
Wholesale Trade	8,804	358	689	33,317
Percent of Total	4.4	3.5	3.3	5.1
Retail Trade	33,530	1,580	3,893	106,383
Percent of Total	16.8	15.5	18.5	16.2
F.I.R.E.	13,437	687	1,536	55,720
Percent of Total	6.7	6.7	7.3	8.5
Services	71,869	3,851	7,508	226,263
Percent of Total	36.1	37.7	35.6	34.5
Government	12,655	800	1,286	35,080
Percent of Total	6.3	7.8	6.1	5.4
Source: US Census, 1990, Social and Economic Characteristics New York.				

Table 3.2-7

Civilian Labor Force and Employment 1995 (Annual Average)

Jurisdiction	Labor Force	Employment	% Unemployed
Brookhaven	206,240	194,510	5.7
Riverhead	10,492	9,962	5.0
Southampton	21,596	20,711	4.1
Suffolk	685,999	648,783	5.4
Source: New York State Department of Labor, 1996.			

Table 3.2-8

Suffolk County Employment 1990-1995 (Annual Averages)

Year	Employment	Unemployment	% Unemployed
1990	681,445	29,845	4.2
1991	650,110	47,400	6.8
1992	632,308	54,728	8.0
1993	641,969	48,024	7.0
1994	642,962	43,169	6.3
1995	648,783	37,216	5.4
Source: US Bureau of Labor Statistics 1996.			

More recent income data than the Census are available at the county level from the US Department of Commerce, Bureau of Economic Analysis (BEA), Regional Economic Information System (BEA, 1996). Suffolk County data for 1990-1994 are provided in Table 3.2-9. These data identify employment and earnings in the county rather than employed residents. Total personal income is seen to rise modestly over the period 1991-1992, with annual growth rates of four percent, and then quite substantially in 1993 at 8.6 percent and 1994 at five percent. Although Suffolk County is substantially above the national average in per capita income, it falls from 120 percent to 117 percent in 1993, then rises slightly to 118 percent. It can be seen that full and part-time employment declined from 543,760 to 515,016 over 1990-92, rose to only 521,541 by 1993, but then made a major recovery in 1994 to 533,325. Higher wages per job manage to increase total disbursements despite the overall decline in employment. The net earnings to residents in the county increased from $5.8 billion to almost $6.3 billion over the period.

Table 3.2-9

Suffolk County Income and Employment 1990-94

Economic Category	1990	1991	1992	1993	1994
Population (1,000s)	1,322.6	1,326.3	1,334.9	1,343.0	1,349.3
Total Personal Income ($1,000s)	29,571,784	30,577,099	31,653,283	32,812,815	34,466,965
Annual Growth Rate (%)	3	4	4	8.6	5
Per Capita Personal Income ($)	22,359	23,054	23,712	24,432	25,544
% of National Average	120	120	118	117	118
Wage & Salary Disbursements ($1,000s)	14,049,171	13,973,061	14,435,783	14,913,162	15,658,473
Full & Pt.-Time Wage/Salary Employment	543,760	520,470	515,016	521,541	533,325
Average Wage per Job ($)	25,873	26,847	28,030	28,594	29,360
Total Gross Earnings Inflow ($1,000s)	7,927,163	7,935,609	8,246,220	8,360,095	8,636,473
Total Gross Earnings Outflow ($1,000s)	2,081,708	2,135,315	2,222,945	2,306,819	2,384,791
Net Residence Adjustment ($1,000s)	5,845,455	5,800,294	6,023,275	6,053,276	6,251,682
Source: US Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, 1996					

3.3 Community Facilities and Services

3.3.1 Education

No public or private schools are located within the one-mi (1.6-km) study area radius of NWIRP Calverton. Several public school districts are partially located within the study area. Riverhead Central is the largest geographically and includes the site; Shoreham-Wading River is located to the northwest, Longwood School District to the west, South Manor to the southwest, and Eastport to the south.

The Riverhead Central School District has four elementary schools, one junior middle school, one senior middle school, and one high school. Total enrollment in the 1995-96 school year is 4,278. District enrollment has been increasing over the past four years and is expected to reach 5,000 by year 2,000 (Carlson, 1996). The adjacent school districts of Shoreham-Wading River had a 1995-96 enrollment of 2.075; Longwood had an enrollment of 9,170; South Manor had an enrollment of 1,120; and Eastport had an enrollment of 942. Each of these districts has also experienced slight increases in enrollment over recent years. Three private parochial schools are located in Riverhead with a total enrollment of 856. Public and private school enrollment as of 1995-96 is shown in Table 3.3-1.

Institutions of higher education in proximity to NWIRP Calverton in Suffolk County include Suffolk County Community College (Eastern Campus in Riverhead and Selden Campus in Brookhaven), a branch of Long Island University at Southampton College, and St. Joseph's College in Patchogue.

3.3.2 Health Care

There are no hospitals within the one-mi (1.6-km) study area. However, there are several hospitals that serve the east end of Long Island. Central Suffolk Hospital in Riverhead is the closest, about 6.5 mi (10.5 km) east of NWIRP Calverton. University Medical center at Stony Brook is the largest and is a teaching, full-service hospital and trauma center located approximately 15 mi (24 km) to the west of NWIRP. Brookhaven Memorial Hospital Medical Center is another full-service trauma center, about 13 mi (21 km) to the southwest of NWIRP. Southampton Hospital is a smaller community hospital about 20 mi (32 km) southeast of the site. Table 3.3-2 lists these hospitals, their licensed beds, and recent occupancy rates, as provided by hospital staff in June 1996.

Table 3.3-1

Educational Facilities and Enrollment, 1995-96

Schools	Grades	Enrollment
Public Schools		
Riverhead	Elementary K-3	1,539
	4-5	606
	6-8	864
	High School 9-12	1,184
Shoreham-Wading River	Elementary K-5	927
	Middle 6-8	494
	High School 9-12	654
Longwood	Elementary K-5	4,507
	Middle 6-7	1,337
	Junior HS 8-9	1,326
	High School 10-12	2,000
South Manor	Elementary K-3	450
	Middle 4-9	670
Eastport	Elementary K-6	548
	JHS 7-8	119
	High School 9-12	275
Private Schools		
St. Isidore's School	K-8	260
St. John the Evangelist	K-8	255
Mercy High School	9-12	341
Source: Individual Schools, June 1996.		

Table 3.3.2

Hospitals in Proximity to NWIRP Calverton 1996

Hospital	Licensed Beds	Occupancy Rate
Central Suffolk Hospital	214	100
University Medical Center at Stony Brook	504	78
Eastern Long Island Hospital	80	73.8
Southampton Hospital	168	40
Brookhaven Memorial Hospital	345	70
Source: Individual Hospitals, June 1996.		

3.3.3 Public Safety and Emergency Services

Police

Police services in the study area are provided by the respective town and county police forces. No police station is within the one-mi (1.6-km) study area. The NWIRP facility is entirely within the jurisdiction of the Riverhead police except as the Suffolk County Police Department would be brought in to conduct major case investigations or respond to emergencies. The Riverhead police station is in the village of Riverhead, approximately six mi (ten km) east of the site. Riverhead's police include 70 sworn officers operating in five motorized and one walking sector. The support staff totals 14, and the department's total budget is almost $6 million (Grattan, 1996).

Suffolk County provides police protection in the Town of Brookhaven and would, therefore, be involved with services provided immediately to the south and to the west of NWIRP Calverton. Suffolk County Police has a complement of almost 2,800 sworn officers, 600 civilian personnel, and 300 school crossing guards (Michael, 1995). Its headquarters are in Yaphank, about ten mi (16 km) to the southwest. Its nearest substation covers the 6th Precinct and is located in Coram, about nine mi (14 km) west of NWIRP on Route 25. A new 7th Precinct that should be open in approximately two years is planned for the southwest corner of the intersection of the Long Island Expressway and William Floyd Parkway, about eight mi (13 km) southwest of NWIRP Calverton.

Emergency Services

Fire protection services at the site were previously provided by Grumman but are now provided by the three surrounding fire districts of Riverhead, Manorville, and Wading River. Approximately 80 percent of the site is covered by the Manorville Fire District, which has its headquarters station on Silas Carter Avenue, about four mi (six km) south of NWIRP Calverton. The Manorville District has a second substation at Cranford Avenue about six mi (ten km) southwest of the site. The district fields 11 pieces of equipment and has 80 volunteer personnel (De Lettera, 1996). The Riverhead Fire District has four fire stations. The nearest of these is at the intersection of Twomey and Riley Avenues, about three mi (five km) to the northeast. In total, the Riverhead District can field 18 pieces of equipment and has 180 volunteer personnel (Happner, 1996). The Wading River Fire District is headquartered at North Country Road about three mi (five km) north of the site, and has a substation at Hulse Landing Road about two mi (three km) north of NWIRP Calverton. Wading River can field 22 pieces of equipment and has 85 volunteer personnel (Flam, 1996).

Ambulance

Emergency medical services (EMS) in Suffolk County are provided by 94 volunteer EMS agencies, 65 integrated with volunteer fire departments and 29 independent community ambulance companies. Each is autonomous but overall coordination is provided by the Suffolk County Division of Emergency Medical Services, within the Department of Health Services. The county provides cohesive communications, linkages with hospitals, training, medical protocols, risk management, standardization of medical equipment, and other support (Larkin, 1996).

The three agencies serving NWIRP Calverton and its vicinity are coterminous with the fire companies noted above. The Manorville Ambulance Company is headquartered at South Street, east of Dayton Avenue about three mi (five km) southwest of the site, and has a substation at Moriches-Middle Island Road, about five mi (eight km) southwest of NWIRP Calverton. Each station fields two ambulances, and a "responder car" (usually first on the scene) serves the district.

The Riverhead Ambulance Company is headquartered at Harrison Avenue, about six mi (ten km) east of NWIRP Calverton, and has a substation in Jamesport, about 12 mi (19 km) east of the site. Three ambulances are stationed at the headquarters and a responder car serves the district. Wading River Fire Department provides EMS services in its district, with two ambulances stationed at its headquarters on North Country Road, about three mi (five km) north of NWIRP Calverton.

Parks and Recreation

The only park within the one-mi (1.6-km) study area is the Robert Cushman Murphy (formerly Peconic River) County Park, a natural area that occupies the river valley for about six mi (ten km) to the south and west of NWIRP Calverton. The park encompasses more than 3,000 acres (1,215 hectares), with 1,254 acres (508 hectares) in Brookhaven and 1,831 acres (742 hectares) in Riverhead. Portions of the park are devoted to nature preserve and portions are available for a state hunting and fishing program. Other facilities in proximity to NWIRP Calverton include :

- Wildwood State Park, approximately 722 acres (292 hectares) about 1.5 mi (three km) directly north of the site, offers 322 campsites, one mi (1.6 km) of beach, picnic areas, ballfields, and 15 mi (24 km) of trails;
- Brookhaven State Park, approximately 1,500 acres (608 hectares), is a large undeveloped facility about one mi (1.6 km) west of NWIRP;
- South Haven Park is an important county recreational facility of approximately 1,356 acres (549 hectares), about six mi (ten km) to the southwest, providing for camping, fishing, canoeing, picnicking, activity fields, and some hunting; and
- Cathedral Pines County Park is an active recreational facility of 323 acres (131 hectares) approximately seven mi (11 km) west of the site, providing camping, picnicking, and activity fields. Prosser's-Cathedral Pines is an adjacent nature preserve.

A private recreational facility, the Swan Lake Golf Club, is a golf course of approximately 122 acres (49 hectares) located immediately south of NWIRP Calverton across Swan Pond Road. Another nearby private facility is the 300-acre (121-hectare) Nassau County Boy Scout facility, Camp Wauwepex, located one mi (1.6 km) north of the site.

3.4 Transportation

3.4.1 Traffic

Local Street Network

The project site is located on Long Island in Suffolk County, New York, approximately 80 miles east of mid-town Manhattan and over 50 miles west of Montauk Point. Regional access to the site is provided by NYS Route 495 (Long Island Expressway), which runs east-west. Local roadway circulation is provided through several rural arterials that surround the site.

Key study area roadways include:

- Middle Country Road (Route 25) - This is the area's main roadway, with a peak hour one-way volume of up to 880 vehicles within the study area. Daily two-way traffic volume is approximately 15,200 vehicles per day (vpd). Middle County Road is a two-lane east-west roadway with minimal development within the study area. Pavement widths vary from 30 ft (nine m) to 24 ft (seven m), with shoulders provided. Middle Country Road provides access to the site west of Route 25A.

- Manorville/Wading River/Schultz Road - This roadway is a two-lane winding rural road with varying pavement widths from 24 to 36 ft (seven to 11 m). This road is a major north-south access to the site, providing a connection to the Long Island Expressway. Hourly one-way volume reaches 380 vehicles per hour (vph) and two-way daily volume is approximately 6,050 vpd.

- Edwards Avenue - Similar to Manorville Road, this roadway provides north-south access for vehicles coming from points east of the site. Edwards Avenue provides access from NYS Route 495 east and access to NYS Route 495 west. Hourly one-way volume reaches 385 vph and two-way daily volume is approximately 9,000 vpd.

- William Floyd Parkway (Route 46) - This roadway is a four-lane limited access highway. It serves as a north-south collector for vehicles to access the study area via Middle Country Road from Routes NYS Route 495 and Route 25A. Existing peak hour one-way volume is approximately 1,580 vph. Two-way daily volume approaches 32,300 vpd.

Traffic Characteristics

Traffic data were collected at seven locations for this analysis. Traffic counts were conducted on a weekday (May 16, 1996) and a Saturday (May 18, 1996). The weekday counts were conducted for the am (6:00-9:00) and pm (3:00-6:00) peaks. The Saturday count was conducted during the afternoon peak (11:00 am-4:00 pm). Both turning movement counts and vehicle classifications were obtained. Turning movement counts establish the existing volumes of traffic moving on the street network. Vehicle classifications identify the types of vehicles (i.e., autos, light trucks, and heavy trucks) using each link in the analysis network. Each intersection counted was also inventoried to identify those parameters used to determine the capacity of the intersection and its approaches, as specified by the Transportation Research Board's *Highway Capacity Manual* (HCM), 1994. In addition to the manual counts, seven-day Automatic Traffic Recorder (ATR) counts were collected at ten locations. Figure 3.4-1 (Traffic Count Locations) provides the traffic count locations.

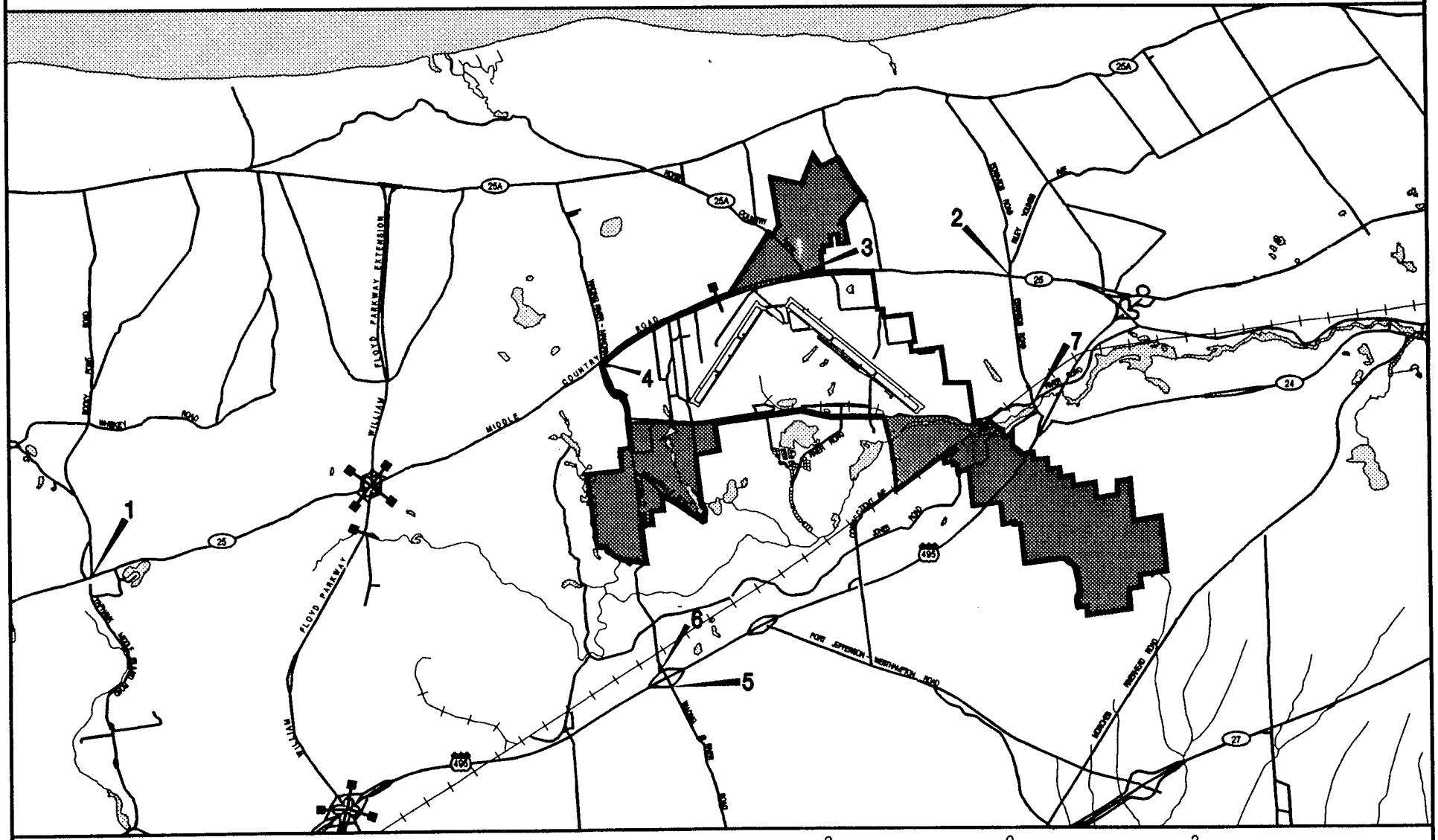
Each traffic signal was inventoried for its cycle length, phasing, and progression characteristics. Geometric conditions of the intersections, such as lane group movements, lane widths, and approach grades, were recorded. General operating conditions such as posted parking regulations, number of parking maneuvers, bus stops, and pedestrian interference, were also observed.

A review of the count data indicates typical am and pm commuter peak periods. The weekday peak hours generally occur between 7:30 and 8:30 am and 4:30 and 5:30 pm. The Saturday peak occurs during the lunchtime hour. Overall volumes within the study area are light to moderate. The recreational nature of the region surrounding the project site induces higher than average traffic volumes during the summer months. Therefore, to account for this, the volumes that were collected in May were adjusted to get average annual volumes using a 0.935 multiplicative seasonality factor. Next, these average annual volumes were adjusted to get worst-case summer volumes using a 1.211 multiplicative seasonality factor. These seasonality factors were supplied by the NYS Department of Transportation (NYSDOT) (NYSDOT, 1996). Capacity analyses were performed for each intersection inventoried using these adjusted summer volumes.

Capacity Analysis

The 1994 HCM provides a methodology to determine the capacity and level of service of signalized and unsignalized intersections for each approach, as well as the intersection as a whole. The capacity of an intersection is defined as the maximum rate of flow that may pass through the intersection under prevailing traffic and roadway conditions. The quality of traffic flow through an intersection is described by the intersection's level of service (LOS). Level of service for signalized intersections is defined by the "average stopped delay" time per vehicle for various movements within the intersection (see Table 3.4-1 for the level of service criteria expressed in terms of average stopped delay). Level of service for a stop-controlled intersection is also based on an average delay per vehicle, which is computed from available gaps in the major roadway traffic stream (Table 3.4-2).

Traffic Count Locations



6 Manual Count Location

ATR Count Location

Buffer Zones

Property Boundary

2 0 2
Scale in Miles

3 0 3
Scale in Kilometers

N

Figure 3.4-1

Table 3.4-1

Traffic Level of Service Definitions for Signalized Intersections

LOS	Description
A	Level A describes operations with very low delay, i.e., less than 5.0 seconds per vehicle. This occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Level B describes operations with delay in the range of 5.1 to 15.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Level C describes operations with delay in the range of 15.1 to 25.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level, although many still pass through the intersection without stopping.
D	Level D describes operations with delay in the range of 25.1 to 40.0 seconds per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume/capacity (v/c) ratios. Many vehicles stop and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Level E describes operations with delay in the range of 40.1 to 60.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.
F	Level F describes operations with delay in excess of 60.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Source: Transportation Research Board Special Report, 209, Highway Capacity Manual, 1985.

Table 3.4-2
Level of Service Criteria for Stop-Controlled Intersections

Level of Service	Average Total Delay (sec/veh)
A	≤5
B	>5 and≤10
C	>10 and ≤20
D	>20 and≤30
E	>30 and ≤45
F	>45

Source: Transportation Research Board Special Report, 209, Highway Capacity Manual, 1985.

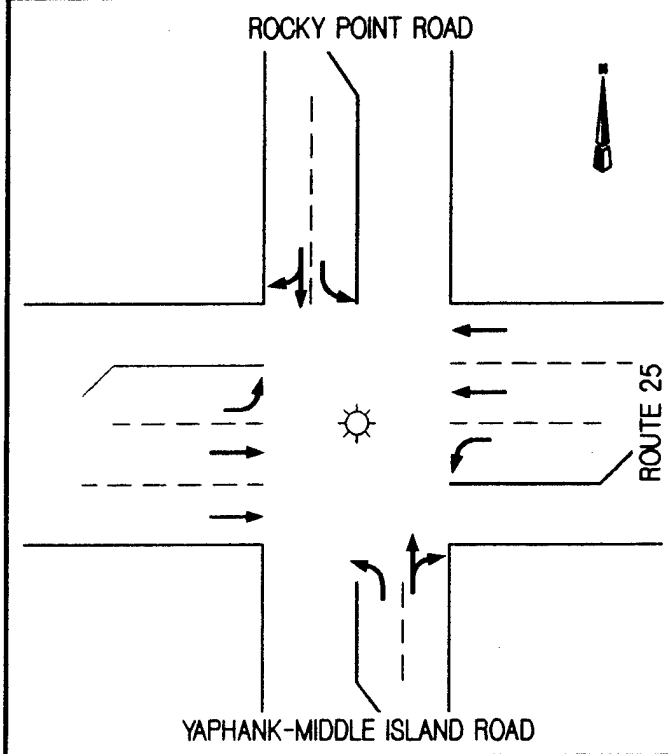
Capacity analyses were performed at all seven count locations. Physical inventories of each intersection studied are provided in Figure 3.4-2 (Intersection Diagram: Location 1 - 4) and Figure 3.4-3 (Intersection Diagram: Location 5 - 7). These inventories provide the roadway configuration and existing lane group utilization. Generally, with the exception of peak periods, the intersections operate favorably (LOS "B" or better) with very few lengthy queues and delays experienced by vehicles. The results of the capacity analyses for peak period existing conditions at the intersections studied are provided in Table 3.4-3. The table provides intersection approach volumes, volume/capacity ratios, stopped delay, and lane group level of service for the am, pm, and Saturday peak hours. Following is a brief description of each intersection and its existing operational characteristics.

- Rocky Point Road and Middle Country Road (Location 1) - This location is controlled by a four-phase traffic signal. This intersection experiences the heaviest volumes of all the study area intersections, with approach volumes reaching 1150 vph. Heavy approach volumes and considerable truck percentages on Rocky Point Road result in operation at LOS "F" for the northbound (NB) and southbound (SB) approaches during peak periods. Operation on the Middle Country Road approach is acceptable.

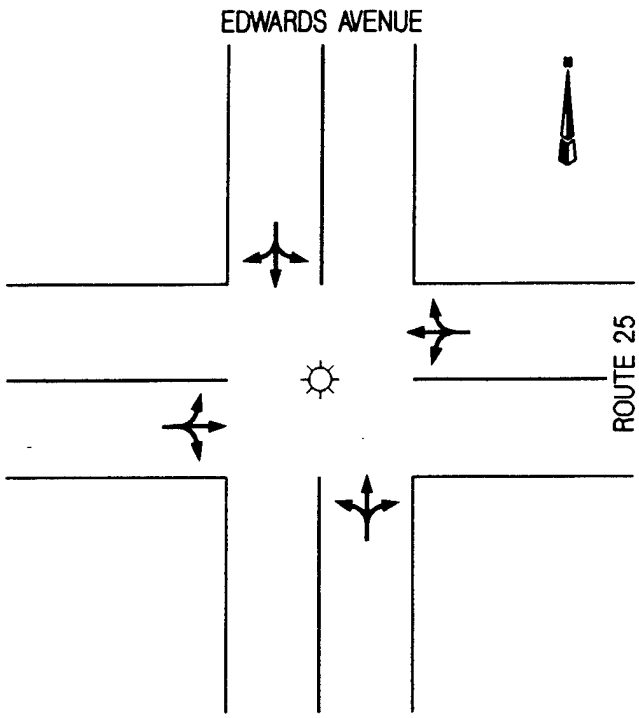
- Edwards Avenue and Middle Country Road (Location 2) - This location is controlled by a two-phase traffic signal. Approach volumes are moderate (less than 750 vph), with acceptable LOS operation during peak periods except on the northbound approach (LOS "F" during the pm peak).

Intersection Diagrams: Locations 1-4

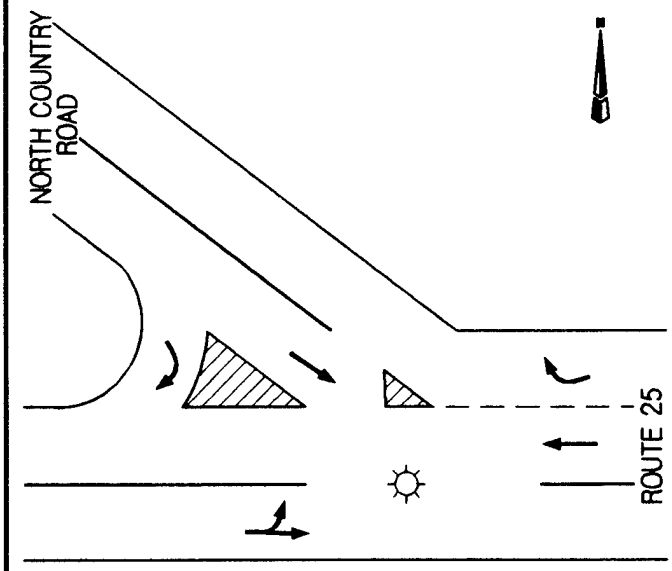
Location 1



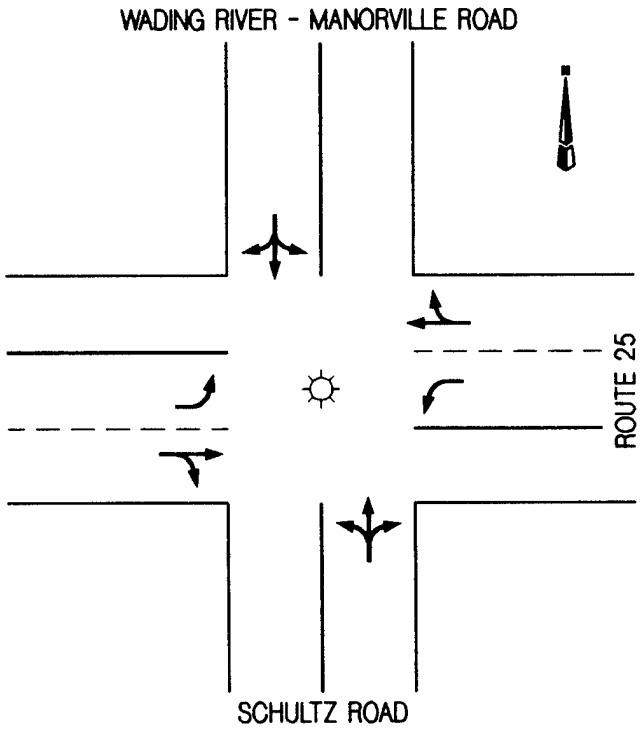
Location 2



Location 3



Location 4



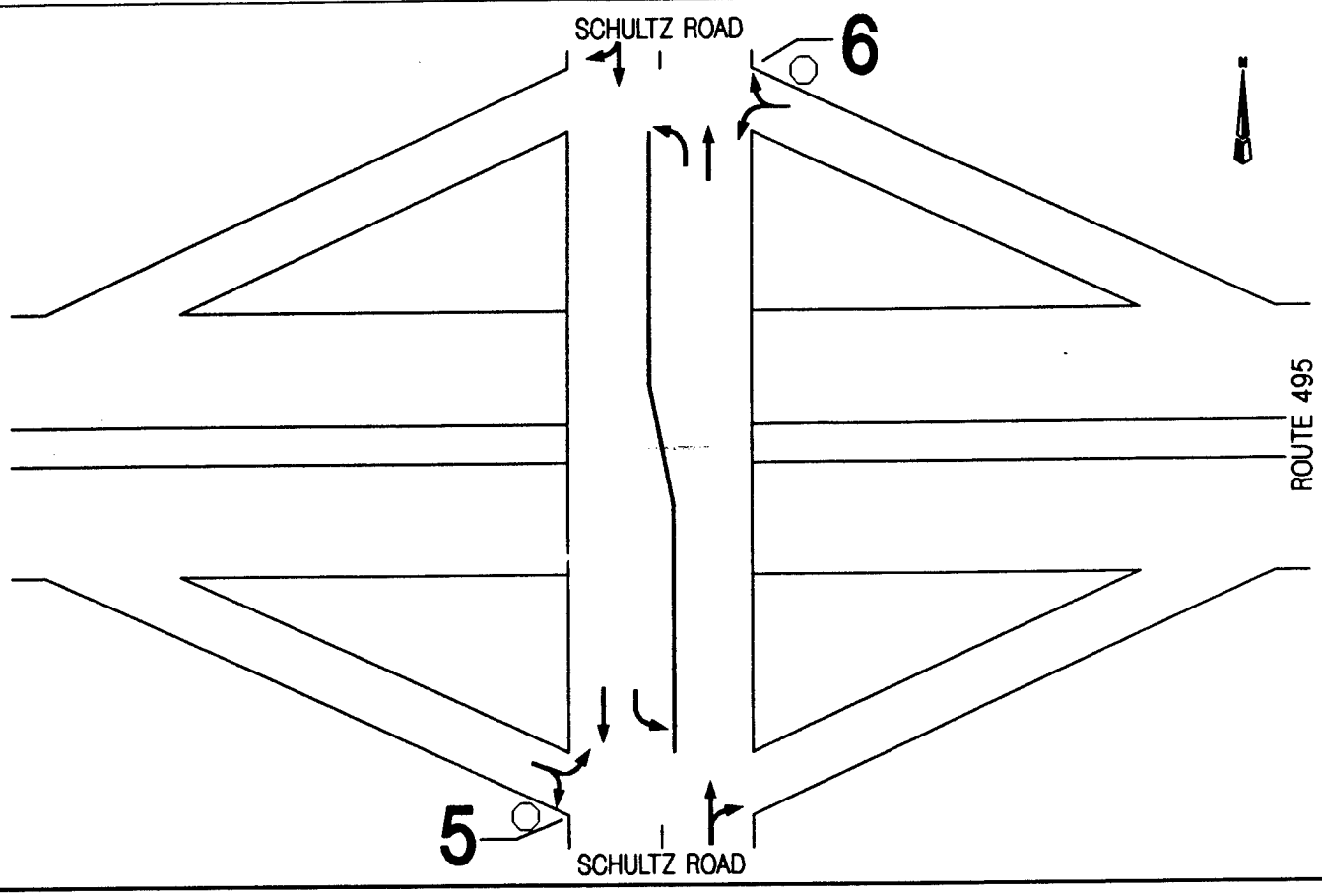
Not to Scale

☼ **Location of Traffic Signal**

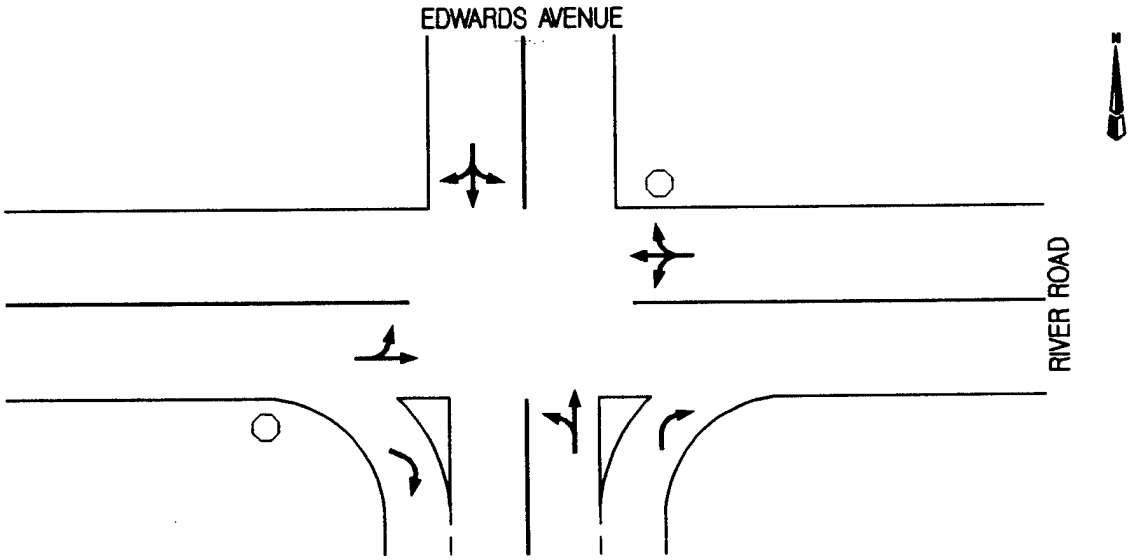
Figure 3.4-2

Intersection Diagrams: Locations 5-7

Locations 5 & 6



Location 7



Not to Scale

○ Location of Stop Sign

Figure 3.4-3

Table 3.4-3

Summary of LOS Analysis - Peak Period Existing Conditions

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Rocky Point Road (Location 1)												
EB L	47	0.197	13.9	B	99	0.695	27.2	D	118	0.827	34.7	D
EB TR	748	0.679	23.3	C	970	0.914	36.2	D	986	0.866	29.2	D
WB L	249	1.180	*	F	133	0.618	22.8	C	139	0.658	26.3	D
WB TR	542	0.398	16.8	C	817	0.683	23.8	C	828	0.612	19.4	C
NB L	238	0.993	66.7	F	376	1.188	*	F	412	1.585	*	F
NB TR	342	0.698	27.7	D	773	1.154	*	F	427	0.878	37.3	D
SB L	68	0.406	23.5	C	136	0.935	62.0	F	153	1.072	109.6	F
SB TR	525	1.170	*	F	356	0.643	28.4	D	296	0.681	33.0	D
Overall:			*	F			*	F			*	F
Middle Country Road and Edwards Avenue (Location 2)												
EB LTR	751	0.984	27.4	D	577	0.965	28.2	D	537	0.732	8.1	B
WB LTR	364	0.797	11.7	B	685	1.068	55.0	E	461	0.790	10.3	B
NB LTR	165	0.561	12.5	B	383	1.264	*	F	229	0.695	15.1	C
SB LTR	191	0.495	11.5	B	171	0.483	10.5	B	172	0.467	11.2	B
Overall:			19.7	C			*	F			10.4	B
Middle Country Road and North Country Road (Location 3)												
EB LT	300	0.264	4.0	A	282	0.256	4.0	A	266	0.237	3.9	A
WB T	247	0.251	4.0	A	342	0.359	4.3	A	225	0.229	3.9	A
WB R	190	0.124	0.0	A	537	0.363	0.1	A	306	0.200	0.0	A
SB L	424	0.881	23.2	C	218	0.485	11.2	B	261	0.542	11.8	B
SB R	13	0.026	9.1	B	12	0.026	9.1	B	7	0.014	9.1	B
Overall:			10.6	B			3.8	A			4.8	A

Table 3.4-3

Summary of LOS Analysis - Peak Period Existing Conditions

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Manorville Road (Location 4)												
EB L	47	0.137	4.6	A	95	0.287	5.1	B	76	0.245	4.9	A
EB TR	45	0.056	4.3	A	93	0.108	4.5	A	293	0.364	5 3	B
WB L	12	0.018	4.3	A	21	0.032	4.3	A	17	0.054	4.3	A
WB TR	255	0.314	5.1	B	300	0.346	5.3	B	282	0.347	5.3	B
NB LT	298	0.495	10.0	B	336	0.587	10.9	B	127	0.236	8.5	B
NB R	79	0.167	8.3	B	37	0.077	8.0	B	18	0.037	7.9	B
SB LTR	184	0.522	10.6	B	137	0.282	8.7	B	134	0.250	8.6	B
Overall:			8.0	B			7.6	B			6.2	B
RT 495 East (Long Island Expressway) and Shultz Road (Location 5)												
EB LR	132	-	4.2	A	352	-	5.0	A	194	-	4.6	A
NB TR	413	-	-	A	187	-	-	A	261	-	-	A
SB L	13	-	3.5	A	12	-	2.7	A	20	-	3.0	A
SB T	93	-	-	A	165	-	-	A	107	-	-	A
Overall:			1.0	A			2.5	A			1.7	A
RT 495 West (Long Island Expressway) and Shultz Road (Location 6)												
WB LR	32	-	8.1	B	90	-	7.0	B	69	-	6.9	B
NB L	275	-	3.0	A	125	-	2.7	A	149	-	2.7	A
NB T	84	-	-	A	137	-	-	A	130	-	-	A
SB TR	116	-	-	A	121	-	-	A	113	-	-	A
Overall:			2.0	A			1.9	A			1.8	A

Table 3.4-3

Summary of LOS Analysis - Peak Period Existing Conditions

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Edwards Avenue and River Road (Location 7)												
EB LT	55	-	4.7	A	38	-	5.8	B	29	-	4.3	A
WB LTR	30	-	6.8	B	30	-	9.5	B	45	-	6.5	B
NB LT	213	-	3.1	A	433	-	3.0	A	249	-	2.7	A
NB R	26	-	-	A	24	-	-	A	26	-	-	A
SB LTR	337	-	2.6	A	294	-	3.2	A	216	-	2.7	A
Overall:			0.7	A			0.9	A			0.9	A

Notes: NB - Northbound; SB - Southbound; EB - Eastbound; WB - Westbound. L - Left turn; R - Right turn; T - Through. *Indicates an approach expected to operate at a v/c ratio greater than 1/peak hour factor. In such cases, the stop delay is not calculated but LOS is "F".

- North Country Road and Middle Country Road (Location 3) - This location is a T-intersection controlled by a two-phase traffic signal. North Country Road terminates at Middle Country Road at an acute angle (approximately 120°). Existing flows are moderate to light (less than 880 vph). Operation is favorable during all peak periods.

- Wading River/Manorville Road and Middle Country Road (Location 4) - This location is controlled by a two-phase traffic signal. Existing peak hour volumes are light (less than 375 vph), with favorable operation during all peak periods.

- Schultz Road and Long Island Expressway eastbound (EB) Ramp (Location 5) - This location is a stop-controlled intersection for access to Schultz Road from the Long Island Expressway EB. Volumes are light with favorable LOS "A" operation.

- Schultz Road and Long Island Expressway westbound (WB) Ramp (Location 6) - Similar to Location 5, this location is a stop-controlled intersection for access to Schultz Road from the Long Island Expressway WB. Existing volumes are light with LOS "A" operation.

- Edwards Avenue and River Road (Location 7) - This location is a stop-controlled intersection with light traffic volumes. Flow along Edwards Avenue is uninterrupted and operations are acceptable. Suitable gaps exist for turning movements onto Edwards Avenue from River Road with LOS "B" or better operation.

3.4.2 Public Transportation

Although there are bus lines that traverse Middle Country Road (Route 25) and the Long Island Expressway, these routes primarily serve recreational travelers to points east of NWIRP Calverton. The typical commuter within the study area does not utilize public transportation.

3.5 Air Quality

3.5.1 National Ambient Air Quality Standards

The US Environmental Protection Agency (USEPA), under the requirements of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, established primary and secondary standards for six criteria pollutants. These standards are known as the National Ambient Air Quality Standards (NAAQS) (Table 3.5-1). The primary standards are intended to protect the public health. The secondary standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare. The NAAQS were established for the following six pollutants:

- Carbon monoxide (CO) is a colorless, odorless gas. The major source of CO is the incomplete combustion of fuels used to power vehicles, heat buildings, and process raw materials, and from the burning of refuse. Carbon monoxide is a site-specific pollutant; major concentrations are found near the source, such as at heavily congested intersections. Carbon monoxide is the most commonly occurring air pollutant. The health effect associated with CO-contaminated air is reduced transport of oxygen by the blood stream, a consequence of CO displacing oxygen in hemoglobin. Exposures to very high levels of CO are lethal and exposures to high levels for a short duration can cause headaches, drowsiness, or loss of equilibrium.

- Sulfur dioxide (SO_2) is emitted into the atmosphere from the combustion of sulfur-bearing fuels for space heating and motor vehicles. The use of low sulfur fuels for space heating has reduced the amount of sulfur dioxide emitted from these sources. The combustion of gasoline and diesel fuels in motor vehicles accounts for a very small percent of the total sulfur dioxides emitted. Respiratory illness and damage to the respiratory tract are the health effects associated with inhalation of sulfur dioxide emissions.

- Nitrogen Oxides (NO_x) measured as nitrogen dioxide. NO_2 is a yellowish-brown, highly reactive gas that is present in an urban environment. The major source of nitric oxide and nitrogen oxide emissions is fuel combustion in boilers associated with electric utilities and industrial facilities. Nitric oxides oxidize in the atmosphere to form nitrogen dioxide. Nitrogen oxides cause irritation to the lungs, bronchitis and pneumonia, and lowered resistance to respiratory infections.

Table 3.5-1

Federal and New York State Ambient Air Quality Standards

Pollutant	Averaging Period	New York Standards	Federal Standards	
			Primary	Secondary
Carbon Monoxide	8-hour 1-hour	9 ppm 35 ppm	10 mg/m^3 40 mg/m^3	10 mg/m^3 40 mg/m^3
Ozone	1-hour	235 ug/m^3	235 ug/m^3	235 ug/m^3
Nitrogen Dioxide	1-year	100 ug/m^3	100 ug/m^3	100 ug/m^3
Lead	3-month	1.5 ug/m^3	1.5 ug/m^3	1.5 ug/m^3
Particulates10	1-year 24-hour	50 ug/m^3 150 ug/m^3	50 ug/m^3 150 ug/m^3	50 ug/m^3 150 ug/m^3
Sulfur Dioxide	1-year 24-hour 3-hour	80 ug/m^3 365 ug/m^3 1300 ug/m^3	80 ug/m^3 365 ug/m^3	1300 ug/m^3

- Ozone (O_3) is a photochemical oxidant and a major constituent of smog. Hydrocarbons and nitrogen oxides are precursor pollutants to the formation of ozone. Hydrocarbons and nitrogen oxides react in the presence of sunlight to form a photochemical oxidant. This reaction is time-dependent and usually takes place far downwind from the site where the contaminants were originally emitted. Thus, hydrocarbons and nitrogen oxides are reactive contaminants whose impact generally occurs well beyond the areas immediate to the source. High concentrations of ozone are a major health and environmental concern. For example, ozone is a principal cause of lung and eye irritation in an urban environment.

- Particulate matter in an urban environment typically occurs as a result of incomplete fuel combustion. Particulate matter includes dust, dirt, soot, smoke, and liquid droplets directly emitted into the air by sources such as factories, power plants, cars, construction activity, and fires. Diesel fuel compared to gasoline contributes more particulates to the atmosphere. An inhalable particulate is defined as a particulate that is less than ten microns (PM10) in diameter. The major health effect caused by the inhalation of PM10 is damage to the respiratory organs.

- Lead (Pb) is a bluish-gray metal, usually found in small quantities in the earth's crust. The most significant contributors of lead emissions to the atmosphere are gasoline additives, iron and steel production, and alkyl lead manufacturing. Other sources of lead include combustion of solid waste, windblown dust from weathering of lead-based paint, and cigarette smoke. The use of lead-free gasoline has considerably reduced lead levels in the urban environment. Exposure to lead is dangerous for the fetus and results in pre-term birth. Other health effects are decreased intelligence quotient (IQ) for infants and small children, increased blood pressure in middle-aged men, and brain and kidney damage in adults and children.

Suffolk County, New York State, where NWIRP Calverton is located, is presently designated by USEPA as a severe nonattainment area (i.e., not meeting the NAAQS) for ozone. The county is in attainment for the other criteria pollutants.

3.5.2 Mobile Sources

Local CO concentrations are estimated through the use of computerized mathematical models. Using the models, worst-case CO levels are calculated for the peak one-hour and eight-hour time periods, which correspond to the averaging periods of the state and federal ambient CO standards.

Generally, the CO concentrations that occur at any one site result from a contribution of several emission sources. Ambient CO concentrations have two components - the local source contribution

(i.e., vehicles on the roadway(s) next to the analysis site) and background contribution. The CO levels due to local roadway source contribution are dependent on traffic and operating conditions such as vehicle volume and speed.

The background CO concentration is a function of land use, land use density, and transportation-related activity in the general community, as opposed to the specific localized sources. Background CO levels at the project site are not available. However, the New York State Department of Transportation (NYSDOT) provides the area-wide applicable CO background levels for various years (NYSDOT, 1995). The one-hour and eight-hour background values for 1996 are 3.6 parts per million (ppm) and 2.45 ppm, respectively.

The CO concentration from local traffic is determined in two steps. First, emissions from vehicle exhausts are calculated. Assumptions about meteorological conditions are then used to calculate the CO concentrations in the air. The composite emission factors and idle emission rates used in this analysis were obtained from NYSDOT, which provides uniform emission factors by region (NYSDOT, 1993).

Carbon monoxide concentrations due to vehicles were then calculated using the USEPA's CAL3QHC computer dispersion model. The concentrations determined by the model are a function of input parameters such as wind speed, wind direction, and atmospheric stability class. The impact levels generated by the model were multiplied by a persistence factor of 0.70 to obtain the eight-hour impact concentration. (The parameters used in this study are based on the recommendations provided in *Guidelines for Modeling Carbon Monoxide from Roadway Intersections* [USEPA, 1992] and *Environmental Procedures Manual* [NYSDOT, 1995]).

CO impacts were estimated at receptor locations for seven intersections. The receptor locations are shown in Figure 3.5-1 (Air Modeling Locations). Intersections were chosen based upon an analysis of where the maximum changes in traffic patterns would occur. At each intersection an analysis was performed for the am and pm peak hours during the week as well as a weekend peak hour when traffic levels were expected to be high. The worst-case conditions during the week occurred during the pm peak hour and are presented in Table 3.5-2. Based on these results, no violations of the NAAQS standards of 35 ppm for the one-hour and nine ppm for the eight-hour concentration are predicted. The impacts predicted for the weekend are shown in Table 3.5-3. No exceedances of the NAAQS standards are predicted for the weekend conditions.

Air Modeling Locations

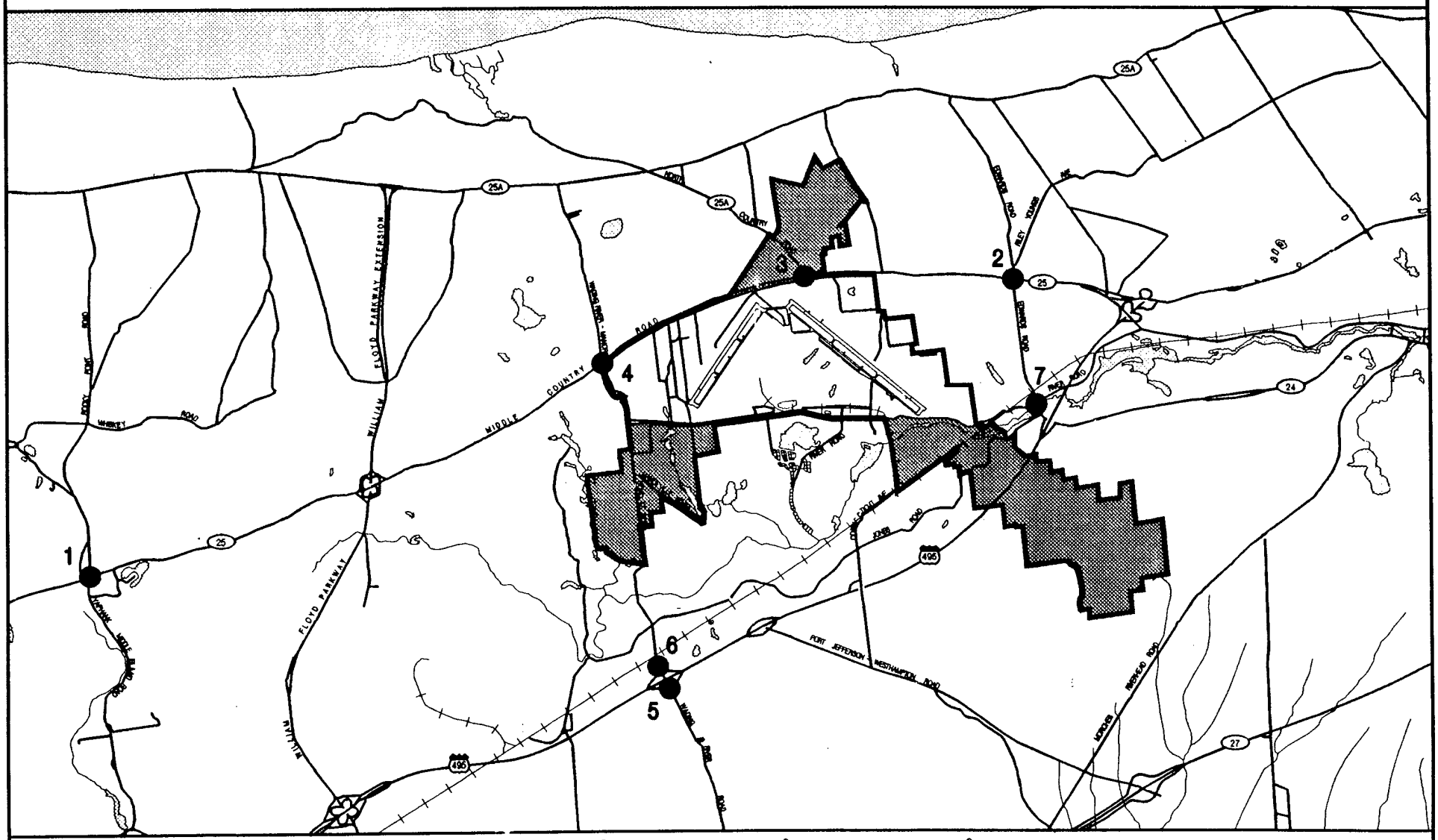


Figure 3.5-1

Table 3.5-2

Weekday Existing Carbon Monoxide Levels

Receptor	One-Hour Concentration (ppm)	Eight-Hour Concentration (ppm)
Route 25 / Middle Island Road	9.1	6.3
Route 25 / Edwards Avenue	7.2	5.0
Route 25 / Route 25A	5.9	4.1
Route 25 / Wading River - Manorville Road	6.2	4.3
LIE Eastbound Ramp / Schultz Road	4.6	3.2
LIE Westbound Ramp / Schultz Road	4.4	2.9
Edwards Avenue / River Road	4.9	3.4
Note: [1]CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). [2]Values are for the pm peak period.		

Table 3.5-3

Weekend Existing Carbon Monoxide Levels

Receptor	One-Hour Concentration (ppm)	Eight-Hour Concentration (ppm)
Route 25 / Middle Island Road	9.0	6.2
Route 25 / Edwards Avenue	6.3	4.3
Route 25 / Route 25A	5.4	3.7
Route 25 / Wading River - Manorville Road	5.7	3.9
LIE Eastbound Ramp / Schultz Road	4.3	2.9
LIE Westbound Ramp / Schultz Road	4.2	2.9
Edwards Avenue / River Road	4.3	2.9
Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour).		

3.5.3 Stationary Sources

The basewide stationary sources with the potential to emit air pollutants were identified at NWIRP Calverton (Braun, 1995). A review of the emission records revealed a total of 28 discrete point and fugitive sources of air pollution. These emission sources were operated over the past ten years under a permit issued by the NYSDEC. Table 3.5-4 shows the source descriptions and their operational status. Due to the termination of all painting-related operations, only the steam power plant and Anechoic Chamber boilers are currently active; they are being operated at low capacity levels for the sole purpose of facility maintenance.

There is wide disparity between actual and potential emissions since most emission sources are used intermittently. Air pollution regulations are generally based on potential emissions that would be generated by the continuous annual use of equipment (24 hours per day for 365 days or 8,760 hours per year) at full capacity. Table 3.5-5 shows the annual potential emissions calculated for the steam plant replacement boilers (replacement scheduled for 1997) and for the Anechoic Chamber boiler. Table 3.5-6 shows the actual historical emissions for the steam plant and the Anechoic Chamber boiler under current operating conditions. Given the magnitude of total potential emission levels of SO_2 and NO_x, the existing NWIRP is considered a major source under Title I of the CAAA.

3.5.4 Clean Air Act Conformity

The Clean Air Act Amendments (CAAA) of 1990 expand the scope and content of the Act's conformity provisions by providing a more specific definition. As stipulated in Section 176c of the CAAA, conformity is defined as "conformity to the State Implementation Program's (SIP) purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards." Conformity further requires that such activities will not:

(1) Cause or contribute to any new violations of any standards in any area;
(2) Increase the frequency or severity of any existing violation of any standards in any area; or
(3) Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The USEPA published final rules on general conformity that apply to federal actions in areas designated nonattainment for any of the criteria pollutants under the CAA (40 CFR Parts 51 and 93) in the November 30, 1993 *Federal Register*. The proposed rules provide specific de minimus emission levels by pollutant to determine the applicability of conformity requirements for a proposed project. For a severe ozone nonattainment area such as the area in which NWIRP is located, 25 tons (22.7 metric tons) per year of volatile organic compounds (VOCs) or NO_x is the de minimus criterion.

Table 3.5-4

Permitted Air Emission Sources at NWIRP Calverton

Emission Point	Source Description	Operational Status
06011-13, 06015-16	Paint and solvent from west hanger	Inactive
06017-19	Paint and solvent from east hanger	Inactive
06025	General exhaust from the paint mixing and storage building (bldg. 168)	Inactive
06060-61	Paint and solvent emissions from paint tunnel	Inactive
06120, 06130	Paint and solvent from new paint hanger (bldg. 318)	Inactive
06161-64	Dust and solvent emissions from the paint strip facility (bldg. 06-75)	Removed
00605	Anechoic chamber boiler (bldg. 284)	Active
06010	Reproduction area	Removed
06040	Instrumentation area (bldg. 166)	Inactive
06041	Passivate tank (bldg. 326)	Inactive
06070	Band saw (bldg. 169)	Inactive
06081	Paint canopy (bldg. 282)	Inactive
06171	Fiberglass shop (bldg. 166)	Inactive
06090, 06100, 06110	Central steam plant (bldg. 167)	Active
06181	Upholstery shop (bldg. 166)	Inactive
Source: CF Braun, October 1995 & Taormina, May 22, 1996.		

Table 3.5-5

Potential Emissions from Stationary Sources

Pollutant	Annual Potential Emissions (tons per year (tpy))		
	Steam Plant Boilers[1]	Anechoic Chamber Boiler[2,3]	Total
Sulfur Dioxide (SO_2)	130.9	1.7	132.6
Nitrogen Oxides (NO_x)	75.5	1.1	76.6
Fine Particulate Matter (PM_{10})	16.4	0.1	16.5
Carbon Monoxide	30.2	0.3	30.5
Volatile Organic Compounds (VOCs)	2.5	0.0	2.5

Source: [1]Grumman Corporation letter, November 10, 1993
[2]Supplement F, AP-42, January 1995.
[3]Taormina, May 22, 1996

Table 3.5-6

Historical Emissions from Stationary Sources

Pollutant	Historical Actual Emissions (tpy)		
	Steam Plant Boilers 1991-92 Average	Anechoic Chamber Boilers[2,3]	Total
Sulfur Dioxide (SO_2)	120.1	0.5	120.6
Nitrogen Oxides (NO_x)	53.6	0.3	53.9
Fine Particulate Matter (PM_{10})	9.8	0.0	9.8
Carbon Monoxide	30.2	0.1	30.3
Volatile Organic Compounds (VOCs)	2.5	0.0	2.5

Source: [1]Grumman Corporation letter, November 10, 1993
[2]Supplement F, AP-42, January 1995.
[3]Taormina, May 22, 1996

However, the final rule also defines a series of exemptions under 40 CFR 93.153 (Applicability). In particular, the general conformity rules are not applicable to the proposed Reuse Plan under Exemption XIX in 40 CFR Part 153(c), which reads:

> "Actions (or portions thereof) associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met, such as promptly after the land is certified as meeting the requirements of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and where the federal agency does not retain continuing authority to control emissions associated with the lands, facilities, title, or real properties."

3.6 Noise

3.6.1 Noise Fundamentals and Methodology

Noise pollution comes from numerous sources. Some noise is caused by activities essential to the health, safety, and welfare of the community's inhabitants, such as emergency vehicle sirens, garbage collection operations, and construction and maintenance equipment. Other sources of noise such as traffic and aircraft stem from the movement of people and goods, activities that are essential to the viability of a community as a place to live and do business. Although these and other noise-producing activities are necessary to modern life, the noise they produce is sometimes undesirable and may detract from the quality of the living environment.

Ways to Measure Noise

A number of factors affect sound as it is perceived by the human ear. These include the actual level of the sound (or noise), the frequencies involved, the period of exposure to the noise, and changes or fluctuations in the noise levels during exposure. Levels of noise are measured in units called decibels (dB). Since the human ear cannot perceive all pitches or frequencies equally well, these measures are adjusted or weighted to compensate for the human lack of sensitivity to low-pitched and high- pitched sounds. This adjusted unit is known as the A-weighted decibel, or dBA. The A-weighted network de-emphasizes both very low- and very high-pitched sound, so the measured levels correlate well with the human perception of loudness.

Human response to changes in noise levels depends on a number of factors, including the quality of the sound, the magnitude of the changes, the time of day at which the changes take place, whether the noise is continuous or intermittent, and the individual's ability to perceive the changes. Human ability to perceive changes in noise levels varies widely with the individual, as does response to the perceived changes. Generally, changes in noise levels less than three dBA will barely be perceptible to most listeners, whereas a ten dBA change normally is perceived as a doubling (or halving) of noise levels. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

Since the dBA noise metric describes a noise level at just one moment, and very few noises are constant, other ways of describing noise over extended periods are needed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific time period, as if it had been a steady, unchanging sound. For this condition, a descriptor called the equivalent sound level, L_{eq}, can be computed. The L_{eq} descriptor is the constant sound level that, in a given situation and time period (e.g., one-hour L_{eq}, or 24-hour L_{eq}), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x are also sometimes used to indicate noise levels which are exceeded 1, 10, 50, 90, and x percent of the time, respectively.

Alternatively, it is often useful to account for the difference in response of people in residential areas to noises that occur during sleeping hours as compared to waking hours. A descriptor, the day-night noise level (L_{dn}), is defined as the A-weighted average sound level in decibels during a 24-hour period with a ten dB weighting applied to nighttime sound levels. It is a widely-used indicator for such evaluations. The ten dB weighting accounts for the fact that noises at night sound louder because there are usually fewer noises occurring at night. The L_{dn} descriptor has been proposed by the US Department of Housing and Urban Development (USHUD), the USEPA, and other organizations as one of the most appropriate criteria for estimating the degree of nuisance or annoyance that increased noise levels would cause in residential neighborhoods.

The maximum one-hour equivalent sound level (one-hour L_{eq}), the 24-hour equivalent sound level (24-hour L_{eq}), and the day-night noise level (L_{dn}) have been selected as the noise descriptors to be used in the noise impact analysis of this project. Maximum one-hour equivalent sound levels were used to provide an indication of highest expected sound levels.

3.6.2 Noise Standards and Criteria

There are a number of standards and guidelines adopted by federal agencies and Town of Riverhead for assessing noise impacts that are reviewed in this EIS. These regulations and standards are useful to review in that they provide both a characterization of the quality of the existing noise environment as well as a measure of project-induced impacts.

Federal Highway Administration (23 CFR 772)

The Federal Highway Administration (FHWA) noise regulations require that a noise analysis be conducted for all highway projects (FHWA, 1974). These standards contain noise abatement criteria that the FHWA considers to be the acceptable limits for noise levels for exterior land uses and outdoor activities and for certain interior uses (Table 3.6-1). The FHWA noise abatement criteria lists developed land use types as Categories A, B, C, or E. In this EIS, Category B, which includes residences, schools and churches, would represent most of the sensitive receptors that lie in proximity to the proposed project. Future noise levels are predicted to evaluate the extent of impact in relation to the noise abatement criteria. If these criteria are exceeded, or if there is a substantial increase above the existing noise level, abatement or mitigation measures are considered. Such measures are to be implemented for all project alternatives.

USHUD Environmental Criteria and Standards

USHUD has adopted environmental standards, criteria, and guidelines for determining acceptability of federally-assisted projects and has proposed mitigation measures to ensure that activities assisted

Table 3.6-1

FHWA Noise Abatement Criteria

Activity Category	$L_{eq}(h)$	$L_{10}(h)$	Description of Activity Category
A	57 (exterior)	60 (exterior)	Land for which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties or activities not included in Categories A or B above.
D	—	—	Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Note: The L_{eq} and L_{10} designations represent hourly A-weighted sound levels expressed in decibels (dBA). Either $L_{10}(h)$ or $L_{eq}(h)$ (but not both) may be used on a project.

Source: US Department of Transportation, FHWA, 1974.

Table 3.6-2

HUD Site Acceptability Standards

Noise Zone	Day/Night Sound Level (L_{dn})
Acceptable	Not exceeding 65 dB
Normally Unacceptable	Above 65 dB but not exceeding 75 dB
Unacceptable	Above 75 dB

Source: 24 CFR Part 51.

by USHUD will achieve the goal of a suitable living environment. These guideline values are strictly advisory.

USHUD assistance for the construction of new noise-sensitive land uses is generally prohibited for projects with Unacceptable noise exposure and is discouraged for projects with Normally Unacceptable (as defined in Table 3.6-2) noise exposure with suitable mitigating measures. This policy applies to all USHUD programs for residential housing, college housing, mobile home parks, nursing homes, and hospitals. It also applies to USHUD projects for land development, new communities, redevelopment, or any other provision of facilities and services that is directed toward making land available for housing or noise-sensitive development.

Sites falling within the Normally Unacceptable zone require implementation of additional sound attenuation or reduction or other mitigation measures: five dB if the L_{dn} is greater than 65 dB but does not exceed 70 dB and ten dB if the L_{dn} is greater than 70 dB but does not exceed 75 dB. If the L_{dn} exceeds 75 dB, the site is considered Unacceptable for residential use.

USHUD encourages noise attenuation features in new construction or in alterations of existing structures. The USHUD-mandated or recommended design mitigation measures to eliminate or minimize Unacceptable or Normally Unacceptable levels, respectively, include well-sealed double-glazed windows, forced air ventilation systems (which permit windows to remain closed in summer), and acoustic shielding and insulation.

Town of Riverhead Permissible Noise Levels

The Town of Riverhead has adopted specific noise control standards and provides the maximum permissible noise levels by receiving property (Table 3.6-3) in order to protect the local community from potential noise impact.

The sound source defined in the town code is based on various categories of property such as residential, commercial, or industrial property. The same categories are used to define different sound receiving properties. The town will not allow or permit the operation of any source of sound on a particular category of property or public land or right-of-way in a manner as to create a sound level that exceeds the maximum permissible sound pressure levels measured within the receiving property. However, a variance to the town noise code could be applied on case-by-case basis, and the Town Board could grant or deny the application through certain procedures, including public hearing.

Table 3.6-3

Maximum Permissible A-Weighted Pressure Levels (dBA) by Receiving Property Category at Town of Riverhead

Sound Source Property Category	Receiving Property Category			
	Residential		Commercial	Industrial
	7 am - 8 pm	8 pm - 7am	All times	All times
Apartment within multidwelling building	65	50	65	75
Residential	65	50	65	75
Commercial or public lands or rights-of-way	65	50	65	75
Industrial	65	50	65	75

Source: Riverhead Town Code, February 25, 1992.

3.6.3 Noise Monitoring

A noise measurement survey was conducted in the study area. Receptors were selected based on noise sensitivity, such as residential and open space use. All receptors were adjacent to streets where there could be increases in traffic due to implementation of the proposed project. The key receptor locations that could experience noise impacts as a result of traffic increases are those residences along the perimeter roads of the project area.

Six monitoring locations were selected to provide measures of the existing noise levels (Figure 3.6-1, Noise Monitoring Locations). A sampling measurement program for weekdays and Saturdays was conducted at Sites 1 through 6 during four time periods on June 1, 5, 6, and 8, 1996. Measurements were taken five ft (1.5 m) from the existing building walls of the receptor locations. Microphone height for all receptors was eight ft (2.4 m) above ground level.

Site 1 Along the eastern end of the project site, there are several residences and a couple of commercial properties between Fresh Pond Avenue and Parker Road. The monitor was located on the south side of Route 25 at the Calverton property line. The receptor was set back approximately 60 ft (18 m) from the centerline of the roadway. Route 25 is a two-lane road with one lane in each direction. There is no on-street parking.

Site 2 — Along Route 25 at the western end of the project site, the Wading River Motel is located east of Kay Road. The closest hotel room is approximately 125 ft (37.5 m) from the center line of Route 25 where the monitor was placed.

Site 3 — There are two homes located on the east side of Wading River Road between Grumman Boulevard and Route 25. These homes are adjacent to the Pine Barrens Core Area. Manor Road is a two-lane road with one lane of traffic in each direction. There is no shoulder or street parking. The microphone was located approximately 75 ft (22.7 m) from the centerline of the road.

Site 4 — This receptor is adjacent to the entrance to Swan Lake Golf Course, across from the entrance to the project site on Grumman Boulevard. There were no receptors on Grumman Boulevard between the entrance and Wading River Manor Road. Grumman Boulevard is one lane of traffic in each direction with no parking. The microphone was located approximately 50 ft (15 m) from the centerline of the road.

Site 5 — Grumman Boulevard turns into River Road just east of the project property line. There are a number of residential receptors on River Road. These receptors are located between Edwards Avenue and the existing entrance onto the property. River Road is a rural road with one lane of traffic in each direction. The microphone was located at residential house #312, approximately 60 ft (18 m) from the center line on the north side of the road.

Site 6 — Edwards Avenue carries traffic from the Long Island Expressway to Route 25. This is a two-lane road with one lane in each direction. There is no parking on the road. The microphone was located at 460 Edwards Avenue between Route 25 and River Road. The receptor is located on the east side of the street and is approximately 70 ft (21 m) from the center line of the road.

Measurements at each sampling location were made on the A-scale (dBA) for a sampling period of 30 minutes. A wind screen was used to minimize wind noise across the face of the microphone. The data were digitally recorded by the noise analyzer and displayed at the end of the measurement period.

3.6.4 Existing Noise Levels

The one-hour equivalent noise levels (one-hour L_{eq}) measured at Sites 1 through 6 for weekday and Saturday are presented in Tables 3.6-4 and 3.6-5. At all measurement locations, the predominant source of noise is vehicular traffic. The measured noise levels are common for residential areas, reflecting the level of vehicular traffic present. While not directly applicable, the USHUD, FHWA,

Noise Monitoring Locations

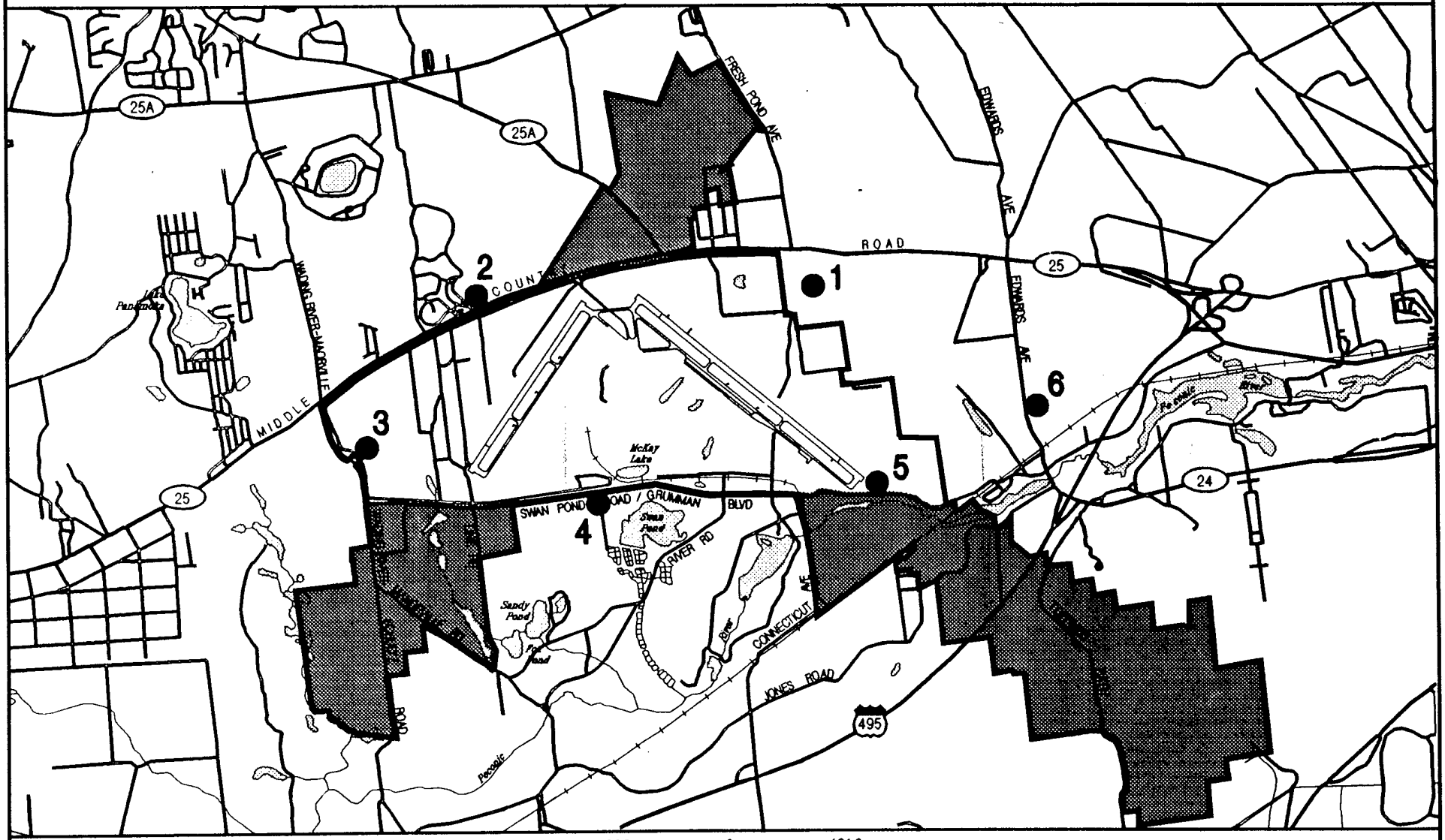


Figure 3.6-1

Table 3.6-4

Existing Sound Levels - Weekdays Sites 1 through 6

Time Period	One-Hour L_{eq} in dBA					
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
AM Peak (7 - 9 am)	66	68	63	62	63	67
Midday (10am - 2pm)	65	65	61	60	59	65
PM Peak (5 - 7 pm)	68	66	64	61	61	68
Pre-Midnight (9pm-12 am)	60	61	59	57	56	61
24-Hour L_{eq}	64	64	60	60	59	65
L_{dn}	66	67	63	62	62	67

Table 3.6-5

Existing Sound Levels - Saturdays Sites 1 through 6

Time Period	One-Hour L_{eq} in dBA					
	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
AM Peak (7 - 9 am)	64	64	62	61	61	66
Midday (10am - 2pm)	61	64	59	60	60	65
PM Peak (5 - 7 pm)	65	65	61	59	62	65
Pre-Midnight (9pm-12 am)	60	60	58	56	57	60
24-Hour L_{eq}	62	63	59	58	59	64
L_{dn}	65	66	63	62	63	66

and Town of Riverhead noise criteria provide a useful yardstick by which to assess the existing noise environment in the study area:

- The USHUD criterion for residential land use is exceeded when the L_{dn} exceeds 65 dBA. Based on existing noise levels, the $L_{dn} = 65$ is exceeded at Sites 1, 2, and 6 for both weekdays and Saturdays.

- The FHWA criterion for Activity Category B land uses (residential, parkland, hospitals, etc.) is 67 dBA. Existing noise levels exceed the FHWA criteria at Site 1 during the pm hour weekdays, Site 2 during the am hour weekdays, and Site 6 during the pm hour weekdays. There are no exceedances on Saturdays. These sites are adjacent to heavily-traveled streets that experience large traffic volumes. At the other three sites, the existing noise levels do not exceed the FHWA criteria; however, the measured ambient levels at all receptors reflect typical levels for suburban areas.

- The Riverhead Town Code criteria for residential land use is exceeded when the L_{eq} exceeds 65 dBA during daytime (7 am to 8 pm) and 50 dBA during nighttime (8 pm to 7 am). Based on existing noise levels, the $L_{eq} = 65$ dBA is exceeded at Sites 1, 2, and 6 during daytime hours for weekdays and Saturdays, and $L_{eq} = 50$ dBA is exceeded at all sites during nighttime hours for weekdays and Saturdays.

3.7 Infrastructure

3.7.1 Water Supply

NWIRP Calverton

Groundwater serves as the source of drinking water for the population residing within a four-mi (six-km) radius of the site (NUS, 1995). Private wells, wells at NWIRP Calverton (described below), at Brookhaven National Lab, and two municipal water systems (Riverhead Water District [RWD] and Suffolk County Water Authority [SCWA]) supply the drinking water needs of the area.

Historically, all the potable and process water needs of NWIRP Calverton were supplied via three wells located on site, near the central area within the fence (Figure 3.7-1, Infrastructure). Permitting and use data on these wells is displayed in Table 3.7-1. A description of groundwater resources in the NWIRP Calverton area is provided in Subchapter 3.10.

Table 3.7-1

Water Supply - NWIRP Calverton

Permit License	Permit Number/Plant Number	Well Depth feet (meters)	General Conditions
Groundwater Pumping	Well No. S-10639/No. 1 Well No. S-49605/No. 2 Well No. S-35110/No. 3	146 (45) 140 (43) 147 (45)	At each well total pumpage cannot exceed 1,000 gallons/minute (or 1.44mgd). Total pumpage for entire site cannot exceed 1.97mgd or 720 mgy.
Source: HR&A, 1996; NUS Corporation, 1995.			

The three on-site wells were completed in the upper glacial aquifer. Well No. 2 was removed from service in December 1989 and Well No. 3 was removed from service in April 1991 because of volatile organic contamination (US Navy, 1986 and Smith, 1991). Grumman added a carbon filtration unit to treat all water prior to use. Because the three production wells were alternately run through the treatment system, they are considered to be back in service and capable of providing water that meets the federal MCLs for VOCs.All three wells are considered back in service and are capable of providing water that meets the federal MCLs for VOCs.

Municipal Water Systems

The RWD and the SCWA are the two municipal water purveyors with wells located in a four-mi (six-km) radius of NWIRP Calverton (NUS Corporation [NUS], 1995).

RWD services about 5,700 customers (22,500 residents) from nine groundwater wells. Two of the nine wells are within a four-mi (six-km) radius of the site. These two wells were completed in the deeper Magothy Formation at depths of 780 ft (238 m) and 490 ft (149 m). It has been estimated that the portion of the population served from by RWD within the four-mi (6-km) radius is approximately 2,096 (Pendzick; 1991a; Riverhead Water District, 1990). RWD is presently expanding its service territory immediately north of NWIRP Calverton, north of Middle Country Road (NYS Route 25).

From its seven groundwater wells, SCWA serves 5,243 customers (12,000 residents). Two of its wells are located within a four-mi (six-km) radius of NWIRP Calverton; the apportioned population served by SCWA within the four-mi (six-km) radius is estimated to be 2,763 residents (Andersen, 1991). These SCWA wells are located in the upper glacial aquifer at depths of 144 ft (44 m) and 146 ft (45 m). SCWA recently started an expansion into existing development surrounding Lake Panamoka, situated between one and two mi (two and three km) west of the site. SCWA also plans to expand into the area north of Brookhaven National Lab, south of Middle Country Road (NYS Route 25), and west of William Floyd Parkway (NUS, 1995).

3.7.2 Sewage System

Storm Drainage

Stormwater runoff from NWIRP Calverton is collected by a gravity storm sewer system comprised of reinforced concrete pipes with diameters ranging from 12 to 54 inches (in) (30 to 137 centimeters [cm]). The overall system consists of ten individual subsystems; the most extensive subsystem discharges the runoff into McKay Lake at the plant entrance near Swan Pond/Grumman Boulevard. Runoff from the other subsystems is discharged through a series of on-site swales. The stormwater drainage system was constructed in the 1950s and is approaching the end of its design life of 50 to 60 years (HR&A, 1996). Table 3.7-2 provides data on the existing stormwater permit for NWIRP Calverton.

Sanitary Sewer

Sanitary sewage from on-site facilities is collected by the gravity sewage drainage system and delivered to the on-site Calverton sewage treatment plant (STP) (Figure 3.7 -1). The sanitary sewer system is made of asbestos cement gravity sewers with diameters ranging from six to ten in (15 to 25 cm). The system was constructed in the 1950s. There are two sanitary sewage lift pumping stations on the site.

Infrastructure

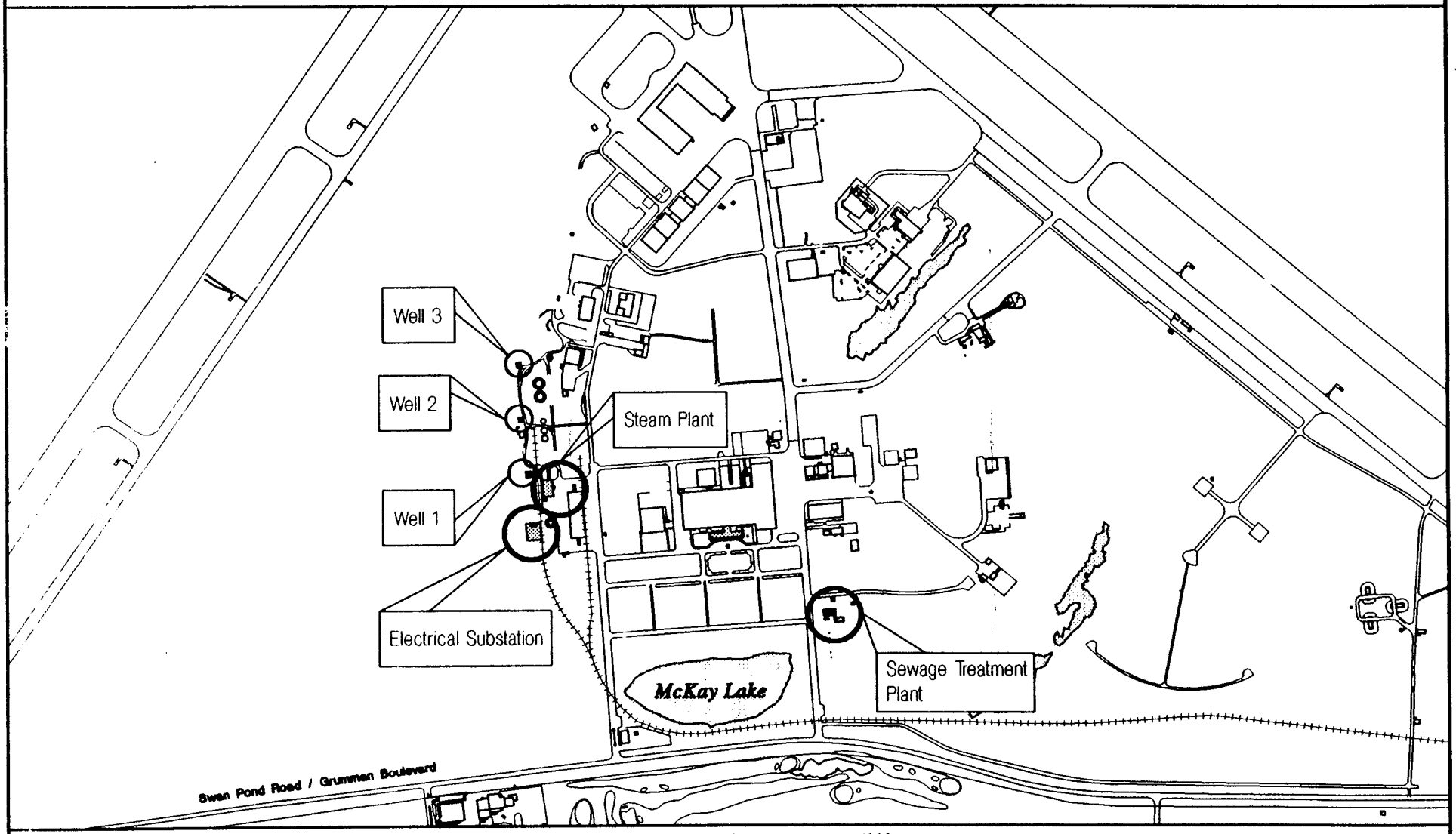


Figure 3.7-1

Table 3.7-2

Stormwater Discharges - NWIRP Calverton

Permit License	Permit/License Number	Date Granted or Renewed/Expiration Date	General Conditions
Stormwater Discharges	General Permit (GP)-93-05	Aug.1, 1993/Aug.1, 1998	Requirements for preparation of stormwater pollution prevention plans, monitoring, and reporting requirements
Source: HR&A, 1996; NUS Corporation, 1995.			

The primary components of the STP include:

- Collection system with lift stations;
- Gravity interceptor;
- Comminutor with bypass;
- Influent pumping station flow equalization tank;
- Aeration tank;
- Two settling tanks;
- Return sludge system;
- Chlorine contact tank;
- Two aerated sludge holding tanks;
- Control building; and
- Retention pond (McKay Lake).

When NWIRP Calverton was fully operational, influent to the STP consisted of sanitary waste from various buildings (including degreased liquid wastes from cafeterias), steam generation plant blow-down, and the discharge from the industrial waste treatment facility (IWTF). The IWTF is a state-of-the-art facility that contains five 6,000-gallon (22,710-liter) batch treatment tanks, holding tanks, and equipment designed to handle waste associated with the chemical stripping of aircraft finishes in preparation for painting. Constructed in 1970, the rated design capacity of the STP is 62,000 gallons per day (gpd) (234,700 liters per day). It utilizes primary sedimentation and secondary activated-sludge process with extended aeration as its treatment method. The treated and chlorinated effluent from the sewage treatment plant is discharged into McKay Lake. Acting as a retention pond, McKay Lake releases overflow along a natural water course, ultimately entering the Peconic River (US Navy, 1994). The primary and secondary sludge produced during treatment is collected into holding tanks for thickening; the supernatant from the sludge tanks is returned to the treatment plant; the sludge is transported to a local treatment plant for processing.

The STP discharge is regulated under the New York State Pollutant Discharge Elimination System (NYSPDES), the state-wide program regulating all surface water discharges. Relevant permitting data is presented in Table 3.7-3.

Table 3.7-3

SPDES Permits - NWIRP Calverton

Permit License	Permit/License Number	Date Granted or Renewed/Expiration Date	General Conditions
State Pollutant Discharge Elimination System	NYSPDES #025453	Feb. 1, 1995/Feb. 1, 2000	Outfalls to McKay Lake 001 - Process & Sanitary Wastewater 002 - Non-Contact Cooling Water 003 - Non-Contact Cooling Water Outfalls to Groundwater 004 - Non-Contact Cooling Water 005 - Non-Contact Cooling Water 008 to 023 - Sanitary Wastewater Surface discharge standards for BOD, heavy metals, coliform, solids, volatile organics; reporting requirements for flow and total nitrogen.

Source: HR&A, 1996; NUS Corporation, 1995.

The STP was operated by an outside vendor. Historical monitoring data show two minor violations of the SPDES permit that were of short duration. Presently, there are no major operational problems at the treatment plant (HR&A, 1996).

3.7.3 Other Utility Systems

Electric

When NWIRP Calverton was operational, electrical service was provided by the Power Authority, State of New York (PASNY); however, since being idled and because of the reduced demand and personnel, power use fell below required contract levels. Presently, incoming electrical service is provided by the Long Island Lighting Company (LILCO) via a 69 kilovolt (kV) switching station located south of the site along Connecticut Avenue and the Long Island Railroad. The switching station is supplied by overhead 69 kV transmission lines from Brookhaven and Riverhead. LILCO's switching station supplies power to the "Connecticut Avenue" substation of NWIRP Calverton located adjacent to the LILCO station. The Connecticut Avenue Substation supplies 69 kV power to the main 69 kV substation on site via a 69 kV overhead distribution line (Figure 3.7-1). The main

substation transforms the incoming 69 kV distribution line voltage to 13.8 kV voltage for use and distribution on site (HR&A, 1996).

Primary electrical distribution is accomplished via 15 kV feeders from the main substation that feed a set of locally mounted step-down transformers. The cables are installed in underground duct banks. There is a limited number of overhead pole lines on site that are also used for primary distribution. Secondary electrical distribution consists primarily of pad-mounted transformers located adjacent to the respective buildings.

Some buildings are equipped with locally-mounted emergency generators that can provide limited power in the event of a power failure.

Gas

NWIRP Calverton has no on-site natural gas piping. The use of a small diameter line to Bldg. 6 for the kitchen was discontinued and the line shut off.

Steam Distribution

The main buildings of NWIRP Calverton are supplied by steam with condensate return from the steam plant (Figure 3.7-1). The 24,000-sq-ft (2,230-sq-m) steam plant was constructed in 1953. From 1954 to 1971 the facility used coal as a source of fuel; in 1972, the plant was modified to use only #4 and #6 fuel oil (CF Braun, 1995) The steam plant is capable of providing heat to 90 per cent of NWIRP facilities (Mastrogiocomo, 1995). Presently, the steam plant is undergoing a major boiler replacement with an estimated completion date of mid-1997. The steam distribution system and the condensate return system are underground direct piping.

3.8 Cultural Resources

The Navy performed an intensive level historic resources survey and a Phase IA archaeological survey (TAMS Consultants, 1996) in compliance with Sections 106 and 110 of the National Historic Preservation Act (NHPA) of 1966, as amended, Executive Order 11593, *Protection and Enhancement of the Cultural Environment*; OPNAVINST 5090.1B, *Environmental and Natural Resources Program Manual*; and NEPA. These laws and regulations require that cultural resources meeting the eligibility criteria of the National Register of Historic places be identified and evaluated. Therefore, the objectives of the intensive level historic resources survey were to establish the historic context of NWIRP Calverton and to evaluate each building and structure with respect to National Register criteria. The objectives of the Phase IA archaeological survey were to determine the presence or absence of intact archaeological resources and to develop appropriate recommendations for future studies, if necessary.

3.8.1 Overview of Prehistoric and Historic Periods

Prehistoric Periods

The prehistoric occupation of Long Island and the northeastern United States represented in this area extends for over 10,000 years. The many Native American occupations for which remains have been collected and analyzed in this region have been broken down into four major cultural periods: Paleo-Indian Period; Archaic (Early, Middle, and Late) Period; Woodland (Early, Middle, and Late) Period; and Historic Period.

- **Paleo-Indian Period** - The Paleo-Indian period followed the retreat of the Wisconsin Glacier approximately 14,000 years ago. This led to the emergence of a cold, dry tundra environment. The earliest human occupation dating to this period is generally represented by limited small surface finds and limited manifestations such as that recovered from the Port Mobile Site in Staten Island where projectile points diagnostic of this cultural period were recovered. The highly mobile nomadic bands of this period specialized in hunting large game animals such as mammoth, moose-elk, bison, and caribou, and gathering plant foods. It has been theorized that the end of the Paleo-Indian Period arose from the failure of over-specialized, big-game hunting.

- **Archaic Period** - In the Archaic period a change to a more generalized subsistence strategy with increased importance placed on gathering a wider variety of plant and animal foods occurred. The environment during the Early Archaic (10,000 to 8,000 years before present [BP]) displayed a milder climate and the gradual emergence of a deciduous-coniferous forest with a smaller carrying capacity for the large game animals of the previous period. The large Pleistocene fauna of the previous period

were gradually replaced by modern species such as elk, moose, bear, beaver, and deer. New species of plant material suitable for human consumption also became abundant. The increasing diversification of utilized food sources is further demonstrated by a more complex tool kit.

The Middle Archaic period (8000-6000 BP) is characterized by a moister and warmer climate and the emergence of an oak-hickory forest. The settlement pattern during this period displays specialized sites and increasing cultural complexity. The exploitation of the diverse range of animal and plant resources continued with an increasing importance of aquatic resources such as mollusks and fish.

The Late Archaic period (6000-3700 BP) was a time of cultural flourishing in Long Island. The Wading River complex, which dates from this period, has been the subject of extensive investigation. The Wading River salt marsh, from which the complex was named, is located only a few miles northwest of NWIRP Calverton. The most commonly identified artifact of the Wading River complex is the thick percussion-flaked point that has a long narrow blade, poorly defined shoulders, and an essentially straight stem.

This time period demonstrates a seasonally-based subsistence pattern with a greatly expanded population base. The Terminal Archaic (3700-1700 BP) is defined as a technologically transitional stage from the pre-ceramic Late Archaic period to the Early Woodland period.

- **Woodland Period** - The Woodland period (3000 BP-European Contact) is generally divided into Early, Middle, and Late Woodland on the basis of cultural materials and settlement-subsistence patterns. The Early Woodland was a continuation of the tool design traditions of the Late Archaic; it marked a transitionary period in which the production and use of ceramics began. Settlement pattern data suggest that the broad-based strategies of earlier periods continued with a possibly more extensive use of coastal resources. This point must be qualified since the larger shell middens of the Woodland Period could simply be representing their greater preservation. The gradually rising sea level around Long Island was likely responsible for the destruction of many earlier coastal shell middens.

  The Early and Middle Woodland periods display significant evidence of a change in settlement patterns toward a more sedentary lifestyle. The discovery of large storage pits and larger sites in general has fueled this theory. Some horticulture may have been utilized at this point but not to the extent that it was in the Late Woodland period.

During the Late Woodland period, food items such as maize, beans, and squash were raised through a specialized agricultural system. This radically different settlement pattern was accompanied by further changes in settlement patterns, social organization, long distance trade networks, and an overall increase in population densities.

- **Historic Period, 1609 - 1952** - Recorded local history begins in 1609, with Henry Hudson's exploration of the New York area. The first English colonists settled in Suffolk County in 1639, including the Town of Southold, which was a religious community. The western portion of Southold eventually became the town of Riverhead. In 1792, Riverhead officially formed as an independent town.

  Suffolk County was mostly agricultural from the time of its settlement until the mid-20th century. In the 18th century, fishing and whaling were also practiced along the coastal areas as well as lumber production and cattle raising inland. The British occupied the county for seven years following the Battle of Long Island (1776) and used it as a supply station for British naval forces. Woodcutting and cranberries became major industries in Suffolk County during the 19th century. The majority of cranberry bogs were in the NWIRP Calverton area - Calverton, Riverhead, and Manorville. Cranberry production thrived until the mid-20th century, with one active bog remaining until 1974. Additional agricultural activities included duck farming beginning in the late 19th century and, for a brief time during the 1920s, a pickle factory operated right near NWIRP Calverton.

  A series of maps reviewed for this report show information about topography and changes in the landscape and property ownership. The earliest cartographic evidence of settled land near NWIRP Calverton is from a circa 1675 map showing "Wading R[iver] Farm." A map from 1731 shows another farm structure called "Land Mark Hills." By 1802, several small farms and roads appear in the area, including Old Country Road which borders the northern fence of NWIRP Calverton. A few roads and structures appear within NWIRP Calverton on other early 19th century maps, but they do not appear in successive, less detailed maps.

A map from 1858 is the first to list landowners within NWIRP Calverton and the roads shown are those bordering the site today. The construction of the Long Island Railroad in the mid-19th century contributed to the further development of Suffolk County. Although it remained rural into the 20th century, the coastal areas were built up as resorts and, after World War II, the population grew quickly and agriculture declined. Maps from 1878 to 1944 show sparse settlement in the area.

The major landowners within NWIRP Calverton were the Davis Family, who came to settle in the area from Boston in 1655, once owning 3,250 acres (1315 hectares); Joseph Raynor, one of Riverhead's 47 original settlers, owning several farms; and William Wells, who owned several farms in the area and whose family held several key positions in the Town of Riverhead. The John H. Wells Cemetery exists at the southeast corner of the site, just beyond the main eastern runway. There were approximately 50 farm and residential structures within NWIRP Calverton, including an estate owned by the Woolworth family, when it was purchased by the Navy in 1952.

Grumman Era at Calverton, 1952 - 1996

NWIRP Calverton was purchased by the US Navy in 1952, built during 1953, and leased in 1954 to the Grumman Corporation for the final assembly and flight testing of jet aircraft. The construction of Government-Owned Contractor-Operated (GOCO) facilities began during World War II to meet a shortfall in production and were later built for the Korean and Vietnam Wars to meet new research, development, and production needs. NWIRP Calverton was built at the beginning of the jet age in aircraft history in response to the production needs of the Korean War.

Founded in 1929, Grumman was the primary producer of the Navy's carrier-based aircraft for over 60 years. Among the company's most significant aircraft were the F4F Wildcat and F6F Hellcat in World War II, the F9F-5 Panther and F9F-6 Cougar in Korea, and, in the last two decades of the Cold War (1946-1989), the A-6 Intruder, EA-6B Prowler, E-2C Hawkeye, and the celebrated F-14 Tomcat. Grumman was the first airframe manufacturer in the country to receive the Navy "E" for excellence, and continued to receive high honors throughout its production history.

The impetus for the construction of NWIRP Calverton was the lack of production and runway space at Grumman headquarters in Bethpage, New York, during the Korean War. With a World War II peak employment of 25,527, Grumman was a major force in the suburbanization of Nassau County. The land surrounding the Bethpage plant was fully developed by 1951 and the Navy looked eastward to more rural Suffolk County for a site within proximity of Bethpage large enough to accommodate Grumman's space needs, including a 10,000-ft (3,048-m) runway, while causing a minimum of noise and safety risks to neighboring residents.

The NWIRP Calverton site was built on 3,000 acres (1,214 hectares) leased to Grumman. Another 3,000 acres (1,214 hectares) were acquired by the Navy in 1960, after a lengthy conflict with the surrounding communities, for the extension of buffer zones beyond the runways. The large size of NWIRP Calverton was intended to meet possible expansion needs in case of wartime mobilization.

The two runways at NWIRP Calverton are 10,000 ft (3,048 m) and 7,000 ft (2,134 m) long. The original group of buildings contained over 600,000 sq ft (55,740 sq m) of space, including a large production facility (Plant 6), testing hangars (Plant 7), and five support facilities including a steam plant, paint shop, and warehouse. Built of innovative precast concrete panels upon wide-span steel frames, the structures were fast and cost-effective to construct. They were designed by the prominent New York City architecture firm of Walker and Poor with Seelye, Stevenson, Value & Knecht as consulting engineers.

Additional facilities were built to meet evolving needs in aircraft testing and production as Grumman increasingly focused upon aircraft electronics (avionics) and advanced methods of airborne electronic warfare (EW) technology. In the late 1950s, in response to the escalating arms race with the Soviet Union, space flight and missile technology began to eclipse jets in the defense budget for research and development. Until the late 1960s, Grumman turned its attention to these programs while improving the development of avionics for aircraft.

The Anechoic Chamber, a hangar designed for the testing of electromagnetic waves of aircraft radar systems, was built in 1968 by the Navy at NWIRP Calverton as a prototype, and was at that time the largest of its kind (able to house an entire aircraft) in the "free" world. Along with the chamber, other facilities, including Plant 8, the Systems Integration Test Station (in Plant 7, now dismantled), and the Electronic Warfare Test Range (now demolished), were built to develop and test the computers, electronics, and radar detection and jamming capabilities of the aircraft. In Plant 6, an "assembly trestle" was installed, markedly improving the production time for aircraft.

The 1980s brought a new wave of construction to NWIRP Calverton to meet the space needs of the growing work force and laboratory facilites used in the development and testing of the F-14 Tomcat as well as the various EW aircraft. Among these new buildings were the AWSACS (Air Warning Support and Control Systems) Development Building, used for flight test evaluation and testing (now demolished); the A-6 Laboratory and Penthouse Building, with activities similar to AWSACS as well as a "black area" (i.e., top secret) laboratory (now demolished); the A-6 Office Building; and the Aircraft Development Support Building (ADSB) and hangars. These new buildings brought the total space at NWIRP Calverton to more than one million sq ft (92,900 sq m).

Grumman was one of Long Island's largest employers, and its impact upon the rural community of Riverhead was felt throughout its presence at NWIRP Calverton. When the land was first acquired in 1952 and the buffer zone added in 1960, there were serious objections from the surrounding communities. Despite NWIRP Calverton's status as a government-owned property, Grumman agreed to pay real estate taxes to the community. On several occasions, the site has been proposed by local

and state authorities as a commercial jetport, which at one point ended in Grumman's threat to leave the region.

The Grumman workforce actively participated in community life. The corporation promoted an informal, familial environment that stressed teamwork, innovation, and high-quality work. The company newspaper, *Grumman Plane News*, regularly reported upon the social life and achievements of Grumman employees. The annual family picnics at Calverton were attended by over 25,000 people and the picnic grounds at the northwest corner of the site had several attractions, including an authentic 1930s hand-carved carousel.

The economic recession that began in 1989, coupled with the decline of defense production after the conclusion of the Cold War, had a visible impact upon the local economy. Grumman was acquired by the Northrop Corporation on May 18, 1994 and, as a result of the completion of Grumman's major F-14 Tomcat contract in 1992 and delivery of the last E-2C Hawkeyes in 1995, NWIRP Calverton closed on February 15, 1996.

3.8.2 Intensive Level Historic Resources Survey

A program of documentary research was conducted on the history of NWIRP Calverton and the general history of naval aviation during the Cold War in order to place the facility in an appropriate historic context. Sources used in preparation of the historic period overview and historic context included local histories, contemporary periodicals, administrative records of NWIRP Calverton, and historic maps. Repositories consulted included:

- Engineering Societies' Library, New York Public Library, NY;
- Grumman History Center, Bethpage, Long Island, NY;
- Sterling Memorial Library, Yale University, New Haven, CT;
- Avery Memorial Architectural Library, Butler Library, Columbia University, NY;
- Naval Historical Center, Washington Navy Yard;
- National Air and Space Museum, Smithsonian Institution;
- National Archives Main Branch, Washington, D.C.;
- Northrop Grumman Public Affairs Office, Bethpage, Long Island, NY;
- National Archives and Records Administration, Regional Archives; and
- Historian's Office, Naval Facilities Engineering Command, Arlington, Virginia.

A review of the National Register files at the Office of Parks Recreation and Historic Preservation in People's Island, New York in January 1996 showed that no architectural or archaeological cultural resources within the NWIRP Calverton property boundaries are listed in the national or state registers. Likewise, no cultural resources determined eligible but not yet listed in the registers are located within NWIRP Calverton.

Although NWIRP Calverton is less than 50 years old, the site was identified as potentially historic in a town-wide survey conducted in 1977 by the Society for the Preservation of Long Island Antiquities. The form is outdated, vague, and historically incorrect and contains no assessment of significance. Although the New York State Historic Presentation Office (SHPO) has had the survey in their files for almost 20 years, the conclusions have not yet been revised.

Upon completion of documentary research, a vehicular and pedestrian field study was conducted. Along with the background research, the purpose of this field study was to permit assessment of the potential significance of historical resources. A Cultural Resource Form K was completed for each building or structure that appeared potentially to meet the Secretary of the Interior's Criteria for Evaluation (36 CFR 60.4). Table 3.8-1 identifies the relevant measures for assessing historic significance. Buildings less than 50 years old are considered ineligible unless considered exceptionally

significant (36CFR 60.4[g]). The research and field examinations indicated that certain structures and buildings at NWIRP Calverton would be considered exceptionally significant under two areas of significance used by the National Register of Historic Places: Military and Engineering. The recommended contexts for the properties are: (1) the development of naval aviation; and (2) electronic warfare during the last 25 years of the Cold War (1965-1989).

Each building or structure at NWIRP Calverton was then evaluated on the basis of whether it possessed: (1) physical or associative characteristics significantly related to the historic contexts (above); .and (2) a sufficient degree of historic integrity as defined by the National Park Service guidelines (Table 3.8-2) to be an exceptional representative of its property type. Buildings or structures that did not meet these requirements were recommended as not eligible.

Three NWIRP buildings individually appear to possess the requisite historic importance necessary to be eligible for listing under Criteria A and C (Table 3.8-1) for their exceptional significance in relation to the development of naval air power during the Cold War:

- The Anechoic Chamber (Bldg 284), used to test for electromagnetic emissions, was the largest of its kind when built;
- Plant 6 was a facility used for the final assembly of aircraft, most notably the F-14 Tomcat; and
- Plant 7 was a facility designed for the development and testing of experimental and production aircraft (e.g., F-14), the testing and development of the EA-6B Intruder, the EF-111B, and other electronic warfare aircraft.

The locations of these buildings appear in Figure 3.8-1 (Eligible Structures at NWIRP Calverton).

Following the evaluation of individual building eligibility, an assessment was made regarding the potential for a historic district at NWIRP Calverton. According to National Park Service guidelines, a district must possess "a significant concentration, linkage or continuity or sites, buildings, or objects united historically or aesthetically by plan or physical development (USDOI, 1991)." As noted in the historic overview, all of the buildings at NWIRP Calverton were constructed within the last 50 years and most of them are unexceptional buildings whose role was not crucial to the conduct of the Cold War.

Although these buildings are united historically by plan and physical development, they should not be considered eligible for the National Register because, as simple ancillary and production buildings, they fail to meet the standards for exceptional significance.

In accordance with the NHPA, the Navy has requested the concurrence of the NYSHPO with the above findings of eligibility and non-eligibility.

3.8.3 Phase IA Archaeological Survey

A review of the files of the New York State Museum (NYSM) and the New York State Historic Preservation Office/Office of Parks Recreation and Historic Preservation (OPRHP) in Albany revealed that 24 sites lie within the general vicinity of the NWIRP Calverton.

There are ten historical sites listed with the New York State Preservation Office within one mi (1.6 km) of NWIRP Calverton. There was no information on file regarding historical sites within the boundaries of the project site or the three buffer areas. Informant interviews also indicated that artifacts made of "white stone" (presumably quartz) had been found around the north shore of Twin Pond and a "road cut" east of McKay Lake. Both of these areas were later investigated through subsurface testing. Documentary analysis also indicated that over the course of the last two centuries, there were once numerous farmhouses and outbuildings at NWIRP Calverton.

To identify the potential for intact archaeological resources at NWIRP, a field survey, supplemented by selective shovel testing, was conducted. In order to maximize the effectiveness of the shovel testing, excavation efforts were concentrated in areas of high sensitivity. These areas were initially delineated using a sensitivity model developed for the Long Island Pine Barrens by Kenneth Lightfoot. Flat or slightly sloping areas near modern or ancient water were considered of higher sensitivity than steep sloped areas or areas that were more than 328 ft (100 m) distant from water sources (TAMS 1996). Using this model, approximately 300 acres (121 hectares) were identified as potentially highly archaeologically sensitive, while the remaining 2,700 acres (1,093 hectares) were identified as potentially low to moderately sensitive (Figure 3.8-2; Prehistoric Sensitivity Areas).

Table 3.8-1

Criteria for Historic Significance

36 CFR 60.4, Part I
The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and: A. that are associated with events that have made a significant contribution to the broad patterns of our history; or B. that are associated with the lives of persons significant in our past; or C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or D. that have yielded, or may be likely to yield, information important in prehistory or history.
36 CFR 60.4, Part II
Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories: A. a religious property deriving primary significance from architectural or artistic distinction or historical importance; or B. a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or C. a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or D. a cemetery which derives its primary significance from graves or persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or E. a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or F. a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or G. a property achieving significance within the past 50 years if it is of exceptional importance.

Table 3.8-2

Integrity Aspects Defined

Aspect of Integrity	Property Attributes
Location	Must not have been moved.
Design	Must retain historic elements that create the form, plan, space, structure, and style of the property.
Setting	Setting must retain its historic character.
Workmanship	Methods of construction from its time of significance must be evident.
Materials	Must retain the key exterior materials dating from the period of its historic significance.
Feeling	Physical features must convey its historic character.
Association	Must be the actual place where a historic event or activity occurred and must be sufficiently intact to convey that relationship to an observer.
Source: US Department of the Interior 1991: 44-45.	

To further refine the assessment of archaeological sensitivity, 376 shovel test pits (STP) were excavated in areas of high potential sensitivity, while 356 STP were excavated in areas of predicted low to moderate sensitivity more than 328 ft (100 m) from freshwater sources. The 356 STP excavated in areas of potentially low to moderate sensitivity yielded only one resource, while 375 artifacts were recovered in the areas of predicted high sensitivity. These materials consisted primarily of lithic debit age (stone debris) resulting from the manufacture and processing of stone tools. In addition, eight projectile points, four tools, one core, two pieces of fire-cracked rock, and two pieces of prehistoric pottery were recovered. One historic resource, a 20th century foundation, was also encountered.

Initial analysis of these artifacts revealed that the prehistoric activity responsible for their deposition dates from the Archaic (8000 to 4000 BP) and Woodland Periods (3000 to 500 BP). Further laboratory analysis found that in the areas around freshwater resources, prehistoric activity was quite varied. It appeared to be transient, and consisted primarily of hunting, foraging, cooking, and tool manufacture and repair (TAMS, 1996).

Based on the field survey, documentary analysis, and the laboratory analysis of the recovered artifacts, five areas within the fence at NWIRP Calverton were identified as areas of high potential

National Register Eligible Properties

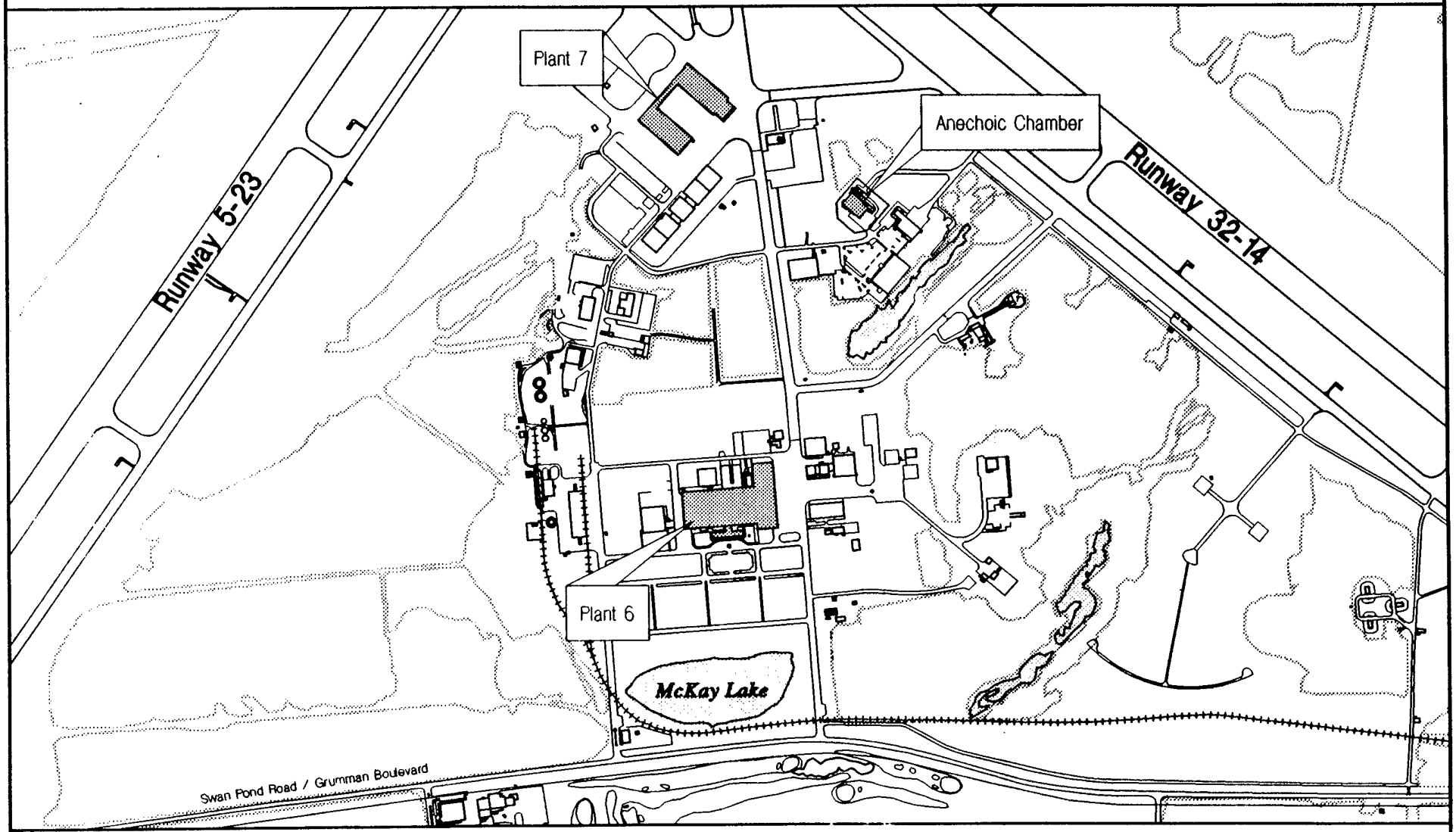


Figure 3.8-1

Prehistoric Sensitivity Areas

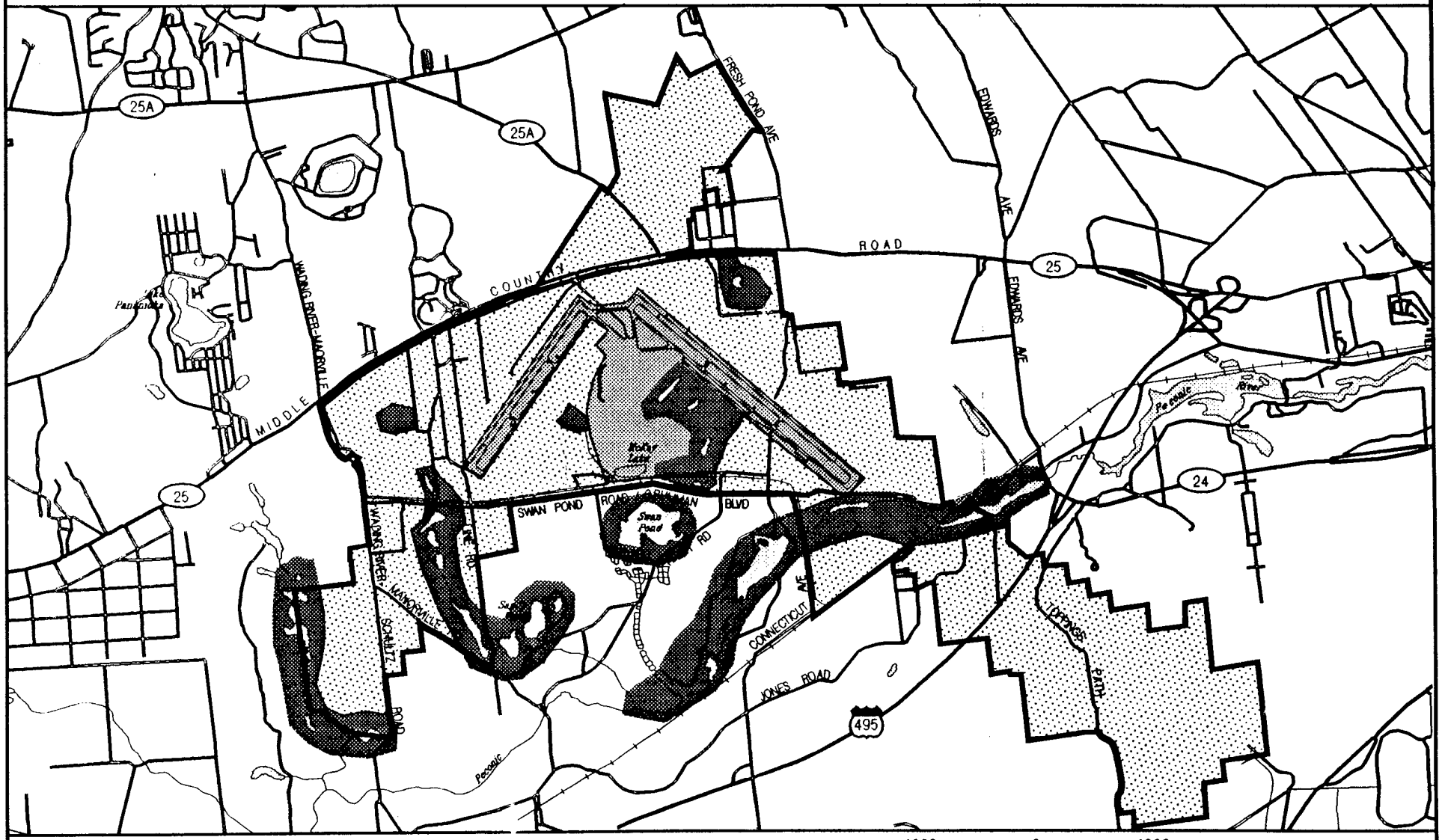


Figure 3.8-2

Historic Sensitivity Areas

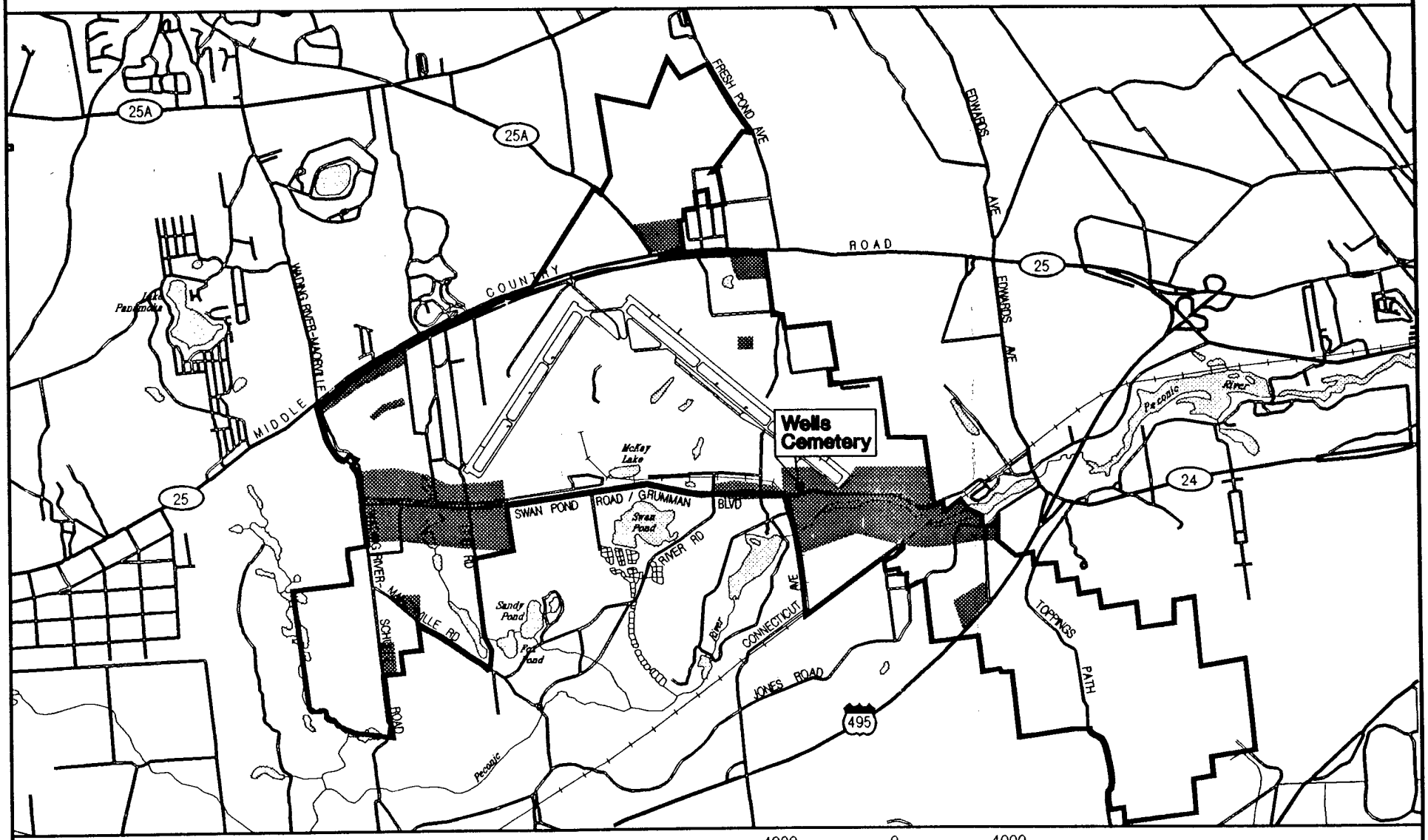


Figure 3.8-3

for finding prehistoric resources. Located adjacent to water sources, these areas are identified on Figure 3.8-2. Areas along Swan Pond Road, including the Wells Cemetery, two areas along Middle Country Road, and one area northeast of the main runway were also identified as possessing high potential for finding historic resources. These locations are identified in Figure 3.8-3 (Historic Sensitivity Map of NWIRP Calverton). The industrial and runway portions of NWIRP Calverton were identified as too disturbed to be likely to yield any archaeological resources. The remaining areas were shown as being of low to medium sensitivity archaeologically. Undisturbed areas where the slope of the land is less than ten percent were identified as being of medium sensitivity and are identified in Figure 3.8-3.

In areas of high and moderate archaeological sensitivity where reuse development is planned, a Phase 1B survey should be performed before any development occurs. In areas of historic sensitivity where development is planned, a more detailed primary documentary research effort should also be performed concurrent with future development planning. If the documentary information indicates that further excavation is warranted, then a Phase 1B archaeological survey should be performed in these areas.

In accordance with the NHPA, the Navy has requested the concurrence of the NYSHPO with the above findings of archaeological sensitivity.

3.9 Topography, Geology, and Soils

3.9.1 Topography

Most of NWIRP Calverton occupies a relatively flat, intermorainal area between the Harbor Hill end moraine to the north and the Ronkonkoma terminal moraine to the south. The landscape surrounding the site is mostly broad farm fields, interspersed with large forested areas. The terrain is a relatively flat, broad, glacial outwash plain sloping to the south.

The area to the west and south of NWIRP Calverton is dominated by the Peconic River, its tributary streams, and numerous associated ponds and wetlands. The land south of the river is a minor escarpment, with irregular hills and rough terrain; forested ridge lines dominate and provide a large area of natural habitat, one of the last on Long Island.

The land of NWIRP Calverton generally slopes from the north to the south, with the lowest area along the Peconic River. Elevations gradually fall from about 100 ft (30 m) above mean sea level (msl) in the northeast buffer zone to a low of about 30 ft (9 m) above msl along the Peconic River (Myers and Gaffney, 1989). South of the Peconic River, in the southeast buffer zone, elevations rise to over 300 ft (91 m) above msl at peaks in the steep, morainic area south of the Long Island Expressway (USGS, 1956 and 1967).

The fenced-in area of the site where the reuse plan would be implemented is gently sloping; elevations range from approximately 39 ft (12 m) to 84 ft (26 m) above msl (USGS, 1967). Slopes are generally under six percent within the fenced area, and the north and southwest buffer zones, except where dissected by drainage swales (USDA, 1975). Some slopes to the south of the Long Island Expressway, within the southeast buffer zone, approach 35 percent.

3.9.2 Geology

NWIRP Calverton is located in the Atlantic Coastal Plain Physiographic Province. The land was created or altered by the activity of four major glacial stages. The youngest glacial event, the Wisconsin, produced Long Island Sound and most of the current topographic features of Suffolk County (USDA, 1975). Most of NWIRP Calverton, north of Swan Pond/River Road, is an outwash plain; south of this road are the remnants of the Ronkonkoma moraine (Myers and Gaffney, 1989).

Approximately 1,300 ft (396 m) of unconsolidated sediments underlie NWIRP Calverton. The sediments consist of four distinct geological units. Listed in order of increasing depth, these units are described as follows (McClymonds and Franke, 1972):

- Upper Glacial Formation is approximately 250 ft (76 m) thick and consists of both glacial till and outwash deposits. The till generally consists of poorly-sorted to unstratified sediments. The outwash deposits consist chiefly of well-sorted and stratified sand and gravel;
- Magothy Formation is approximately 520 ft (158 m) thick and consists chiefly of stratified, fine to coarse sand and gravel;
- Raritan Clay Member of the Raritan Formation is approximately 170 ft (52 m) thick and consists of clay and silty clay;
- Lloyd Sand Member of the Raritan Formation is approximately 400 ft (122 m) thick and consists chiefly of fine to coarse sand and gravel.

Crystalline bedrock, consisting of schist, gneiss, and granite, underlies the unconsolidated sediments beneath NWIRP Calverton. The regional dip is to the south and southeast (McClymonds and Franke, 1972).

A soil boring and sampling program for parts of NWIRP Calverton's fenced-in area was undertaken as part of the Installation Restoration Program to investigate and clean up portions of the site; no similar program was done for the buffer zones (NUS, 1995). The depths of the borings ranged from six to 22 ft (1.8 to 6.7 m) below surface level. Analysis of the borings indicated that much of the fenced area is underlain predominantly by fine to coarse sediments of probable glaciofluvial (glacier and water-based) origin. Three distinct lithofacies were encountered and include (NUS, 1995):

- Upper lithofacies consist predominantly of silty, fine-grained sand with varying amounts of peat and clay, representing a mixture of soil, fill, and glacial deposits;
- Middle lithofacies consist of predominantly fine-grained sand with varying amounts of medium to coarse-grained sand, and pebbles, probably representing undisturbed glacial deposits; and
- Lower lithofacies consist of micaceous, silty clay.

3.9.3 Soils

NWIRP Calverton lies within two soil associations: the Haven-Riverhead association, which occurs generally north of the Swan Pond/River Road, and the Plymouth-Carver association, which occurs south of the road (USDA, 1975). Approximately three-quarters of the fenced-in area and the northern buffer zone fall within the Haven-Riverhead association. The remaining one-quarter of the

fenced-in area and the southwest and southeast buffer zones fall within the Plymouth-Carver association.

Haven-Riverhead Association

The Haven-Riverhead association soils are deep, nearly level to gently sloping, well-drained, medium-textured, and moderately coarse textured soils that occur on outwash plains (USDA, 1975). The association is nearly level and has short gentle slopes along shallow drainageways. Some areas are pitted by steep-sided kettle holes. Slopes range from one to 12 percent. Haven soils make up about 40 percent of the association and Riverhead soils make up about 30 percent; minor soils comprise the remaining 30 percent. Haven and Riverhead soils are together across most landforms; however, Haven soils are most extensive at slightly higher elevations and at greater distances from the drainageways. The characteristics of Haven and Riverhead soils are (USDA, 1975):

- Haven soils are deep, well-drained, and medium-textured. Their surface layer is loam and their subsoil is loam or silt loam. The substratum is sand and gravel. Depth to the substratum ranges from about 18 to 36 in (45 to 91 cm).

- Riverhead soils are deep, well-drained and moderately coarse-textured. Their surface layer and subsoil are sandy loam. In many places, however, the lower part of the subsoil is loamy sand. The substratum is sand and gravel. Depth to the substratum ranges from about 22 to 36 in (56 to 91 cm).

Riverhead and Haven are productive soils and are used extensively for agriculture and development; most areas of this association have been cleared (USDA, 1975). These soils have moderate to high available moisture capacities. From the Brookhaven-Riverhead town line eastward, the soils in this association make up the largest area of farmland in the county, and they are used extensively for potatoes and other vegetables.

Because of its good drainage and the ease of excavation, this association has excellent potential for housing developments and similar uses. In places where the soils have a high water table or have steep slopes, however, limitations are more severe for most non-farm uses. The soils are strongly acid and highly erodible. Long bare slopes as flat as two percent are subject to sheet erosion caused by rain. On three percent or steeper slopes, sheet erosion often turns into rill erosion (erosion via small streams), causing greater soil loss, sometimes in the range of ten tons or more per acre. Conservation measures are required to prevent erosion.

Plymouth-Carver Association

The Plymouth-Carver association is rolling and hilly. It contains deep, excessively drained, coarse-textured soils that occur on the Ronkonkoma moraine (USDA, 1975). These soils are characteristically steep-sloping, with slopes ranging from eight to 35 percent. Plymouth loamy sand

soils make up about 45 percent of the association, and Carver and Plymouth sands make up about 30 percent. The characteristics of Plymouth soils and Carver and Plymouth sands are (USDA, 1975):

- Plymouth soils are deep and excessively drained. The substratum is sand and gravel. Depth to the substratum ranges from 20 to 36 in (51 to 91 cm).

- Carver soils are deep and excessively drained. Their surface layer and subsoil are sand. The substratum is sand and gravel. Depth to the substratum ranges from 16 to 32 in (41 to 81 cm).

Carver and Plymouth sands generally are the steeper soils on ridgetops and the lower part of slopes (USDA, 1975). The more gently sloping Plymouth loamy sand soils are mainly on the intervening areas. Areas along the crests of some ridges have a large amount of gravel on the surface. These gravelly areas generally are very small and are scattered throughout the association. The soils of this association have a characteristically poor cover of scrub oak, white oak, and pitch pine.

Plymouth and Carver soils are coarse-textured, excessively drained, rapidly permeable, and droughty. Natural fertility and organic matter content is low to very low. Plymouth soils are also highly erodible. If exposed for agriculture or development, the Plymouth soils are easily eroded by both wind and water. These factors make Plymouth and Carver soils poor for most crops commonly grown in the county. Only a small part of this association has ever been farmed, and many of these areas have been allowed to revert to brush.

Steeper slopes and difficulty in establishing and maintaining lawns and landscape plantings for the reasons described above severely limit Plymouth and Carver soils for housing developments or similar non-farm uses. Because these soils are highly permeable, movement of water and wastes through them is rapid; these soils are also excellent recharge areas for ground water supplies.

Hydric Soils

Hydric soils are those soils that are saturated, flooded, or ponded long enough during the growing season to produce low oxygen conditions that are detrimental to most plants, but that favor hydrophytic plants (plants that live and survive in wet conditions). These soils in their undrained condition are usually classified as wetlands. There are four hydric soils that occur on NWIRP Calverton - Atsion, Berryland, muck, and Wareham soils. Only small portions of the fenced-in area of NWIRP Calverton are hydric soils; these soils types are more prevalent in the southeast and southwest buffer zones, although not as extensively as mapped in the Soil Survey of Suffolk County (USDA, 1975). Wetlands of NWIRP Calverton are discussed in Subchapter 3.10 and 3.11.

3.10 Water Quality and Hydrology

3.10.1 Surface Water

Most of NWIRP Calverton is located within the Peconic River drainage basin. The drainage basin to the main portion of NWIRP Calverton originates one to 1.5 mi (1.6 to 2.2 km) north of state Highway 25 (Myers and Gaffney, 1989). Surface water generally moves in a southerly direction towards the Peconic River.

The Peconic River is the largest stream in Suffolk County (Figure 3.10-1, Surface Water Features). It originates on the Brookhaven National Laboratory property, west of NWIRP Calverton. The Peconic River flows easterly across the southeast buffer zone, passing within approximately 500 ft (152 m) of the fenced-in area, near the southern terminus of Runway 32-14 (Braun, 1995). From just south of the runway, the river flows 1.9 stream mi (3.1 stream km) eastward into Peconic Lake. The Peconic River is tidally influenced below the dam on Peconic Lake and discharges to Peconic Bay, 8.5 stream mi (13.7 stream km) from NWIRP Calverton.

A small, perennial tributary originates between the two runways west of the building complex on NWIRP Calverton, flows south through a series of old cranberry bogs along the main entrance through McKay Lake and Swan Pond, then into the Peconic River. A second stream originates near North Pond at the southwest end of the Runway 5-23, flows through Prestons Pond and Forest Pond, into Linus Pond, then into the Peconic River. A third perennial tributary that originates northwest of the site in Lake Panamoka flows south across the southwest buffer zone through a series of small ponds (Sandy Pond, Grassy Pond, and Jones Pond) then into the Peconic River.

On NWIRP Calverton, most of the bodies of water are a combination of a pond and wetland, because of their shallow nature and greatly fluctuating water levels. On NWIRP Calverton there are 16 ponds and wetlands, ranging in size from about one-quarter to ten acres (one-tenth to four hectares). Six are in the fenced area and ten are in the southwest buffer zone (Figure 3.10-1). Several of the ponds, e.g., North Pond, Northeast Pond, and the Runway Ponds, lie in landlocked depressions and have no outfalls.

The largest pond that is entirely on the site is McKay Lake, a man-made groundwater recharge basin, about nine acres (4 hectares) in size (Braun, 1995). Although Grassy Pond is larger than McKay Lake, (12 acres [5 hectares] in size), only about three acres (1 hectare) of it are on NWIRP Calverton. McKay Lake receives non-contact cooling water discharge from industrial activities, treated sanitary effluent, and stormwater runoff from paved areas in the centrally developed (or industrial core) of NWIRP Calverton. McKay Lake has an intermittent discharge to Swan Pond (located on a privately-owned golf course), which discharges to the Peconic River via a series of former cranberry bogs.

The ponds and wetlands of the area are formed by the water table intersecting the land surface. When the water table lowers, the water levels in the ponds drop, sometimes to near desiccation. During drought years, in addition to the Peconic River, only McKay Lake and a small area of Prestons Pond retain water. The other ponds are shallow, less than 6 ft (2 m) in depth, and occasionally dry up during years of low rainfall. Among these, only the deeper ponds - Grassy, Jones, Linus, and Forest ponds - retain permanent water during most years. According to the NYSDEC, most of the ponds were desiccated or nearly desiccated in 1981 and again in 1988 (Myers and Gaffney, 1989).

NYSDEC has classified the Peconic River in the immediate vicinity of NWIRP Calverton as a Class "C" freshwater; McKay Lake and all other ponds on the site are also classified as "C" waters. The best use of these waters as designated by the state is for fishing; these waters are to be suitable for fish propagation and survival. The water quality shall also be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes (NYCRR, Title 6, Parts 701 and 921). While the quality of the water in the Peconic River and the larger ponds is suitable to support fish, the depth of the small ponds and their tendency to dry up in droughts limits their potential for maintaining a population of fish (Myers and Gaffney, 1989).

New York State Wild, Scenic and Recreational Rivers Systems Act

The stated policy of the New York State Wild, Scenic and Recreational Rivers System Act (Title 27 of Article 15 of the Environmental Conservation Law) is that designated rivers of the state and their immediate environs possessing outstanding values (natural, scenic, ecological, recreational, aesthetic, botanical, geological, hydrological, fish and wildlife, historical, cultural, archaeological, and scientific) be preserved in a free-flowing condition and be protected. Segments of the Peconic River and three of its tributaries are designated "scenic" near NWIRP Calverton. The "scenic" designation is one of thee classes of rivers defined in the Act:

> "Scenic rivers are generally free of diversions or impoundments with limited road access. Their river areas are essentially primitive and undeveloped or are used for agriculture, forest management and other dispersed human activities which do not in themselves substantially constrain public use and enjoyment of these rivers and their environs. Management of scenic river areas will be directed to preserving and restoring their natural scenic qualities (Part 666.4)".

The Act allows a river area width of up to 0.5 mi (0.8 km) from either bank of the river. The location of the river corridor in relation to NWIRP Calverton is displayed in Figure 3.10-1. In the western portion of the site, the scenic corridor traverses the Pine Barrens CPA, parallels a portion of Grumman Boulevard, winds its way across the developed industrial core, and crosses the southern portion of Runway 32/14. Within the regulated area of the scenic corridor, new multiple-family dwellings, commercial, and industrial uses are not permitted.

Surface Water Features

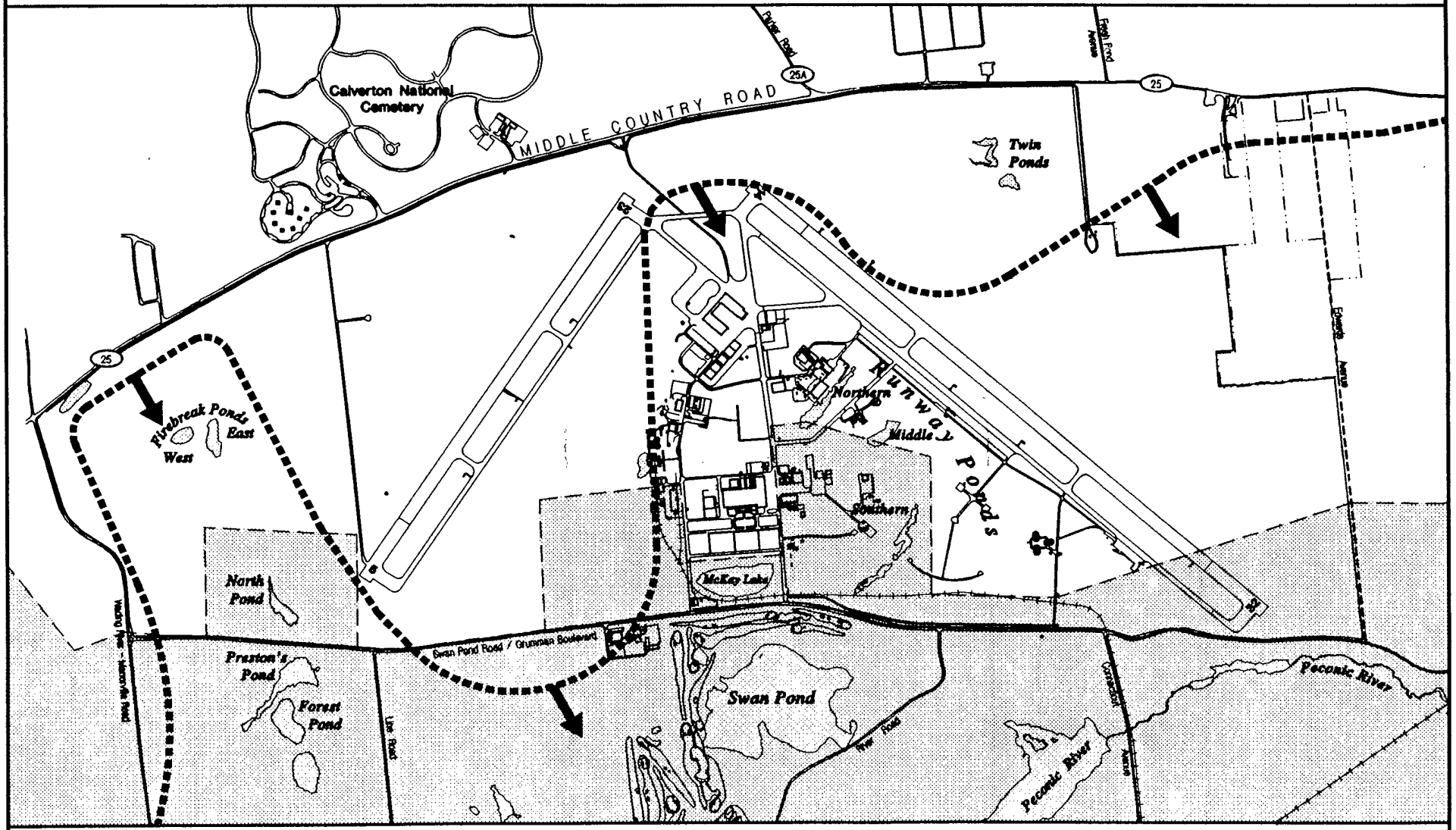


Figure 3.10-1

The Peconic Estuary Program's Management Plan, discussed in the next section, also addresses the scenic river designation of the Peconic River. It recommends setbacks of 250 ft (76 m) for new building in the scenic portion of the river, minimum setbacks of 75 ft (23 m) from the landward edge of tidal wetlands, and limiting development within 100 ft (30 m) of freshwater wetlands.

At the time of field reconnaissance in the spring and summer of 1996, most of the existing scenic corridor on NWIRP Calverton was completely dry, except for the wetlands through which it passes. The corridor is crossed by several roads within NWIRP Calverton and there at least two culverts with piping within the scenic corridor for the conduct of stormwater.

Peconic Estuary, National Estuary Program

In 1987 the Clean Water Act (CWA) was amended to provide for creation of a National Estuary Program (NEP) to promote long-term planning and management in nationally significant estuaries that are threatened by pollution, development, or overuse (LIRPB, 1993). The Peconic Estuary was designated in September, 1991. The Peconic Estuary contains a large variety of natural communities, from upland pine barrens along the Peconic River to soft-bottom benthos in the bays. There is a larger percentage of undisturbed habitats and a greater diversity of natural communities within this watershed than anywhere else in the coastal zone of New York State (Suffolk County Department of Health Services Office of Ecology [SCDHS], 1995).

A Comprehensive and Management Plan (CCMP) for the Peconic is to be prepared; at the present time a preliminary plan, or working draft, is available (SCDHS). The final CCMP is scheduled to be produced in July 1997. The CCMP is prepared to address three management areas:

- water and sediment quality, dealing with abatement and control;
- living resources, focusing on protection and restoration; and
- land use and water resources, including conservation areas and special protective legislation and initiatives.

One of the nutrients of concern in the Peconic Estuary is nitrogen that can lead to excessive algal blooms and lowered dissolved oxygen levels. The NYSDEC has accepted a nitrogen guideline of 0.5 milligrams per liter (mg/l) for the Peconic River. A prior study published in 1988 by SCDHS known as the Brown Tide Comprehensive Assessment and Management Program (BTCAMP) identified the Riverhead Sewage Treatment Plant (STP) as the most significant of all controllable nitrogen loadings in terms of impact on the estuarine system. This impact is due to the concentrated nature of the discharge near the mouth of the Peconic where tidal flushing is poor. Modeling projected that removal of the Riverhead STP would result in attainment of the nitrogen guideline (SCDHS, 1995). BTCAMP recommended that, from a natural resources and surface water quality perspective, groundwater recharge seems to be the most desirable alternative for the Riverhead STP; this would result in additional filtration of effluent through the soil and elimination of potential surface water contamination during upset conditions. The town of Riverhead has committed to freezing nitrogen

loads from its STP via a Town Board Resolution. The long-range plan for the Riverhead STP may be in the form of a groundwater discharge (ten mg/l total nitrogen), a relocated surface water discharge, or reduced nitrogen loads at the existing discharge point.

BTCAMP also recommended more stringent land use controls for the Peconic River, such as two-acre (0.8-hectares) zoning for the groundwater-contributing area of which the fenced-in portion of NWIRP Calverton is a part.

3.10.2 Groundwater

Three major aquifers underlie NWIRP Calverton. From the ground surface in descending order, these are:

- Upper Glacial Formation aquifer, widely used as a source of groundwater in Suffolk County. The water table beneath NWIRP Calverton lies within this aquifer. Porosities in excess of 30 percent have been calculated in the adjoining Nassau County; the estimated value of hydraulic conductivity (the speed at which water moves through the formation) is 270 ft (82 m) per day;

- Magothy aquifer, widely used as a source of groundwater in Suffolk County. The most productive units are the coarser sands and gravels. The permeability is high; hydraulic conductivities in excess of 70 ft (21 m) per day have been calculated;

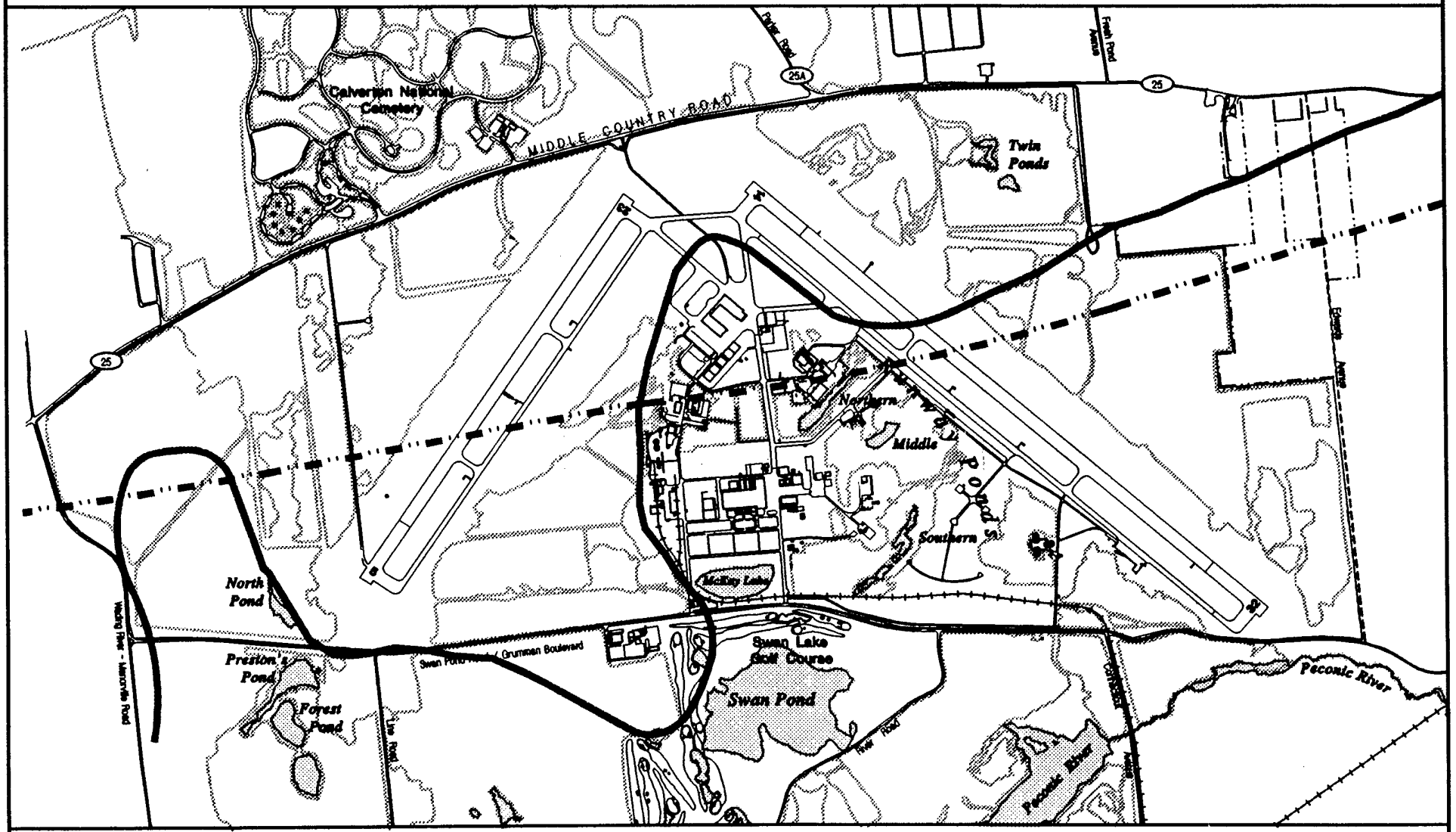
- Lloyd Sand aquifer, a potentially excellent aquifer, not widely exploited because of its depth and the abundant water available in the overlying aquifers. Estimated hydraulic conductivities range from 20 to 70 ft (6 to 21 m) per day (SCDHS, 1987: McClymonds and Franke, 1972:

The Upper Glacial and the Magothy aquifers are believed to be hydraulically connected and to function as a single unconfined aquifer (Braun, 1995). The Raritan Clay, which overlies the Lloyd Sand aquifer, has a very low permeability and hydrologically acts as a regional confining layer.

The water table at NWIRP Calverton is at an elevation of between 40 and 50 ft (12 to 15 m) above msl, being deeper towards the west (SCDHS, 1987). Based on soil borings in the NWIRP Calverton fenced area, the depth to water table is estimated to range from about five (two m) beneath the south-central part of the fenced area to approximately 20 ft (6 m) beneath the northeastern part (NUS, 1995).

A groundwater divide cuts across the NWIRP Calverton fenced area as shown in Figure 3.10-2 (Groundwater Divide). Groundwater in the shallow aquifer zones (upper Glacial and upper Magothy

Groundwater Divide



Groundwater Divide

Groundwater Contributing to Peconic River

Water Feature

Source: Koppelman, et. al, 1993.

2000 0 2000

Scale in Feet

500 0 500

Scale in Meters

N

Figure 3.10-2

aquifers) beneath the north buffer zone and the northern half of the fenced area flows to the northeast, probably discharging into Long Island Sound (Rogers, Golden and Halpern, 1986; NUS, 1995). The shallow aquifer zone groundwater beneath the southwest and southeast buffer zones and beneath the southern half of the fenced area flows to the southeast. The southeast-draining groundwater probably discharges into the Peconic River and its associated ponds and wetlands.

Groundwater serves as the source of drinking water for population residing within a four-mi (six-km) radius of NWIRP Calverton (NUS,1992). The drinking water needs are supplied by private wells, wells on two government-owned facilities (NWIRP Calverton and Brookhaven National Lab), and three municipal water systems, Riverhead Water District, Shorewood Water Company, and Suffolk Water Company.

The aquifer beneath Suffolk County was designated by USEPA as a sole source aquifer in 1978, concluding that the system was the principal source of drinking water to the people of Long Island. Any federally funded projects must be reviewed by USEPA to ensure that the sole source aquifer would not be adversely affected.

The NYSDEC regulates potential sources of groundwater contamination. New source discharges and renewed permits on NWIRP Calverton would be reviewed for effluent standards Class GA waters (6 NYCRR 703.6). These standards require that groundwater discharges with respect to coliform and pathogens cannot be detrimental to public health, safety, and welfare. NYSDEC has also established groundwater standards for principal organic containment values, and guidance values for a variety of chemicals.

NWIRP Calverton served about 2,800 workers with potable water from three production wells located approximately 2,500 to 2,750 ft (762 to 838 m) north of the south gate. The three wells were completed in the upper glacial aquifer (at depths ranging from 140 to 147 ft [45 to 47 m] below the surface), each with an estimated capacity of 1,000 gallons per minute (gpm). Well No. 2 was removed from service in 1989 and Well No. 3 was removed from service in 1991 because of volatile organic contamination (Navy, 1896; Smith, 1991). These three production wells were alternately run through a carbon filtration treatment system and are considered to be back in service (US Navy, August 1995). There are also two wells located off the site that were used by Grumman Corporation as production wells for Plants 8 and 78 in the fenced area of the site. The production well at Plant 8 was used a potable water supply for that Plant. Additional information on the water supply system is presented in Subsection 3. 7.

Groundwater contamination in Suffolk County has been investigated by the Suffolk County Department of Health Services, using data from public and private wells (SCDHS, 1987). Two wells used in the county survey are located in the vicinity of NWIRP Calverton.

The first well (Well 51591) is located 25 ft (8 m) north of Swan Pond Road and 213 ft (65 m) west of River Road, about 1,500 ft (457 m) southeast of the NWIRP Calverton waste treatment plant.

Analysis of water taken from this well between 1981 and 1987 showed some low concentrations of nitrates and ammonia, which generally indicate proximity to septic system waste (SCDHS, 1987). Recent tests on this well, conducted in 1993, revealed a detection of 1,1,1 trichloroethane (TCA) at 4 ppb. 1,1 dichloroethane (DCA) was detected at a concentration of 27 ppb, which is slightly above the federal MCL for this chemical of five parts per billion (ppb). These chemicals could be from waste treatment facilities, septic systems, or industrial solvents.

The second well (Well 51592) is located 179 ft (55 m) south of the intersection of Schultz Road and Wading River Road in the southwest buffer zone. Analysis of this water over the same time period indicated that it is of good quality, with only very low concentrations of nitrates (SCDHS, 1987).

Special Groundwater Protection Area

In 1992, the Long Island Comprehensive Special Groundwater Protection Area (SGPA) Plan (Long Island Regional Planning Board [LIRPB], 1992) was prepared to assist in the further protection of groundwater resources in Suffolk/Nassau region. Approved in 1993 by NYSDEC, the plan requires that new land uses produce no net increase in the levels of polluting constituents in the groundwater supply.

For Suffolk County, the LIRPB established nine Special Groundwater Protection Areas (SGPAs) with specific requirements for land use activities and groundwater. NWIRP Calverton lies completely within the Central Suffolk SGPA. The fenced-in area and northern buffer are in the northern part of the SGPA; the southern buffer zones are in the southern part of SGPA. SGPAs are considered critical environmental areas (CEAs) pursuant to the State Environmental Quality Review Act (SEQRA). A CEA is "a specific geographic area designated by a state or local agency, having exceptional or unique characteristics that make the area environmentally important (Section 617.2 (I) of Title 6 New York Codes of Rules and Regulations [NYCRR]).

The quality of the groundwater, particularly the shallow groundwater, within the SGPA has been impacted by point and non-point sources of contamination. STPs represent a major category of point sources within the SGPA (LIRPB, 1992). Landfills, other potential hazardous waste disposal sites, and spills and leaks of petroleum products are other major point sources. Specific areas of concern within NWIRP Calverton are described in Subchapter 3.12.

In the SGPA, non-point sources are common and significant and include unsewered medium density residential and commercial developments that release nitrogen through cesspools; farming activities and impacts from plant nutrients (like nitrate) and pesticides; and accidental spills or discharges of hazardous substances.

Selected recommendations from the SGPA Plan for the Town of Riverhead (unless otherwise noted) for the area near NWIRP Calverton include the following:

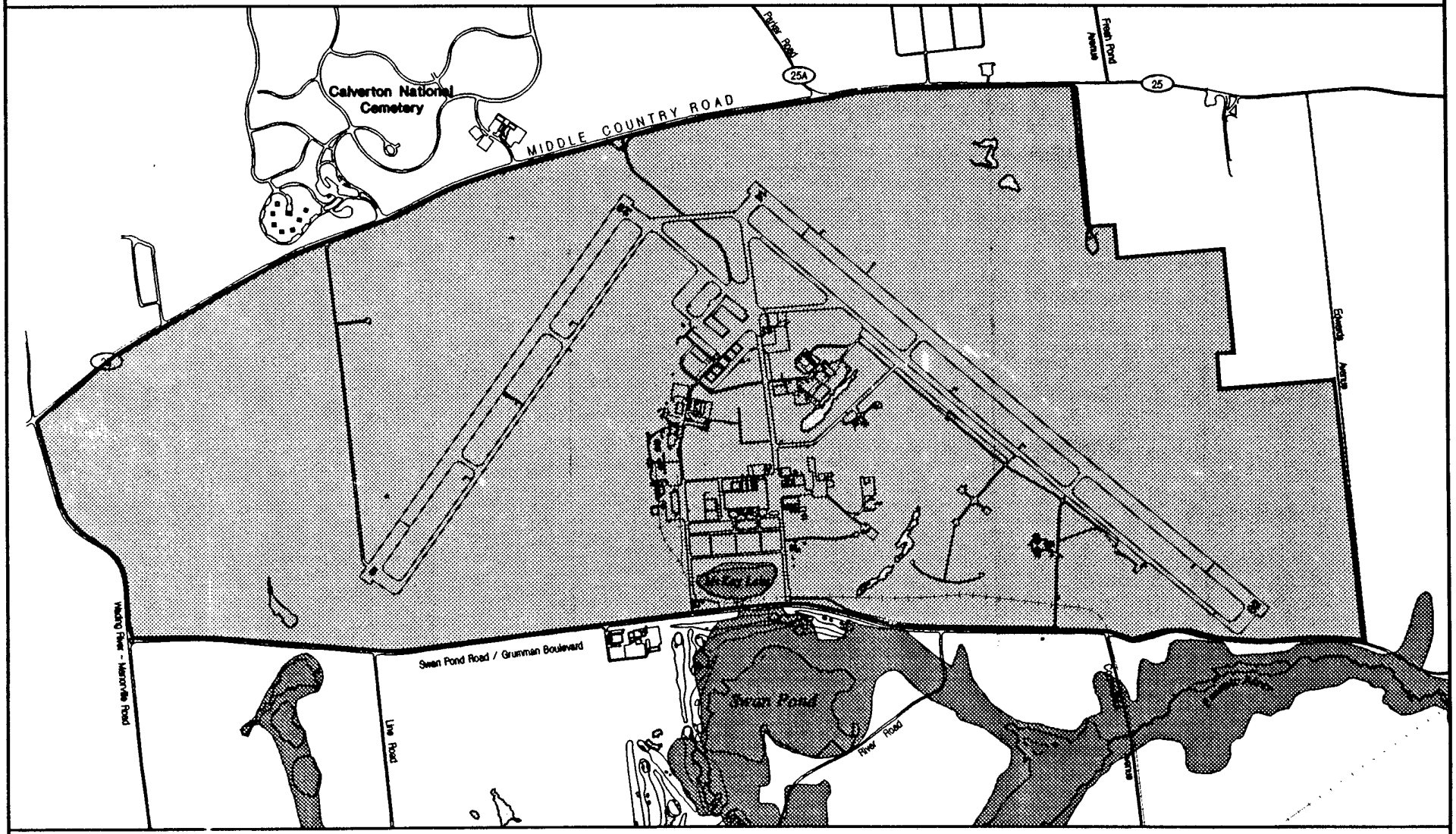
- Along with Suffolk County, expand the existing agricultural preserve;
- Amend the town zoning ordinance requiring five-acre (two-hectare) minimum lot size for all farmland in the SGPA;
- Require clustering of new development in the town where transfer of development (TDR) is infeasible;
- Place excess lands at the National Cemetery and in the NWIRP Calverton buffer zones in a protected category and retain them as open space;
- Reduce the amount of industrially-zoned land and concentrate these uses at the end of the Long Island Expressway; and
- Review and amend the town zoning ordinance to preclude expansion of commercial activities beyond the existing limits in the SGPA.

3.10.3 Floodplains

The 100-year floodplain, as defined by the Federal Emergency Management Agency (FEMA) of the US Department of Housing and Urban Development, has been delineated for the Peconic River. Figure 3.10-3 (Peconic River Floodplain) shows the boundary of the 100-year floodplain. No part of the NWIRP Calverton fenced area where reuse would occur lies within the 100-year floodplain of any rivers or streams; only parts of the southwest and southeast buffer zones are within the Peconic River floodplain.

For the most part, flooding is limited to a narrow band along the river and its major tributaries, because the topography rises fairly rapidly. The 100-year floodplain is delineated around the Swan Pond tributary as far upstream as McKay Lake, along Linus Pond, upstream to Prestons Pond, along Jones Pond, Grassy Pond, Sandy Pond, Peasys Pond, and upstream to Horn Pond.

100-Year Floodplain



100-Year Floodplain

Property within fence

Existing Building

2000 0 2000
Scale in Feet

500 0 500
Scale in Meters

N

Source: Myers & Gaffney, 1989.

Figure 3.10-3

3.11 Terrestrial and Aquatic Environment

NWIRP Calverton, located within the Long Island Pine Barrens, is home to many plant and animal species, some of which are classified as endangered or threatened (Central Pine Barrens Joint Planning and Policy Commission [CPBJPPC], 1995). The land surrounding NWIRP Calverton is generally sparsely settled, reflecting the existing agricultural economy. As described in Subchapter 2.1, the buffer zones of NWIRP Calverton constitute about half of the total property acreage. The buffer provide habitat for many plants and animals. Based on a cooperative agreement between the Navy and NYSDEC, the buffer lands are used for a variety of conservation, agricultural, fish, wildlife, recreation, and educational activities.

3.11.1 Vegetation

Because NWIRP Calverton is within the pine barrens region of Long Island, pitch pine-oak is the dominant upland plant community. Other communities found at NWIRP Calverton include upland hardwoods, planted spruce (*Picean* spp.), pine (*Pinus* spp.), larch (*Larix* spp.) locust (*Gleditsia* spp.), and open water and wetlands.

The *Natural Resource Management Plan* for NWIRP Calverton (Myers and Gaffney, 1989) separated vegetation within the fenced area and the buffer zone into three management categories: improved, semi-improved, and unimproved. Table 3.11-1 provides the approximate acreage of vegetation in each of these management categories by area.

Other than the developed lands within the fenced area and the agricultural outleases in the buffer zones, most of NWIRP Calverton supports forest dominated by pitch pine and upland oaks (Figure 3.11-1, Generalized Vegetation Cover). Dominance by pitch pine is generally greatest in the southwest and southeast buffer zones, where sandy, xeric (dry) soils are prevalent, while dominance by oaks and other hardwoods is generally greatest in the fenced area and the north buffer zone, where soils are more mesic (moist). In addition, wildfires have been suppressed in the fenced area to protect buildings and agriculture (Braun, 1995). Several tracts in the fenced area, north and east of Runway 32-14, support plantations of white pine and spruce, established in the 1960s. Other vegetation cover includes (Myers and Gaffney, 1989; NUS, 1995; CF Braun, 1995):

- Wetland vegetation associated with the Peconic River as it passes through the Southeast Buffer Zone, and with areas surrounding the ponds in the fenced area and the Southwest Buffer Zone;

Table 3.11-1

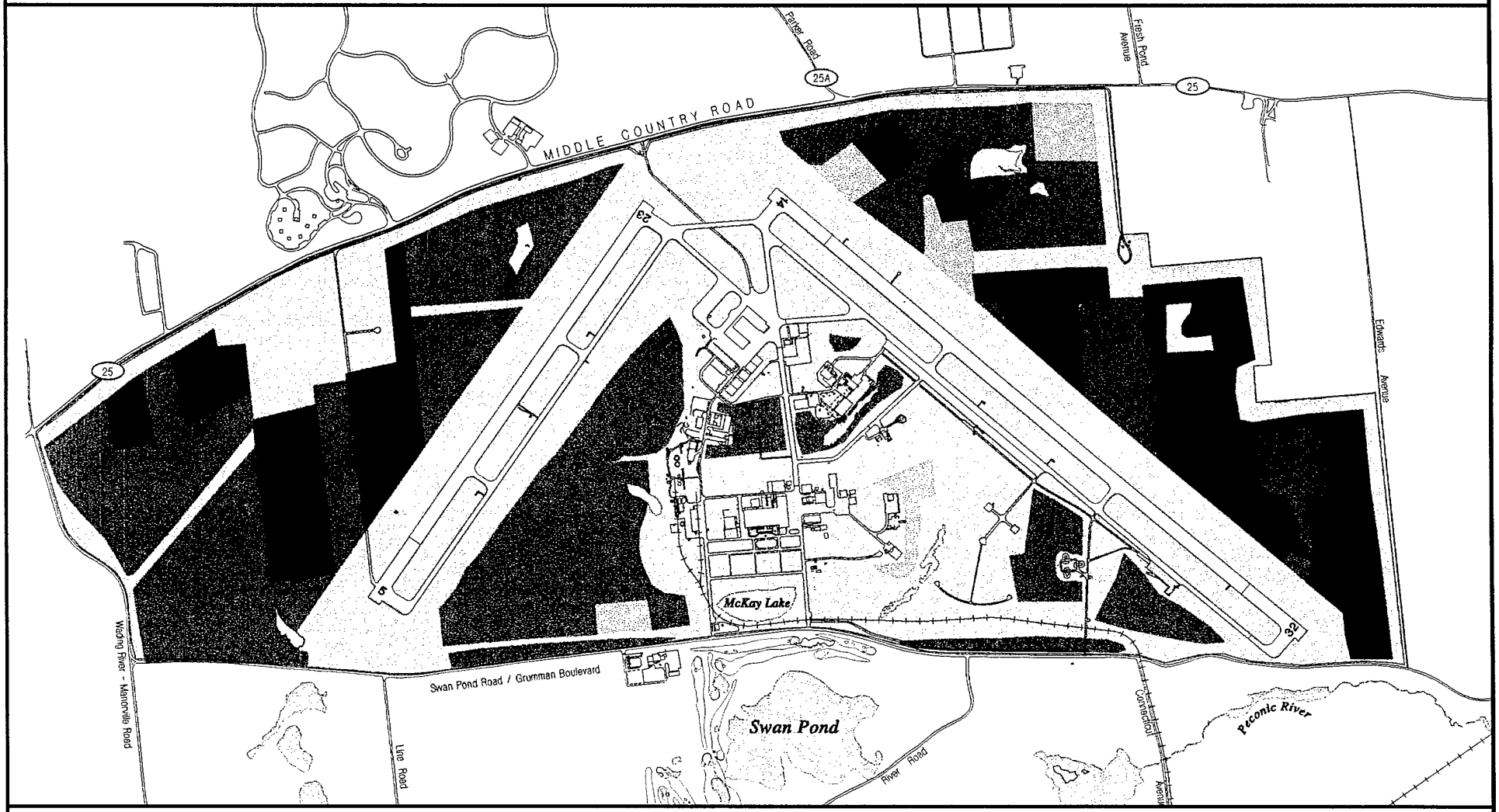
Approximate Acreage of Vegetation by Management Categories

Vegetative Management Category	Fenced Area	Buffer Zones			Total	Percent of Total
		N	SW	SE		
Improved (frequently mowed)	67	-	-	-	67	1.1
Semi-Improved (infrequently mowed)						
Grassland	789	-	-	-	789	13.0
Wildlife Food/Cover Plantings	-	5	169	2	176	2.9
Unimproved						
Forest	1,562	239	566	1,500	3,868	63.8
Water/Wetlands	28	trace	93	130	251	4.1
Power Line Right-of-Way	-	-	3	4	7	0.1
Agricultural Fields	-	366	-	45	411	6.8
Buildings and Paved Areas	477	-	4	11	492	8.1
Total	2,923	610	835	1,692	6,061	100

Note: The Forest Management Plan shows 4,239 acres of forest land, as opposed to the 3,868 acres indicated above. Wooded wetlands and tree and shrub-type wildlife food and cover plantings account for the 371 additional acres.

Source: Modified from Myers and Gaffney, 1989, Table 6, page 47.

Generalized Vegetation Cover



Hardwood - Pine Forest

Pine Plantation

Old Field/Shrub (Fields reverting back to woodlands)

Grass

Open Water

Existing Building

2000 0 2000
Scale in Feet

500 0 500
Scale in Meters

N

Source: CF Braun Engineering Corp., 1995.

Figure 3.11-1

- Agricultural fields in outleases;
- Wildlife food and cover plantings established by the NYSDEC, located primarily in the abandoned farmland in the southwest buffer zone;
- Semi-improved, infrequently mowed grassland around the runways and in other working areas in the fenced area; and
- Improved, landscaped lawns that are regularly mowed, surrounding the buildings in the industrial core area.

Improved Vegetation Category

Vegetation in the improved vegetation category requires the most management and maintenance of the three management categories. Intense management is necessary to meet the designated use criteria, protect the natural environment, and ensure a pleasing appearance that harmonizes with the natural landscape (Myers and Gaffney, 1989). Examples of vegetation in this category include lawns, landscape plantings, flower beds, foundation plantings around buildings, athletic fields, and picnic areas. Table 3.11-2 lists representative plant taxa in this category.

Semi-Improved Vegetation Category

Land in the semi-improved vegetation category is maintained at a lesser degree of intensity than improved vegetation, but at a level meant to match the intended use, enhance natural beauty, ensure conservation of natural resources, and reduce the vegetation fire hazard (Myers and Gaffney, 1989). Lands subject to annual, semiannual, or once in three- to four-year maintenance operations are included in this category. Examples of semi-improved vegetation include the clear zones required along the runways, compass calibration area, radar fields, the electronic counter measure test range, and wildlife food and cover plantings. Table 3.11-3 lists representative plant taxa in this category.

Unimproved Vegetation Category

The unimproved vegetation category includes forests, agricultural fields, wetlands, ponds, and lakes. Most of the land in the unimproved vegetation category is forested. Little, if any, maintenance is required, aside from protecting the forests from fire (Myers and Gaffney, 1989). Management practices, such as timber stand improvement, may be implemented as infrequently as once in five to ten years or more.

The vegetation on the agricultural outlease fields is primarily potatoes and corn. However, other crops are also grown. Table 3.11-4 lists representative vegetation in the unimproved category.

Table 3.11-2

Improved Vegetation Category Plant Taxa

Common Name	Scientific Name
Lawns	
Kentucky Bluegrass	*Poa pratensis*
Red Fescue	*Festuca rubra*
Crabgrass	*Digitaria sanguinalis*
Quackgrass	*Agropyron repens*
Tall Fescue	*Festuca arundinacea*
Redtop	*Agrostis gigantea*
Panicgrass	*Panicum* spp.
Orchardgrass	*Dactylis glomerata*
Foundation Plantings and Ornamental Shrubs	
Juniper	*Juniperus* spp.
Yew	*Taxus* spp.
Rhododendron	*Rhododendron* spp.
Redosier Dogwood	*Cornus stolonifera*
Burning Bush	*Euonymus alata*
Hawthorn	*Crataegus* spp.
Trees	
Pin Oak	*Quercus palustrus*
Basswood	*Tilia americana*
Flowering Dogwood	*Cornus florida*
Flowering Cherry	*Prunus* spp.
Blue Spruce	*Picea pungens*
Source: Myers and Gaffney, 1989	

Table 3.11-3

Semi-Improved Vegetation Category Plant Taxa

Common Name	Scientific Name
Ragweed	*Ambrosia artemisifolia*
Broomgrass	*Andropogon virginicus*
Three Awn	*Aristida* sp.
Lambsquarters	*Chenopodium* spp.
Crabgrass	*Digitaria* sp.
Autumn Olive	*Elaeagnus umbellata*
Tall and Hard Fescue	*Festuca* spp.
Hawkweed	*Hieracium* spp.
Switchgrass	*Panicum virgatum*
Plantain	*Plantago* spp.
Sorghum	*Sorghum vulgare*
Source: Myers and Gaffney, 1989.	

Table 3.11-4

Unimproved Vegetation Category Plant Taxa

Common Name	Scientific Name	Common Name	Scientific Name
Upland Communities			
Pitch Pine-Shrub Oak Woodlands		**Pitch Pine-Oak Woodlands**	
Pitch Pine Scrub Oak Black Oak Scarlet Oak Black Huckleberry Lowbush Blueberry	*Pinus rigida* *Quercus ilicifolia* *Quercus velutina* *Quercus coccinea* *Gaylussacia baccata* *Vaccinium vacillans*	Pitch Pine Black Oak Scarlet Oak White Oak Black Cherry	*Pinus rigida* *Quercus velutina* *Quercus coccinea* *Quercus alba* *Prunus serotina* *Ericaceous* spp.
Oak-Pine Woodlands		**Successional Pine Barrens Grassland**	
White Oak Black Oak Black Locust Black Cherry Catbriar Poison Ivy Japanese Honeysuckle Virginia Creeper	*Quercus alba* *Quercus velutina* *Robinia pseudoacacia* *Prunus serotina* *Smilax* spp. *Rhus radicans* *Lonicera japonicus* *Parthenocissus quinquifolia*	Little Bluestem Spike Grass Switchgrass Asters False Indigo Goldenrod Sweet Fern	*Andropogon scoparius* *Danthonia spicata* *Panicum virgatum* *Aster* spp. *Baptisia tinctoria* *Solidago* spp. *Comptonia peregrina*
Wetland Communities			
Red Maple-Pitch Pine Woodlands		**Coastal Plain Pond Shores**	
Red Maple Pitch Pine Sourgum Sweet Pepperbush Swamp Azalea Inkberry	*Acer rubrum* *Pinus rigida* *Nyssa sylvatica* *Clethra alnifolia* *Rhododendron viscosum* *Ilex glabra*	Short-Beaked Bald-Rush Long-Beaked Bald-Rush Coppery St. Johnswort Rose Coreopsis	*Psilocarya nitens* *P. scirpoides* *Hypericus denticulatum* *Coreopsis rosea*
Coastal Plain Poor Fen		**Pine Barren Shrub Swamp**	
Narrow-Leaf Cattail Sedge Walter's Sedge Bayberry Swamp Azalea Red Maple Rose	*Typha angustifolia* *Carex lasiocarpa* *Carex walteriana* *Myrica gale* *Rhododendron viscosum* *Acer rubrum* *Rosa* spp.	Red Maple Sweet Pepperbush Rose Blueberry	*Acer rubrum* *Clethra alnifolia* *Rosa* spp. *Vaccinum corymbosum*
Coastal Plain Pond		**Open Water River Channel**	
Arrowheads Bayonet Rush Bladderwort Spike rushes	*Sagittaria* spp. *Juncus militaris* *Utricularia* spp. *Eleocharis* spp.	Duckweed Starwort Arrowheads Pondweeds	*Lemna minor* *Callitriche* spp. *Sagittaria* spp. *Potamogeton* spp.
Source: Myers and Gaffney, 1989.			

Unimproved areas of NWIRP Calverton located within the fenced area and the buffer zone (outside of the core area) can be generally divided into upland and wetland communities (Myers and Gaffney, 1989). These plant communities are briefly described below.

Upland Communities

Upland communities at NWIRP Calverton include the following four communities:

- **Pitch pine-shrub oak woodlands**: Situated on dry sites, these woodlands are maintained by frequent fires. There are scattered, small examples of this plant community within the NWIRP Calverton fence and in the southeast buffer zone;

- **Pitch pine-oak woodlands**: The dominant vegetation type in upland sites, these woodlands occur in areas that burn occasionally. The canopy is usually nearly closed. Most of the woodlands within the NWIRP Calverton fence and in the upland sections of the buffer zone near Linus Pond, Jones Pond, and Grassy Pond are of this plant community;

- **Oak-pine woodlands**: These woodlands occur in upland areas where fires have been suppressed. Examples of this plant community are located near NWIRP Calverton buildings and at scattered locations throughout the area within the fence; and

- **Successional pine barrens grassland**: These grasslands occur in mowed sites, such as along the runways and along roads in the fenced area. Native grass species often are dominant, with herbaceous species found throughout sunny areas of the coastal pine barrens. Diversity in this community ranges from very low in areas that are frequently mowed to very high at infrequently disturbed woodland edges and along sand roads.

Wetland Communities

Wetlands are transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Under the US Fish and Wildlife Service (USFWS) classification system, wetlands must have at least one of the following three attributes: 1) at least periodically, hydrophytes predominate; 2) the substrate is predominantly undrained hydric soil; or 3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

During the 1970s NYSDEC mapped wetlands throughout the state by vegetative cover type using aerial photographs (Myers and Gaffney, 1989). In the 1980s, the USFWS, as part of a nationwide inventory known as the National Wetland Inventory (NWI), mapped both wetlands and deepwater habitats using conventional aerial photo-interpretation (stereoscopic analysis) of high altitude aerial

photography (1:80,000 black and white). The NWI is more detailed than the NYSDEC inventory, and includes information such as the water regime and other wetland modifiers, along with vegetation, using the USFWS hierarchical classification system (Cowardin et al., 1979).

NWI maps show the general configuration, location, and type of wetlands found within a given area of coverage. A margin of error is inherent in the use of the aerial photographs and a detailed, on-the-ground and historical analysis of a single site may result in a revision of the wetland boundaries established through photographic interpretation (USFWS, 1983). Because the NWI maps are limited in precision by their scale (1:24,000 or 1 in = 2000 ft) and the identification method used, the boundaries of wetlands shown on the NWI maps may need to be more precisely determined in the field at a later date. Often small wetland areas, and less frequently large wetland areas, are not shown on NWI maps.

Twenty-five wetlands, wetland complexes, and deepwater habitats totaling 251 acres (102 hectares) have been identified on NWIRP Calverton property (Myers and Gaffney, 1989). In addition, TAMS identified other two potential wetlands during field reconnaissance in May 1996. The wetlands range in size from 0.1 to 126 acres (0.04 to 51 hectares) (Myers and Gaffney, 1989). The largest is a wetland complex associated with the Peconic River. The locations of wetlands and open water habitats are shown in Figure 3.11-2 (Wetlands).

The majority of the wetlands on NWIRP Calverton are forested, palustrine wetlands that have a saturated or seasonally saturated water regime. The second most abundant type is open water wetlands that have an intermittently exposed permanent water regime and occasionally dry up. There is only one lacustrine (lake)-type deepwater habitat, which is a stretch of the Peconic River that is impounded, west of the Village of Calverton. The mid-stream portion of the Peconic River is a riverine-type deepwater habitat, although the area it occupies is too narrow to delineate on the NWI wetland maps. Wetland and deepwater habitats at NWIRP Calverton and their classifications are provided in Table 3.11-5.

NYSDEC regulates all freshwater wetlands in New York State that are 12.4 acres (five hectares) or larger in size and valuable wetlands that are smaller than 12.4 acres (five hectares), such as those containing threatened or endangered species. A permit is needed to modify any of the regulated wetlands. Of the 25 wetlands on NWIRP Calverton, 18 are NYSDEC-regulated wetlands. Several of the NYSDEC regulated wetlands include two or more closely associated wetlands that are separately numbered in Table 3.11-5.

Wetlands on Long Island are predominantly seasonally flooded. Generally, they are at least saturated or temporarily ponded in the spring and perhaps again in the fall, providing resting areas for migrating waterfowl and marsh and shore birds. They also provide courtship and brood habitat for waterfowl and other species of wildlife. NYSDEC classifies the regulated wetlands according to their characteristics and beneficial value, from most beneficial (Class I) to least beneficial (Class IV). Table 3.11-5 provides the NYSDEC classification of each of the regulated wetlands on NWIRP Calverton.

Of the 18 regulated wetlands on NWIRP Calverton, 12 wetlands are Class I, two are Class II, three are Class III, and one is Class IV. Several of the wetlands are Class I because of the presence of threatened or endangered species. Myers and Gaffney (1989) have described the general wetland communities as follows:

- **Red maple-pitch pine woodlands**: These woodlands typically occur as a band of woods in low areas between dry pine barrens and permanent wetlands. Examples are located within the fenced area along edges of identified wetlands, and within the buffer zone at the northern ends of Linus and Jones Ponds and around Kents Pond;

- **Coastal plain pond shores (water/wetlands)**: This community occurs in shallow topographic depressions that are wet in years with high rainfall and dry in years with low rainfall. Fluctuating water levels maintain these sites in the earliest stages of succession. An unusual assemblage of annual species and short-lived perennials occurs in, and many are restricted to, this community. Examples include Sandy Pond, Third Pond, and Linus Pond;

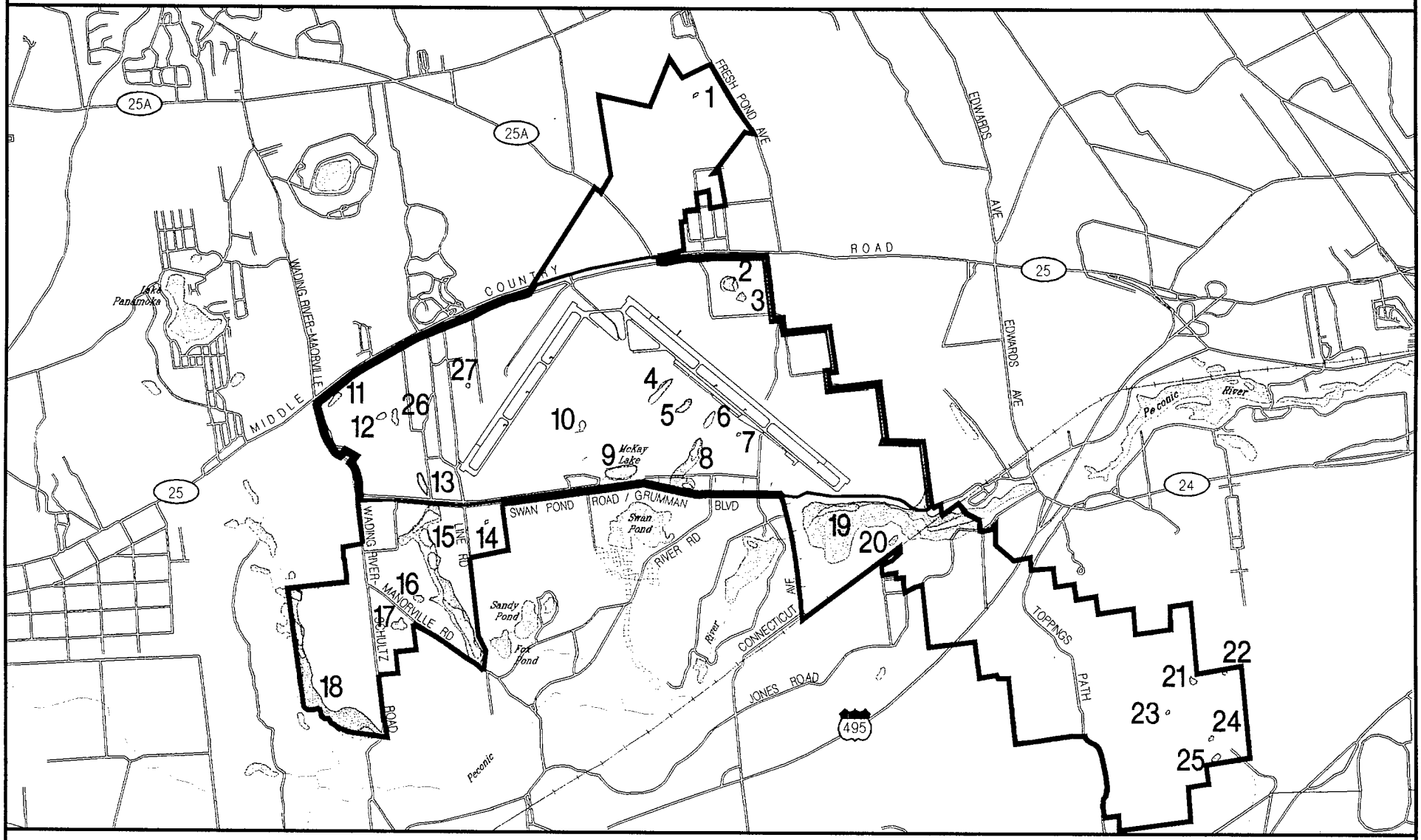
- **Coastal plain poor fen**: This community comprises sedge and cattail marshes with a low density assembly of shrubs and stunted trees. It occurs in sections of the Peconic River with permanent standing, slow-moving water. The only occurrence on NWIRP Calverton is east of Kents Pond. Only two other sites occur on Long Island;

- **Pine barren shrub swamp (brush wetlands)**: These shrub thickets form on consolidated organic mats of sedge, grass, and cattail. The most representative occurrence of this community in the buffer zone is west of Jones Pond;

- **Coastal plain pond (water/wetlands)**: These communities are pine barrens open standing water areas with no regular flow. The bottoms of these ponds have organic accumulations or are sandy. Emergent and submerged species are dominant, and trees and shrubs are absent. The most representative occurrences of this community are Jones Pond, Kents Pond, and Linus Pond; and

- **Open water river channel**: These communities occur in sections of the Peconic River with moderate to high flow. Vegetation is dominated by emergent, submerged, and floating species. The only occurrence of this community on NWIRP Calverton is the Peconic River section south of River Road.

Wetlands



Wetlands
Open Water
Property Boundary
Fenceline

4000 0 4000
Scale In Feet
1000 0 1000
Scale in Meters

N

Figure 3.11-2

Table 3.11-5
Wetland and Deepwater Habitats

Map No *	NYSDEC Regulated Wetland	NYSDEC Wetland Designation	NYSDEC Class ☼	NWI Class ◊	Area Subtotal (Acres)	Field Identified or Confirmed Wetlands (Inside the Fence)	Total Area (Acres)
1	-	-		PEM	0.2		0.2
2	X	W-16	I	PSS3Ba	1.2	X	4.0
				PUBHh	2.8		-
3	X	W-16	I	PUBHh	0.8	X	0.8
4	X	W-27	II	PUBHh	2.2	X	2.2
5	X	W-28	II	PUBHh	1.8	X	1.8
6	X	R-5	I	PUBHh	1.2	X	6.0
7	-	-		PFO1E	0.4		0.4
8	X	R-5	I	PUBHh	1.2	X	6.0
				PUBHx	3.2		-
9	X	R-5	I	PUBHh	10.0	X	10.0
10	-	-		PSS1Eh and PUBHh	0.4	X	0.4
11	X	W-24	IV	POWZ	0.8	X	0.8
12	X	W-25	I	PUBH	0.2	X	0.2
13	X	W-26	I	PUBHh	1.2	X	1.2
14	-	-		PEM	0.2		0.2
15	X	R-5	I	PUBH			41.8
				PFO1E			-
				PFO1C			-
				PEM/SS1E			-
				L1UBH			-
				PPFOSF			-
16	-	-					-

Map No *	NYSDEC Regulated Wetland	NYSDEC Wetland Designation	NYSDEC Class◇	NWI Class ◇	Area Subtotal (Acres)	Field Identified or Confirmed Wetlands (Inside the Fence)	Total Area (Acres)
17	X	W-4	I	PUBHx	1.6		1.6
18	X	R-5	I	PUBH	10.2		48.9
				PSSIF, PSS1E and PSS3/EMB1B			-
19	X	R-5	I	PFOIE	68.0		126.0
				PFOI/4E	15.6		-
				PEM/SS1E			-
				PUB/EM1Fh			-
				PF04E			-
				PSS1F			-
				PEM5E			
20	X	R-5	I		1.6		1.6
21	X	R-55	III	PFO/SSIE	0.2		0.2
22	X	R-55	III	PFO/SSIE	0.2		0.2
23	-	-		PFO/SSIE	0.2		0.2
24	-	-		PFO/SSIE	0.1		0.1
25	X	R-7	III	PFO/SSIE	0.2		0.2
26				26 & 27 - Potential wetlands identified by TAMS		X	
27				(May, 1996)		X	
Total							255.0

Notes:
*Numbers relate to location in Figure 3.10-1, Location of Wetlands and Deepwater Habitats.
☼Class I regulated wetlands are most beneficial, Class IV the least.
◊ Classification of Wetlands and Deepwater Habitats of the United States, US Fish and Wildlife Service, Washington, DC 20240, FWS/OBS-79/31, December 1979 .

P - Palustrine (upland) System
- OW -Open water ..... 1 Algal
- UB - Unconsolidated Bottom .....1 Cobble-Gravel
- AB - Aquatic Bed ..... 2 Aquatic Moss
- EM - Emergent .....1 Persistent plants
- SS - Scrub/Shrub .....1 Broad-Leaved deciduous plants, 3 Broad Leaved Evergreen
- FO - Forested.....1 Broad-leaved deciduous plants
  4 Needle-leaved evergreen plants, 5 Dead

L - Lacustrine (Lake) System.....1 Limnetic

Modifying Terms - Water Regime.....B Saturated
C Seasonally Flooded
E Seasonally Flooded/saturated
F Semipermanently Flooded
H Permanently Flooded
Z Intermittently Exposed/Permanent

Special Modifiers.....h Impounded/Diked

Source: Modified from Myers and Gaffney, Table 5, 1989.

As a result of previous fires, drought, and/or low fertility soil conditions, the forests are dominated by scrub oak and pitch pine, which are fire- and drought-tolerant species. These species will not mature to saw timber size, and at best may produce poles or provide firewood. Of the approximately 4,000 acres (1,600 hectares) of forest, only about 700 acres (280 hectares) are classed as pole timber; the remaining acres containing smaller trees (Myers and Gaffney, 1989).

3.11.2 Wildlife

Terrestrial

Muskrat and mink and a variety of marsh birds, shorebirds, and migrating waterfowl are associated with the Peconic River and the streams, ponds, and wetlands in and around NWIRP Calverton. Eastern chipmunk and eastern mole have also been identified within the fenced area. It has been reported that of the migrating waterfowl, a few black ducks and wood ducks remain throughout the summer to nest and raise their young. Although no ducks were identified within the fenced area during a recent field visit, a flock of Canada geese resides on or near McKay Lake throughout the year (Myers and Gaffney, 1989).

Terrestrial wildlife on NWIRP Calverton is dominated by woodland wildlife species. There is a large population of whitetail deer. Within the Calverton woodlands, low natural populations of ring-necked pheasants, bobwhite, quail, cottontail rabbits, woodchucks, gray squirrels, raccoon, red fox, opossum, and weasel occur (Myers and Gaffney, 1989). A variety of songbirds have also been identified within the fence.

Table 3.11-6 lists birds that were positively identified at NWIRP Calverton during a field reconnaissance in 1996. Common terrestrial wildlife species at NWIRP Calverton are listed in Table 3.11-7.

Based on species composition, the quality of most of the forests is considered only fair, although the trees themselves appear healthy. There is a general lack of diversity in the types of vegetative cover, particularly in the buffer zones, and a lack of a variety of plant species in each cover type for all species of wildlife. Forest vegetation diversity is low; therefore, only a few food-producing species are available to wildlife. The oak trees within the woodlands produce acorns that are a food source for gray squirrels, whitetail deer, and wood ducks. Most of the trees, however, will never be large enough to have dens and cavities for squirrels, wood ducks, raccoons, and other wildlife (Myers and Gaffney, 1989).

Table 3.11-6

On-Site Birds

Common Name	Scientific Name
Rufous-sided Towhee	*Pipilo erythrophthalmus*
Blue Jay	*Cyanocitta crista*
Eastern Pewee	*Contopus virens*
Eastern Phoebe	*Sayornis phoebe*
Brown Thrasher	*Toxostoma rufum*
American Crow	*Corvus brachyrhynchos*
Common Yellowthroat	*Geothlypis trichas*
Yellow Warbler	*Dendroica petechia*
American Robin	*Turdus migratorius*
Northern Cardinal	*Cardinalis cardinalis*
Tree Swallow	*Iridoprocne bicolor*
Red-Winged Blackbird	*Agelaius phoeniceus*
Canada Goose	*Branta canadensis*
Mute Swan	*Cygnus olor*
Gray Catbird	*Dumetella carolinensis*
Killdeer	*Charadrius vociferus*
Baltimore Oriole	*Icterus galbula*
Orchard Oriole	*Icterus spurius*
American Tree Sparrow	*Spizella arborea*
Mourning Dove	*Zenaida macroura*
Red-Tailed Hawk	*Buteo jamaicensis*
Yellow-Bellied Flycatcher	*Empidonax traillii*
Source: TAMS field reconnaissance of NWIRP Calverton fenced area, May 1996.	

Table 3.11-7

Common Terrestrial Wildlife Species

Common Name	Scientific Name
Opossum	*Didelphise virginiana*
Woodchuck	*Marmota monax*
Weasel	*Mustela erminea*
Whitetail Deer	*Odocoileus virginianus*
Racoon	*Procyon lotor*
Gray Squirrel	*Sciurus carolinensis*
Cottontail Rabbit	*Sylvilagus floridanus*
Red Fox	*Vulpes fulva*
Muskrat	*Ondatra zibethica*
Mink	*Mustela vison*

Source: Myers and Gaffney, 1989.

Table 3.11-8

Peconic River Fish Species

Common Name	Scientific Name
Largemouth Bass	*Micropterus salmoides*
Chain Pickerel	*Esox niger*
Yellow Perch	*Perca flavescens*
Brown Bullhead	*Ictalurus nebulosus*
Golden Shiner	*Notemigonus crysoleucas*
Pumpkinseed	*Lepomis gibbosus*
Bluegill	*Lepomis macrochirus*
Banded Sunfish	*Enneacanthus obesus*
Tessellated Darter	*Etheostoma olmstedi*
Swamp Darter	*Etheostoma fusiforme*
Creek Chub	*Semotilus atromaculatus*

Source: Myers and Gaffney, 1989.

Outside the fenced area and throughout Long Island, mortality due to hunting and incidental collisions with cars contributes to maintaining some balance in the deer population. Within the fenced area (outside the runway deer exclosure), these controls are not present and the deer population is above the site's carrying capacity (Myers and Gaffney, 1989).

The large on-site deer population results in over-browsing of food species, prevents regeneration of browse species, results in large fluctuations in the deer population, and may contribute to a higher incidence of Lyme Disease (Myers and Gaffney, 1989). The primary deer foods are grasses, oak mast and browse, and blueberry browse. There are few legumes and the diversity of browse species is minimal.

Aquatic

On NWIRP Calverton, the Peconic River, McKay Lake, and seven pond/wetlands are known to support fisheries, according to NYSDEC fish survey records (Myers and Gaffney, 1989). Fish found in the Peconic River are listed in Table 3.11-8. The dominant sport fish in the river are bass, pickerel, and bullheads (Myers and Gaffney, 1989). McKay Lake, located within the fenced area, contains an excellent quality fishery, composed of largemouth bass, bluegills, and pumpkinseeds. The seven pond/wetlands supporting fisheries include: North Pond, Prestons Pond, Third Pond, Linus Pond, Sandy Pond, Grassy Pond, and Jones Pond. These pond/wetlands are connected by tributaries to the Peconic River. The fisheries in these pond-wetlands are eliminated in dry years, but are replaced naturally with fish from the Peconic River (Myers and Gaffney, 1989). Restocking occurs when heavy rains provide sufficient runoff or flood waters from the river backup to connect the ponds with the river, enabling fish to swim from the river to the ponds. A ninth pond/wetland, Forest Pond, presumably contains fish, as it is located between and is connected to two ponds with known fisheries (Figure 3.11-2).

3.11.3 Threatened, Endangered, and Rare Species

The federal Endangered Species Act (ESA), passed in 1973 and reauthorized in the 1988, protects listed plant and animal species. The New York State Environmental Conservation Law protects threatened, endangered, rare, and exploitably vulnerable plant and animal species, and the law contains ranked listings of rare vascular plants and animals in New York State.

In addition, the New York Natural Heritage Program (NYNHP) has prepared lists of rare plants and animals in New York. Unless protected by state or federal regulations, the species on these lists have no legal protection.

As of 1991, no federally-listed threatened or endangered species were known to reside within a four-mi (six-km) radius of NWIRP Calverton, although suitable habitat exists for transient individuals of

certain species, such as the bald eagle (NUS, 1995). However, several plants, amphibians, insects, fish, and birds listed by the State of New York as threatened, endangered, rare, or of special concern do occur on NWIRP Calverton.

In 1986 and 1987, a study was undertaken by the NYNHP to review and determine the status of endangered, threatened, vulnerable, and rare species on NWIRP Calverton (NYNHP, 1987). The study included field surveys to confirm the presence of protected species. The findings of this study are summarized as follows:

- No federally-listed or candidate plant species have historical or current records;
- No species or habitat of federally-listed animal species were identified on NWIRP Calverton; however, migrating species such as the bald eagle occasionally may move through the area;
- Twenty-nine rare plant species have NYNHP historical records from the vicinity of NWIRP Calverton. Of these, 17 have been confirmed since 1984;
- The tiger salamander, listed as endangered by New York State, was identified on NWIRP Calverton (Buffington 1991/Scheibel 1991);
- Nineteen NYNHP-listed rare animals have been recorded historically from the study area. Of these, seven have been confirmed on NWIRP Calverton; and
- Four additional songbirds have been confirmed in the vicinity during recent breeding bird atlas surveys and suitable habitat does occur on NWIRP Calverton. None of the recent records represents federally-listed species or candidate species.

Some occurrence records cannot be confirmed in the database due to one of the following reasons (NYNHP, 1987): 1) the original location information is sometimes imprecise and the species may not have occurred on NWIRP Calverton; 2) the species was present at the time of the historical record, but since has been extirpated; or 3) the species is present, but was not seen during the field survey.

Table 3.11-9 lists the New York State-listed threatened, endangered, and special-concern plants reported for the NWIRP Calverton Area. Table 3.11-10 provides the listed threatened, endangered, and special-concern animals.

A total of 173 rare animals, rare plants, and significant natural communities in the Peconic Estuary is documented in the NYNHP Biological and Conservation Data System (Pleuthner, 1995). The Peconic is among the most diverse rivers in New York and contains many pine barren plants and animals that are rare or absent elsewhere in the state (Newton, undated), including at least six rare species of fish and salamanders (NYSDEC, 1987). Of the 278 survey sites in the estuary, 32 high

Table 3.11-9

New York State Threatened, Endangered, and Special-Concern Plants

Common Name	Scientific Name	New York State Status	Confirmed Presence
Pine-Barrens Gerardia	*Agalinus virgata*	Rare	No
Swamp Pink	*Arthusa bulbosa*	Rare	No
Silvery Aster	*Aster concolor*	Endangered	No
Blunt-lobed Grape Fern	*Botrychium multifidum*	Unprotected	No
Button Sedge	*Carex bullata*	Threatened	No
Sedge	*Carex hormathodes*	Rare	No
Rose Coreopsis	*Coreopsis rosea*	Rare	Yes
Tall Tick-Clover	*Desmodium glabellum*	Threatened	No
Smooth Tick-Clover	*Desmodium laevigatum*	Unprotected	No
Knotted Spikerush	*Eleocharis equisetoides*	Threatened	No
Three-Ribbed Spikerush	*Eleocharis tricostata*	Threatened	Yes
Coppery St. John's-Wort	*Hypericum denticulatum*	Endangered	No
St. John's-Wort	*Hypericum dissimulatum*	Unprotected	Yes
Carolina Redroot	*Lachnanthese caroliniana*	Threatened	No
Slender Pinweed	*Lechea tenuifolia*	Rare	No
Southern Twayblade	*Listera australis*	Rare	Yes
Nuttall's Lobelia	*Lobelia nuttallii*	Rare	No
Ludwigia	*Ludwigia sphaerocarpa*	Rare	Yes
Comb-Leaved Mermaid-Weed	*Prosperpinaca pectinata*	Rare	Yes
Short-Beaked Bald-Rush	*Psilocarya nitens*	Rare	Yes
Long-Beaked Bald-Rush	*Psilocarya scirpoides*	Rare	Yes
Drowned Horned Rush	*Rhynchospora inundata*	Endangered	Yes
Quill-leaf Arrowhead	*Sagittaria teres*	Endangered	No
Reticulated Nutrush	*Scleria reticularis* var. reticularis	Rare	Yes
Two-Flowered Bladderwort	*Utricularia biflora*	Rare	Yes
Fibrous Bladderwort	*Utricularia fibrosa*	Rare	Yes
Hiddenfruit Bladderwort	*Utricularia geminiscapa*	Rare	Yes
Rush Bladderwort	*Utricularia juncea*	Rare	Yes
Small Floating Bladderwort	*Utricularia radiata*	Rare	Yes
Mountain Bellwort	*Uvularia puberula*	Endangered	Yes
			Yes

Source: NYNHP, 1987, as cited in Myers and Gaffney, 1989.

Table 3.11-10

New York State Threatened, Endangered, and Special-Concern Animals

Common Name	Scientific Name	New York State Status	Confirmed Presence
Northern Cricket Frog	*Acris crepitans*	T	No
Spotted Salamander	*Ambystoma maculatum*	SC U	Yes
Tiger Salamander	*Ambystoma tigrinum*	E	Yes
Grasshopper Sparrow	*Ammodramus savannarum*	SC P	Yes
Pine Barrens Underwing Moth	*Catocala herodias* gerhardi	U	Yes
Common Nighthawk	*Chordeiles minor*	SC P	?
Acadian Flycatcher	*Empidonax virescens*	P	?
Lateral Bluet	*Enallagma laterale*	U	?
Painted Bluet	*Enallagma pictum*	U	?
Barrens Bluet Damselfly	*Enallagma recurvatum*	U	?
Banded Sunfish	*Enneacanthus obesus*	U SC	No
Coastal Barrens Buckmoth	*Hemileuca maia maia*	SC U	Yes
Eastern Hognose Snake	*Heterodon platyrhinos*	SC U	No
Yellow-Breasted Chat	*Icteria virens*	P	?
Eastern Mud Turtle	*Kinosternon subrubrum*	T	No
Red Crossbill	*Loxia curvirostra*	P	?
Southern Sprite	*Nehalennia integricollis*	U	?
Vesper Sparrow	*Pooecetes gramineus*	SC P	?
Southern Leopard Frog	*Rana sphenocephala*	SC G	No
Eastern Spadefoot	*Scaphiopus holbrookii*	U	No
Eastern Bluebird	*Sialia sialis*	SC P	Yes
Regal Fritilllary	*Speyeria idalia*	U	No
New England Cottontail	*Sylvilagus transitionalis*	SC G	No

Notes: E - Endangered
T - Threatened
SC - Special Concern
P - Protected Wildlife
U - Unprotected
G - Game
? - Confirmed during initial, but not subsequent surveys.

Source: NYNHP, 1987, as cited in Myers and Gaffney, 1989; Pleuthner, 1995.

priority survey sites containing 228 element occurrences (28 percent of the 798 total occurrences) have been identified by the NYNHP. One of the high priority sites is Sandy Pond West, which is partially in the southwest buffer zone and partly off site. Two additional high priority survey sites occur off site, within the immediate vicinity of NWIRP Calverton: Fox Pond, adjacent to the eastern boundary of the southwest buffer zone; and Peasys Pond, about one-fifth mi (one-third km) from the southwest buffer zone's western boundary.

Of the 52 species identified as NYNHP-listed threatened, endangered, and species of concern existing on NWIRP Calverton, only six species (three plant and three animal species) are located within the fenced area (O'Neill, 1996). These six species occur in six locations within the forested, or unimproved, vegetation portion of the fenced area. The tiger salamander occurs in four of the six locations, once with the spotted salamander, once alone, and in three locations with the Nuttall Lobelia, a flowering plant associated with coastal plain pond margins, swamps, wet meadows, and roadsides. The remaining three species include two plants, the slender pinweed, an upland plant that grows in sandy soil, and the rose coreopsis, a wetland plant that is associated with standing water, coastal plain pond shores, margins, and wet depressions; it grows in damp sand, gravel, or peat. The third species is the coastal barrens buckmoth, a small moth that is restricted to sandy pitch pine/scrub oak barrens.

3.11.4 Natural Resource Management

There are several natural resource management plans that either have in the past affected NWIRP Calverton or will in the future guide resource management on the site. Two of them, the Navy-NYSDEC Cooperative Agreement and the NWIRP Calverton Forest Resources Management Plan, are described below; the other two are described in their resource-related Subchapters (i.e., the Pine Barrens Plan in Subchapter 4.1, Land Use, and the Wild and Scenic River Act in Subchapter 4.10, Water Quality and Hydrology).

Navy - NYSDEC Cooperative Agreement

In 1965, the Navy entered into a Cooperative Agreement with the NYSDEC Division of Fish and Wildlife for public recreational use of most of the NWIRP Calverton buffer zone lands. Hunting, fishing, trapping, dog training, dog field trials, and other uses are allowed under a state permit (under authority of Public Laws 85-337 and 86-797) (Myers and Gaffney, 1989). The Navy also issues licenses to military reserve units, dog trainers, and the Boy Scouts for use of the property. Four tracts of cropland totaling 411 acres (166 hectares) were leased through 1994 to agricultural outleasers, and a few other small tracts are leased to other parties (Myers and Gaffney, 1989; Braun, 1995). The remainder of the buffer zones is covered under the terms of the Cooperative Agreement. The NYSDEC issues permits under the agreement to control access to the buffer zone lands.

The southwest and southeast buffer zones are predominantly forested. The 610-acre (247-hectare) north buffer zone contains agricultural land that was outleased to local farmers and commercial forest land.

A nominal user fee is charged by the NYSDEC for parking at the buffer zones, the revenue from which is used for the continued development and improvement of the fish and wildlife resources on these areas (Myers and Gaffney, 1989). Under the agreement, NYSDEC prepares ten-year plans that identify development and wildlife habitat improvements to be undertaken in the buffer zones. These plans are prepared to be compatible with the Navy's Forest Resource Management Plan. Under the plans, clearings have been created in the forested areas to establish food and cover plots for wildlife as part of the habitat improvement plan.

In the 1980s, the current ten-year plan was changed to authorize the use of off-road vehicles (trail bikes) in the south end of the southeast buffer zone. The use was approved initially on a one-year trial. At the end of the trial year, the use area was inspected for environmental impacts. A determination was made that the level of impact was acceptable, when combined with restoration projects voluntarily undertaken by the users (Myers and Gaffney, 1989). NYSDEC and the Navy periodically inspect the areas of use for impacts and adjust the use in accordance with conditions found.

Heavy use of the buffer zones for fishing and hunting occurs in the spring and fall. The heaviest use is during hunting season, which usually runs from October to February. It includes various hunting seasons for waterfowl, pheasant, quail, grouse, rabbit, squirrel, deer, and woodcock. The deer season is divided into archery and shotgun seasons.

NYSDEC has issued woodcutting permits to the public for cutting selected trees for firewood. This system facilitates development of the clearings for wildlife foodplots and as salvage for other operations (Myers and Gaffney, 1989). Fishing for pickerel, largemouth bass, and panfish is done on a permit basis in the Peconic River and in the ponds of the Southwest Buffer Zone.

NWIRP Calverton Forest Resource Management Plan

It is the policy of the Navy (NAVFACINST 11015.9A) that all facilities having the potential for commercial timber production shall have programs for the conservation and management of forest resources. Forest resource management includes activities such as timber management and forest administration, reforestation, timber stand improvement, access road construction and maintenance, and fire protection.

The Natural Resources Branch of Northern Division Naval Facilities Engineering Command (NORTHNAVFACENGCOM) prepared a long-term Forest Resource Management Plan for NWIRP Calverton in 1987, with the cooperation of Rutgers University. It also prepared annual increments to the plan for tasks such as timber stand improvement and planting of seedlings for reforestation. Timber stands suitable for harvest are advertised for bids for sale of these forest products.

3.12 Petroleum and Hazardous Materials

3.12.1 Hazardous Waste Generation

NWIRP Calverton ceased operations in February 1996. Hence, no hazardous waste from operations is currently being generated. During its operation from 1952 to 1996, NWIRP Calverton operations and maintenance activities generated wastes classified as hazardous under federal and New York State regulations, including:

- Waste halogenated solvents;
- Waste non-halogenated solvents;
- Photo waste;
- Waste jet fuel;
- Oil and water waste;
- Cleaning absorbent waste;
- Paint stripping and metal finishing rinse waters;
- Residue and debris;
- Industrial wastewater treatment sludge;
- Waste sulfuric acid;
- Spent batteries; and
- Lab packs of acute hazardous waste, offspec material, and non-asbestos asphalt.

Hazardous waste was generated from aircraft maintenance, assembly, and support operations throughout the installation, collected at undocumented accumulations points, and stored in 55-gallon (208-liter) drums or 250-gallon (946-liter) bowsers (mobile fuel tank and pipe used for refueling aircraft). The waste was periodically transported to the permitted hazardous waste storage facility (Bldg 329) where it was consolidated and prepared for shipment to a permitted Treatment, Storage and Disposal (TSD) facility. All halogenated and non-halogenated solvents were sent to an off-site facility for reprocessing and kiln burning. Industrial wastewater was treated on-site at the Industrial Wastewater Treatment Plant (Bldg 316).

3.12.2 Hazardous Waste Storage

As required by the Resource Conservation and Recovery Act (RCRA) of 1976, the US Navy and Grumman obtained a Hazardous Waste and Solid Waste Amendment (HSWA) Permit and a New York State Part 373 Hazardous Management Permit for the treatment, storage, and disposal of hazardous substances. A HSWA Permit was issued on April 13, 1992 that included an assessment of Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), requirements for further investigations, waste minimization requirements, land disposal restrictions, and organic air emissions standards. A Part 373 Hazardous Management Permit was issued by the New York State

Department of Environmental Conservation (NYSDEC) on March 25, 1992 (NYSDEC 1-4730-00013/0001-0) for the operation of a hazardous waste container storage facility (Bldg 329). This permit outlined procedures governing the operation and final closure of this facility. The USEPA has also issued a permit (USEPA ID Number NYD003995198) dated May 11, 1992 for the operation of this facility. The USEPA supports NYSDEC in its oversight activities. The requirements of both permits are the same, although the terminology and format vary.

3.12.3 Previous Hazardous Waste Investigations

The US Navy's Installation Restoration (IR) Program is designed to identify contamination of Navy and Marine Corps lands/facilities resulting from past operations and to institute corrective measures, as needed. There are typically four distinct stages in the IR Program, which are listed below.

Stages of the Installation Restoration Program at NWIRP Calverton

Stage 1 is the Preliminary Assessment (PA), formerly known as the Initial Assessment Study (IAS).

Stage 2 is a RCRA Facility Assessment Sampling Visit (RFA), similar to a Site Investigation (SI), which augments the information collected in the PA.

Stage 3 is the RCRA Facility Investigation/Corrective Measures Study (RFI/CMS), similar to a Remedial Investigation/Feasibility Study (RI/FS), which characterizes the contamination at a facility and develops options for the remediation of the site.

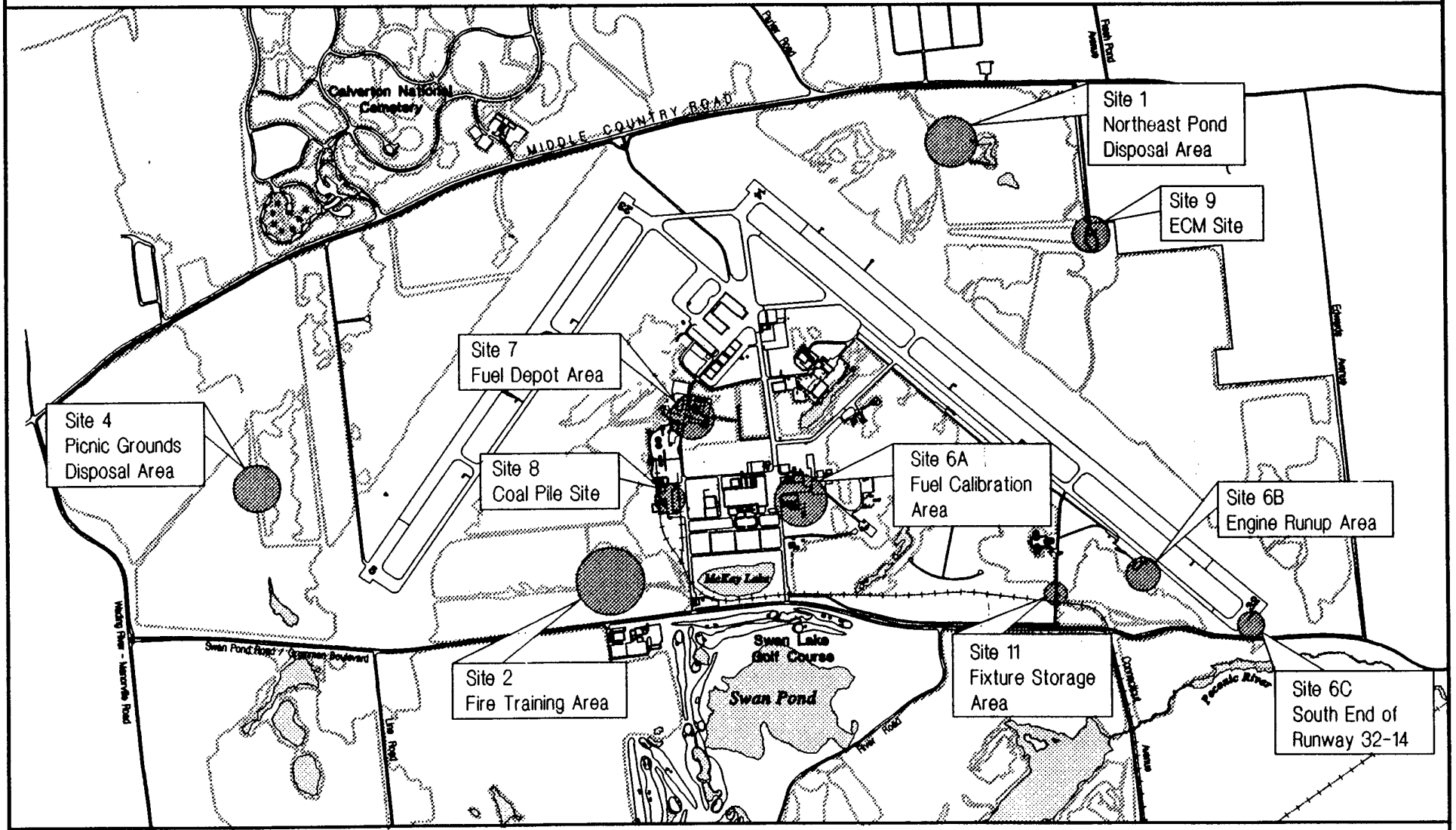
Stage 4 is the Corrective Action, which results in the control or cleanup of contamination at sites.

The US Navy has conducted several studies to evaluate past disposal sites and practices at NWIRP Calverton. The first study performed, the Initial Assessment Study (IAS), identified six areas of potential concern (NEESA, 1986). The IAS recommended that a Site Investigation be performed at only four of the six areas. Those four sites are listed below and are shown on Figure 3.12-1 (Installation Assessment Study Sites).

- Site 1, Northeast Pond disposal area;
- Site 2, Fire rescue training area;
- Site 4, Picnic grounds disposal area; and
- Site 6, Fuel calibration/engine run-up area.

A Site Investigation (SI) performed under the US Navy Comprehensive Long-Term Environmental Action Navy (CLEAN) Program conducted sampling at these areas and at an additional area, Site 7 -

Initial Assessment Study Sites



Source: CF Braun Engineering Corp., 1996.

Figure 3.12-1

Fuel Depot Area (US Navy, 1992). Site 6 was divided into three areas: Site 6A, Fuel Calibration Area; Site 6B, Engine Runup Area; and Site 6C, South End of Runway 32-14 (Figure 3.12-1). The SI eliminated Sites 4, 6B, and 6C from further consideration based on field sampling results. A more detailed investigation was recommended for the remaining four sites where environmental contamination was confirmed (Site 1, Site 2, Site 6A, and Site 7).

A RCRA Facility Investigation (RFI) was completed for Sites 1, 2, 6A, and 7 in 1995 (US Navy, August 1995). A brief overview of each site is provided below:

- Site 1, the Northeast Pond Disposal Area- was used for the disposal of demolition debris such as concrete, brick, wood, and other construction material. When it was closed in 1984 a final soil cover was placed over the material. The RFI detected contamination in surface soils, sediments, groundwater, and surface water. Contaminants included metals, VOCs, semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs). Contamination is suspected to be linked to contaminated soil (fill).

- Site 2, the Fire Training Area- was used by Grumman and Navy crash rescue crews as a training area beginning in 1955. The soils are contaminated with VOCs, semivolatile organics (including polyaromatic hydrocarbons [PAHs] and phthalates), metals, PCBs, and pesticides. Groundwater is contaminated with VOCs, and floating free product has been identified on site.

- Site 6A, the Fuel Calibration Area- was used in the testing of aircraft fuel and engine systems. Aircraft fuel delivery systems were pressurized with fuel in the calibration area to test for leaks. The testing may have resulted in frequent small fuel spills to the area's pavement. VOCs, PAHs, and phthalates were detected in the soils. The fuel-contaminated area appears to be localized to an area immediately south of the concrete pad. Groundwater was found to be contaminated by VOCs, and floating free product was identified at the site.

- Site 7, the Fuel Depot Area- was used for the storage and distribution of fuel products, such as JP-4 and JP-5 jet fuel, at the activity. Fuels were stored in underground storage tanks and then transferred to trucks for use in the flight preparation areas of the facility. These activities have resulted in groundwater contamination by fuels, which may have occurred by tank and pipe leakage, overfilling, and spills.

The RCRA RFI included a baseline human health risk assessment for each of the four sites investigated (Sites 1, 2, 6A, and 7) to determine potential health risks. For current exposures, maintenance workers were evaluated and a residential land use scenario was assumed for future

exposure. A baseline ecological risk assessment was also performed for the Northeast Pond Disposal Area (Site 1). These risk assessments were performed to determine if any unacceptable risks (i.e., above target risk levels) are present at NWIRP Calverton, and if so, to provide an estimate of their magnitude. The results of these risk assessments are summarized in Table 3.12-1.

Under the current conditions only the Fire Training Area (Site 2) has calculated risks above the target levels. These risks are attributable to polychlorinated biphenyl compounds (PCBs), benzo (b) flouranthene, and benzo (a) pyrene.

Under a hypothetical future residential land use scenario all four of the sites investigated in the August 1995 RFI had the potential for unacceptable health effects from contact with soils and domestic use of groundwater. Contaminants in the surface water and sediments of Site 1- Northeast Pond Disposal Area have the potential to cause adverse impacts to the biological community of the area.

A RCRA Facilities Assessment (RFA) performed for NWIRP Calverton identified four additional areas with environmental concerns (US Navy, March 1995). These areas are shown on Figure 3.12-1:

- Site 8, Coal pile storage area;
- Site 9, Electronic countermeasures area;
- Site 10, Cesspool/leach field areas; and
- Site 11, Fixture storage area.

No further action was recommended at Site 11, but further investigation was recommended for Sites 8, 9, and 10. Site 10 consists of 22 cesspools/leach fields associated with various industrial buildings in the south-central part of the fenced portion of NWIRP Calverton, known as the Cantonment Area. A preliminary screening eliminated concerns over most of the areas, but two buildings in Site 10 were recommended for further sampling. These areas were named Site 10A, Jet Fuel Systems Lab (Bldg. 06-11), and Site 10B, Engine Test House (Bldg. 06-18).

A supplemental RFA was performed (US Navy, April 1996) to confirm the presence or absence of contamination at four of the sites investigated during the initial RFA-Sampling Visit. Two additional sites were added to help define the limit of groundwater contamination. The supplemental RFA included the following five areas within NWIRP Calverton and one area outside of NWIRP Calverton:

- Site 8, Coal pile storage area;
- Site 9, Electronic countermeasures area;
- Site 10A, Jet fuel system lab;
- Site 10B, Engine test house;
- Southern area; and
- Swan Lake Golf Course (outside of NWIRP Calverton).

Table 3.12-1

Potential Human Health and Ecological Risks at NWIRP Calverton

Site	Human Health Concerns		Ecological Concerns
	Current	Future	
Site 1: Northeast Pond Disposal Area	None	Future residential use: unacceptable risks from direct contact with soils and domestic use of groundwater	Adverse impacts to aquatic life and other pond inhabitants is possible
Site 2: Fire Training Area	Unacceptable risks from contact with surface soils	Future residential use: unacceptable risks from direct contact with soils and domestic use of groundwater	Not evaluated
Site 6A: Fuel Calibration Area	None	Future residential use: unacceptable risks from direct contact with soils and domestic use of groundwater	Not evaluated
Site 7: Fuel Depot Area	None	Future residential use: unacceptable risks from direct contact with soils and domestic use of groundwater	Not evaluated
Source: US Navy, August 1995.			

Only trace levels of compounds were found at Sites 8 and 9. The levels detected in the soils at these sites were generally below federal and state action levels, as well as the compounds in the groundwater at Site 8. At Site 9, the levels of chemicals (VOCs) in the groundwater slightly exceeds the federal MCLs for acceptable drinking water quality and may require some level of remediation, especially if groundwater in this area is to be used for residential (domestic) purposes.

A source of VOC contamination was not identified at the southern area, where it was suspected that a source of VOCs was contributing to the contamination in a nearby county well located downgradient.

VOC contamination has been confirmed at the fenceline downgradient of Site 2 and has likely moved across Swan Pond Road into the area of the Swan Lake Golf Course. An offsite investigation is planned for this area during the late 1996/early 1997 timeframe.

Petroleum-based contamination at Sites 10A and 10B appeared to be restricted to fairly localized areas. Additional investigations are required at Site 10A to further delineate contamination, but there appears to be sufficient information to proceed to a removal action at Site 10B.

A Basewide Phase I Environmental Baseline Survey (EBS) inspected Navy-owned buildings and areas in the NWIRP Calverton complex operated by the Navy (US Navy, October 1995). The EBS divided NWIRP Calverton into five zones for the purpose of reporting data (Figure 3.12-2, Installation Restoration Zones). Each zone is described in Table 3.12-2. The EBS identified areas that require further investigation.

A Phase II Field Sampling Work Plan has been prepared for areas selected for sampling (US Navy, March 1996). These areas are Navy-owned buildings in Zone I and all areas identified in the EBS in Zones II through V (Table 3.12-3). Many areas in Zone I are being addressed independently by the Northrop Grumman Corporation. The media that will be sampled include surface soil, subsurface soil, groundwater, surface water, and sediments.

Only the media suspected of contamination in each area will be tested. Contaminants to be tested for include VOCs, SVOCs, metals, pesticides, and herbicides. Media will be tested for contaminants that are suspected to be present based on prior or current use, anecdotal evidence, or field observations.

Groundwater Investigations

NWIRP Calverton served approximately 2800 workers with potable water from three production wells. The wells are located in a line approximately 2,500 to 2,750 ft north of the south gate, approximately 500 ft (152 m) west of the roadway (Figure 3.12-1). The three wells are in the upper glacial aquifer (Subchapter 3.10.2) and have depths ranging from 140 to 146 ft (43 to 45 m) below the surface and capacities of between 1,000 to 1,100 gallons per minute (gpm). Wells No. 2 and 3

Environmental Baseline Survey Zones

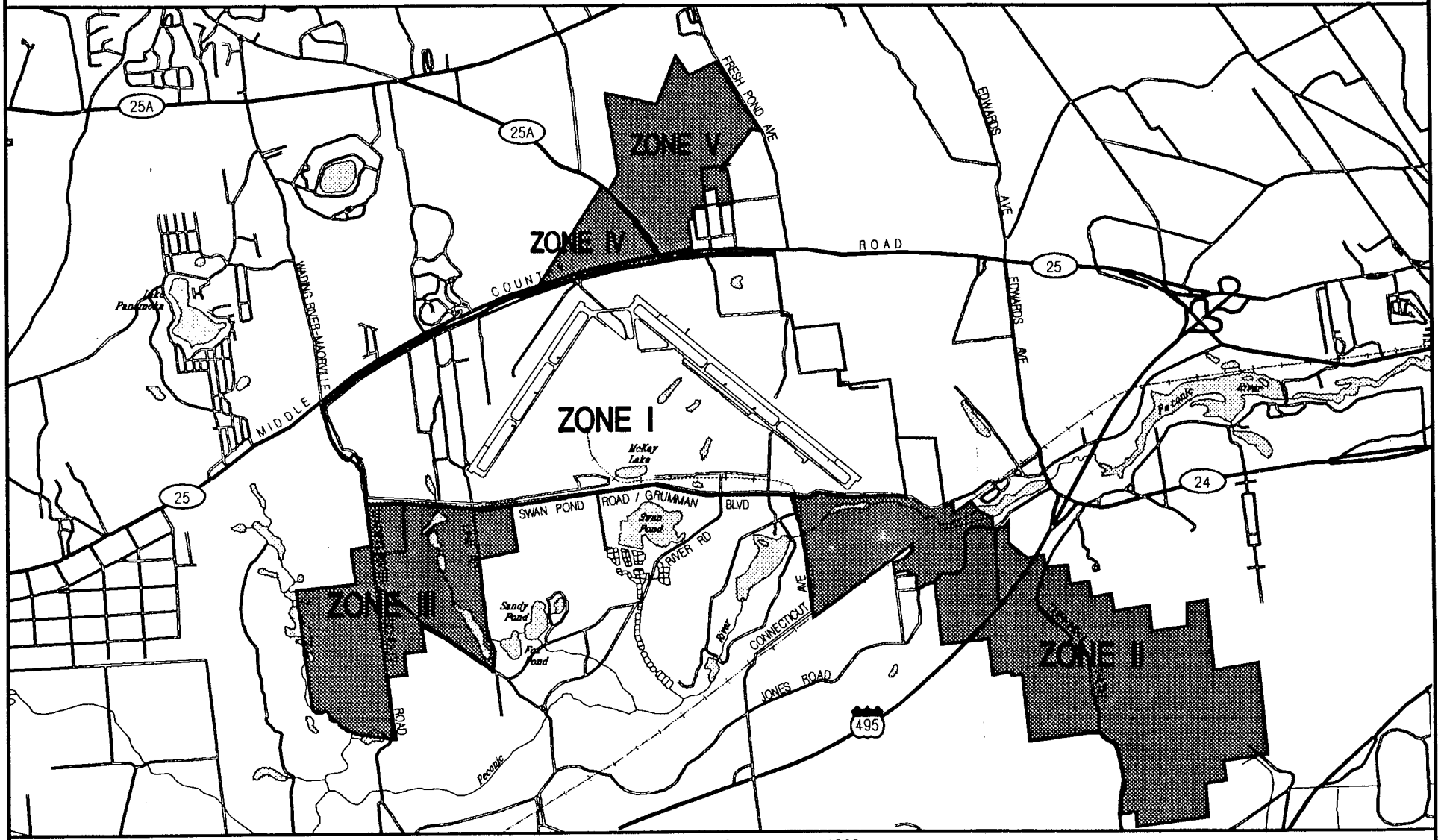


Figure 3.12-2

were removed from service on December 5, 1989 and April 23, 1991, respectively, because of volatile organic contamination (US Navy, August 1995). Well service was reinstated after the Grumman Corporation installed an activated carbon treatment system to address the VOC contamination.

Historically, higher concentrations of 1,1,1-trichloroethane and freon-113 (greater than five μg/l) have been detected in production wells. Northrop Grumman added a carbon filtration unit to treat the production water prior to use. The Brookhaven National Laboratory, located approximately two mi (three km) southwest of NWIRP Calverton, had two of its production wells removed from service in 1989 because concentrations of 1,1,1-trichloroethane were detected above the New York State Drinking Water

Standard of 5 μg/l. These wells were located 3.5 and 3.6 mi (5.6 and 5.8 km) southwest of Calverton. In addition, sampling by the Suffolk County has detected volatile organic contamination in well No. 51591, located southeast of the south gate, over the last 17 years (Robbins, 1996).

3.12.4 Compliance Program Status

An Environmental Compliance Evaluation (ECE) of NWIRP Calverton was conducted 1995 (US Navy, 1995) in order to identify and document instances of non-compliance (deficiencies); provide specific recommendations to achieve compliance; and provide to the Operations Contractor's Environmental Manager an overall assessment of the installation's compliance posture.

A Basewide Phase I Environmental Baseline Survey (EBS) was also performed in 1995 to identify, to the extent feasible, recognized environmental conditions in connection with real property (US Navy, 1995). The environmental regulatory issues summarized below are based on information contained in the ECE and EBS.

Resource Conservation and Recovery Act (RCRA) Corrective Action Program

The HSWA permit issued on April 13, 1992 included an assessment of SWMUs, AOCs, requirements for further investigations, waste minimization requirements, land disposal restrictions, and organic air emissions standards. RCRA Facility Investigations were recommended for two SWMUs and one AOC, and RCRA Facility Assessments were recommended for one SWMU and one AOC. These investigations were performed and are discussed in Subchapter 3.12.3.

Table 3.12-2

Description of EBS Zones at NWIRP Calverton

Zone I: Fenced Area. Zone I encompasses approximately 2,923 acres (1,183 hectares) of land and buildings leased by the Navy to Grumman. Nearly all mission-related activities at NWIRP Calverton have taken place in Zone I, while the other zones have largely served as undeveloped buffer lands. Zone I is surrounded by a chain-link perimeter fence. It is bounded to the south by Grumman Boulevard, to the west by Wading River Manor Road, and to the north by New York Route 25 (Middle County Road). Zone I includes an area of hangers, shops, and administrative buildings in the industrial core, two runways, and several other facilities scattered within a largely wooded perimeter.
Zone II: Southeast Buffer Zone. Zone II consists of about 1,703 acres (689 hectares) of land extending southeast from the eastern end of the two runways (Runway 32-14). The land north of Grumman Boulevard is leased to a local farmer. Most of Zone II is woodland.
Zone III: Southwest Buffer Zone. Zone III covers approximately 812 acres (329 hectares) of land extending southwest from the western end of the two runways (Runway 5-23). Nearly all of Zone III is woodland.
Zone IV: Northwest Buffer Zone. Zone IV includes about 140 acres (57 hectares) bounded by Route 25 to the south, Route 25A (Parker Road) to the north and east, and the Calverton National Cemetery to the west. This land was previously leased to a local farmer; however it was idle in the 1995 growing season. The wooded areas interspersed among the outleased cropland are managed for public hunting by NYSDEC.
Zone V: Northeast Buffer Zone. Zone V encompasses approximately 470 acres (190 hectares) of land northeast of Route 25A. Two areas of cropland in Zone V are presently leased to a local farmer, and the remaining land is woodland.
Source: US Navy, October 1995.

Table 3.12-3

Areas of Potential Environmental Concern Included in the Phase II Field Sampling Plan

Area	Reason for Concern	Zone
Land area north of A/C engine run-in building (Bldgs 296 and 307)	Stormwater runoff may have carried leaked jet fuel from building to adjacent area of soil.	I
Pistol range (Bldg 232)	Bullet fragments in surface soil and sand pile at south end of range	I
Flightlines Number 1 and 2	Suspected presence of jet fuel under concrete	I
Ponds east of cantonment area (Runway Ponds 1,2, and 3)	Receives stormwater from Cantonment Area and Flightline number 1	I
Former skeet range	Shell fragments from former skeet shooting activity	I
Sprayer staging area near Bldg 260	Used to load pesticides into farm equipment	II
Irrigation pump on Peconic River and aboveground storage tank	Anecdotal evidence of oil sheens on water in river	II
Potato barn (Bldg 222)	Empty 55- gallon drums reportedly removed from around the barn by volunteer cleanup in May 1995	III
Pesticide dump area	Location of discarded pesticide containers, mostly removed during a volunteer cleanup in May 1995	III
Burn site for tire and other debris	Burn site for old tires and other debris	III
AST east of VORTAC station and abandoned well	Poor condition of AST	IV
Source: US Navy, March 1996.		

Above-ground Storage Tanks (ASTs)

There are 25 active ASTs and one removed AST associated with facilities inspected in the fenced area of Zone 1. In addition, agricultural outleasers maintain diesel fuel ASTs (under 500-gallon [1893-liter] capacity) in the agricultural outlease areas and there is a 5,000-gallon (18,930-liter) AST containing No. 2 fuel oil at the Transmitter Building at Terry Hill was removed (Ohlman, 1996).

Polychlorinated Biphenyls (PCBs)

There are three PCB-containing (.500 ppm) transformers that remain at the Calverton site, but only one is still active (T21). There are three PCB-contaminated (<500 ppm) transformers that remain at the Calverton site, but again, only one remains active (T114). Finally, there are six pole-mounted transformers that still exist at Calverton and only one of these remains active (T132). These six pole-mounted transformers have not been tested, but are assumed to be PCB-contaminated.

Lead

No facilities have been inspected for lead-based paint (LBP). However, it should be assumed that all facilities constructed prior to the implementation of the DoD ban on the use of LBP in 1978 are likely to contain one or more coats of such paint.

Pesticides

Prior to the Northrop Grumman shutdown in February 1996, it was reported that pesticides were applied at NWIRP Calverton by a contractor and were not stored at the facility. It is possible, however, that short-term storage and mixing did occur. The ECE found the pesticide program had no deficiencies. As part of the Environmental Baseline Survey, the Navy is planning to sample several ponds, both within and outside the fenceline, for the presence of pesticides.

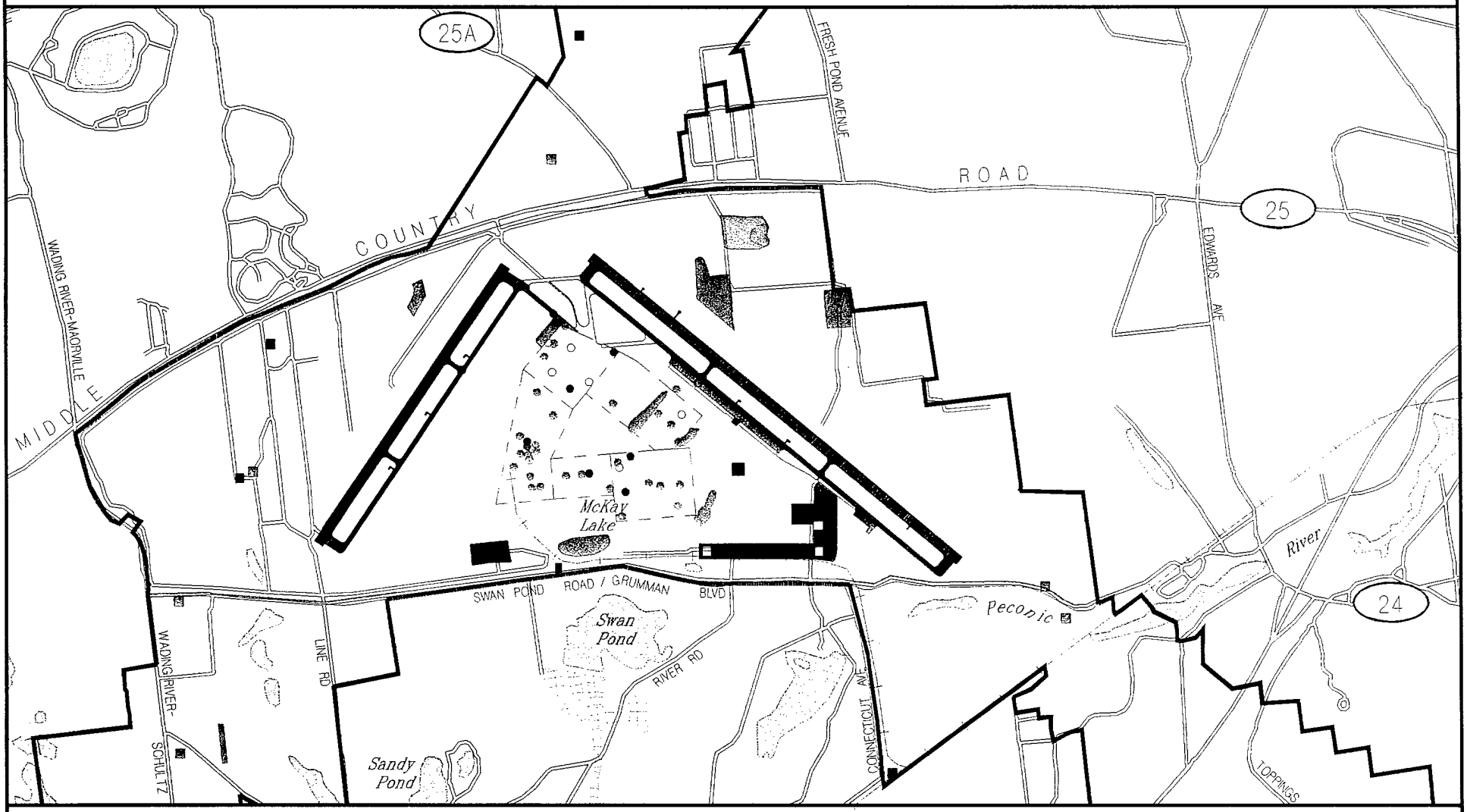
Asbestos

An installation-wide survey for asbestos containing material was conducted by both the Northrop Grumman Corporation and by NORTHDIV.

3.12.5 Summary

The Town of Riverhead's Community Development Agency (CDA) was given authority to receive title to NWIRP Calverton from the US Navy via Public Law 103-c337. A Finding of Suitability to Transfer (FOST) must be issued before property transfer. This involves the identification of uncontaminated property. As defined by the Community Environmental Response Facilitation Act

Classification of EBS Program Areas



Property Boundary

Class 1
No Storage, Release, or Disposal of Hazardous Substances or Petroleum Products

Class 2
Storage Only of Hazardous Substances or Petroleum Products, but No Release or Disposal

Class 3
Storage, Release, or Disposal, but Concentrations Do Not Require Remediation

Class 4
Storage, Release, or Disposal, but All Necessary Remediation has Been Completed (None Present)

Class 5
Storage, Release, or Disposal, and Remediation in Progress

Class 6
Storage, Release, or Disposal, and Remediation Not Yet Initiated

Class 7
Additional Evaluation Required

2500 0 2500
Scale in Feet
500 0 500
Scale in Meters

N

Source: CF Braun Engineering Corp., 1995.

Figure 3.12-3

(CERFA), an uncontaminated property is any real property on which no hazardous substances or petroleum products and their derivatives (including aviation fuel and motor oil) were stored for more than one year, and further, no known releases or disposals have been associated with the property. The EBS assigned each building and area of land on NWIRP Calverton to one of seven categories described in Table 3.12-4. The classification of all areas at Calverton is provided in Figure 3.12-3 (Classification of IR Program Areas). If release or disposal of hazardous substances, hazardous wastes, and/or petroleum products are confirmed in an area, Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and/or Resource Conservation and Recovery Act (RCRA) requirements must be met prior to property transfer.

The majority of NWIRP Calverton is uncontaminated property, with most of the areas of concern located in the fenced area (Zone I) where the majority of maintenance and operation activities occurred. Investigations and corrective actions for these areas are ongoing. Zones II, III, and V include several small areas where additional evaluation is required, and Zone V contains one area where hazardous substances or petroleum products have been stored, but no release has occurred. Since NWIRP Calverton ceased operations in February 1996, no additional areas of concern are anticipated.

Table 3.12-4

Environmental Condition Categories

Category 1- Areas where no storage, release, disposal, or migration of hazardous substances or petroleum products has occurred.
Category 2- Areas where only storage of hazardous substances or petroleum products has occurred.
Category 3- Areas of contamination below action levels.
Category 4- Areas of known contamination where remedial or removal actions have been taken.
Category 5- Areas of known contamination where remedial or removal actions are underway.
Category 6- Areas of known contamination where no remedial or removal actions have yet been initiated.
Category 7- Areas requiring further investigation.
Source: US Navy, October 1995.

4 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter presents a discussion of the potential impacts that would result from the disposal and reuse of NWIRP Calverton based on the locally developed reuse plan and two redevelopment alternatives. Chapter 4 is organized in a parallel fashion to Chapter 3. Subchapters 4.1 through 4.12 address the potential environmental impacts for each of the resource categories due to implementation of the four alternatives:

- No action;
- Calverton Enterprise Park Reuse Plan;
- Calverton Enterprise Park/Raceway Alternative; and
- Peconic Village Alternative.

Subchapter 4.13 discusses cumulative impacts of disposal and reuse.

The proposed Reuse Plan of the town of Riverhead provides overall development goals and objectives, including general types of development (e.g., industrial, commercial, theme attraction, etc.) and the acreage and/or floor area for each general category of land use (Chapter 2). However, specific developments within the land use categories are uncertain and much will depend upon emerging market opportunities. This situation has necessitated two levels of impact analysis - quantitative and qualitative.

Quantitative analyses were conducted wherever possible for those aspects of the alternatives that are essentially a function of the number of employees and/or square feet of development. For example, employment impacts, intersection analyses of future traffic, motor vehicle-related air and noise impacts, and sanitary wastewater loads are discussed quantitatively. However, these calculations would change should the amount type, timing and other aspects of the action alternatives be modified.

Qualitative analyses were conducted for those proposed alternative components that cannot be specified at this time. For example, specific building renovation and site layout plans have not yet been developed and specific related impacts can only be discussed qualitatively. Similarly, although sanitary wastewater loads can be quantified at this time, industrial wastewater loads and air emissions cannot, since the specific type and requirements of such future uses are unknown. However, the qualitative analyses presented do identify sensitive environmental issues that need to be addressed, and describe the types of permits (and their requirements) that must be obtained.

The impact analysis of the alternatives listed above is based on the assumption of full project

implementation over a 20-year timeframe.

4.1 Land Use and Zoning

As discussed in Subchapter 1.1, lands within the fence may be disposed of to the town of Riverhead. Lands outside the fence (the buffer zones) may also be disposed to the NYSDEC. Legislation mandates that these buffer lands remain in their natural state. Therefore, implementation of any of the action alternatives for the area within the fence would have no direct land use effect on the buffers.

4.1.1 No Action Alternative

Under the no action alternative (representing future baseline conditions), NWIRP Calverton would be retained in ownership by the federal government. No reuse or redevelopment would occur at the facility. NWIRP Calverton land and facilities within the fence in the Town of Riverhead would be vacated and closed in accordance with *Base Realignment and Closure Facility Layaway and Caretaker Standards* (Naval Facilities Engineering Command, September 1994). All GOCO activities have already ceased (February 1996) and the federal government has no existing proposals for reuse of the facility.

Buffer zones outside the fence in the towns of Riverhead and Brookhaven would be deeded to the NYSDEC.

4.1.2 Calverton Enterprise Park Reuse Plan

Land Use

Implementation of the locally developed Reuse Plan for NWIRP Calverton would result in the development of a multi-use enterprise park that has at its core a major industrial complex and a cargo/general aviation airport. As discussed in Chapter 2, other primary uses include: theme park and attractions; commercial recreation family entertainment center; stadium; golf course; and a variety of open spaces. Figure 2-3 in Chapter 2 shows the allocation of land uses within the overall conceptual site plan for the Reuse Plan. Consistent with legislative mandate, the buffer zones would be transferred to the NYSDEC and would remain in their existing natural (undeveloped) state.

The industrial business park of 887,500 sq ft (82,538 sq m) would consist of 50 percent new development and 50 percent reuse of existing buildings. The 443,750 sq ft (41,269 sq m) of new industrial space would be developed as infill parcels within the industrial core. The airport would utilize the existing 10,000-ft (3,048-m) runway and would require about 65 acres (26 hectares) of

land in the industrial core for ancillary facilities. Two of the proposed land uses, the industrial business park and the airport, are compatible with historical activities of the facility. Maintenance of the buffer zones in a natural state would assist in maintaining land use compatibility with the proposed airport use in the Reuse Plan. With the retention of the industrial business park, this alternative would retain some of the historical land use relationship with surrounding land uses. The retention of the buffer lands as conservation and recreational resources would also be consistent with historical land use patterns. Proposed uses such as the theme park and family entertainment center would represent new land uses in the area. Although these uses have been adopted by the town as part of the Reuse Plan, future land planning such as facility layouts and landscaping treatments would need to be utilized to minimize effects on existing surrounding properties.

It is estimated that about 477 acres (193 hectares), or 16 percent of the fenced-in area, is presently developed as either buildings or paved areas (Table 3.11-1). It is estimated that the Reuse Plan would require an additional 320 acres (130 hectares) of new building/paved area; therefore, the total amount of developed land in the Reuse Plan would be 797 acres (323 hectares) or 27 percent of the site. Open space would remain the largest land use component on site. Including wetlands and surface water features, it is estimated that open space would account for 2,126 acres (861 hectares) or about 73 percent of the total fenced-in area.

Zoning

At the present time lands within the fence are zoned as Defense Institutional, allowing agriculture, national cemetery, and naval weapons testing facility uses. No zoning regulations exist that specify such land use development parameters as density, floor area ratios (FARs), and setbacks.

Implementation of the Reuse Plan would therefore require that the Town of Riverhead prepare and adopt new zoning for the site, or portions thereof, based on the specific uses adopted. The Comprehensive Economic Development Task Force, a body created by the Town of Riverhead to identify issues of significance relating to the reuse of NWIRP Calverton, prepared a report addressing future land use and zoning of the site. In its 1994 report, the Task Force recommended that a Planned Unit Development (PUD) District be the operative zoning district for the property pursuant to Section 263 of the Town Law. Implementation of the PUD would be based on a Comprehensive Development Plan for the site and through the adoption of a PUD District into the Town of Riverhead zoning ordinance. Implementation of the Reuse Plan via a new PUD zoning ordinance would be consistent with the plans of the Town of Riverhead for the town's future land use. Once transfer of the buffers to the NYSDEC is complete, the towns of Riverhead and Brookhaven would appropriately rezone these lands from Defense Institutional and Open Space Conservation in Riverhead and from Residential in Brookhaven.

Central Pine Barrens Comprehensive Land Use Plan

Lands in the far western portion of the site (438 acres or 177 hectares) have been defined as Pine

Barrens Core Preservation Area (CPA) in the Reuse Plan, consistent with the Central Pine Barrens Comprehensive Land Use Plan. The Town of Riverhead has adopted a Pine Barrens Overlay District that prescribes allowable uses and intensities. For the CPA, the Overlay District language states:

> "Those economic development activities to occur within the fence of the Calverton Naval Weapons Industrial Reserve Plant as contemplated by Public Law 103-c337, the Plan and its attending Generic Environmental Impact Statement shall not constitute development as defined by Section 57-0121 of the New York State Environmental Conservation Law and by this Article....Land uses which do not constitute development may be permitted provided that the use complies with all other provisions of this Chapter."

Development is defined in the town of Riverhead's Overlay District language as:

> "... the performance of any buildings or mining operation, the making of any material changes in the use of or intensity of any structure or land...."

Thus, the Overlay District of the town would effectively render the Pine Barrens CPA designation inapplicable, as any "development" associated with the disposal of NWIRP Calverton would not be considered "development" as presently worded in the Pine Barrens Plan. However, the Reuse Plan has designated these lands as CPA, consistent with the Pine Barrens Plan.

With regard to the remainder of lands within the fence designated Compatible Growth Area (CGA) (2,500 acres or 1,013 hectares), the Riverhead Overlay District states:

> "A land use within the Compatible Growth Area that lawfully exists at the time of the effective date of this article or any amendment thereto may be continued in its present form except that the aforementioned standards shall apply to any change, structural alteration, expansion, restoration or modification to said land use constituting development as defined herein."

Therefore, the industrial uses and aviation use of the Reuse Plan would be allowed as pre-existing uses within the CGA. Modifications to these facilities as part of the Reuse Plan would need to be done in compliance with the Overlay District development standards for the CGA.

In its Findings Statement for the implementation of the Pine Barrens Plan, the CPBJP&PC specifically addresses the future reuse of NWIRP Calverton. The language of the Findings Statement describes the status of NWIRP Calverton with respect to the Pine Barrens Plan:

> "Additionally, the Plan recognizes the need for both managed land development within the CGA in general and the congressionally mandated economic redevelopment of the Calverton Naval Weapons and (sic) Industrial Reserve Plant (the "Calverton Site") in particular....The SEQRA record identifies the level of economic development contemplated to occur within

the CGA of the Calverton site and provides that proposed land uses which conform to prescribed Standards and Guidelines for Land Use and the Planned Development District ("PDD") ordinance adopted by the Town, which is deemed to be consistent with the Plan by the Commission, will be considered environmentally appropriate developments which support regional economic growth as contemplated by the Act.

"The Plan provides that the redevelopment activity in the CGA contemplated for the Calverton site is considered a public improvement and shall in no instance be considered a development of regional significance as defined by the Act, so as to warrant an automatic review by the Commission. Therefore, those development activities on the Calverton site which conform to both the development standards for the CGA as well as those zoning ordinances enacted by the Town of Riverhead to implement the Plan, which are deemed to be consistent with the Plan by the Commission, shall be presumed not to require formal review or consideration of the Commission."

In summary, although the town Overlay District seems to null the Pine Barrens language, the Reuse Plan has designated the western lands as Pine Barrens CPA, consistent with the Pine Barrens Plan. Given this designation and the regulatory authority of the CPBJP&PC, new development within the CPA and on lands adjacent in the CGA would be implemented in a fashion consistent with the Pine Barrens Plan.

4.1.3 Calverton Enterprise Park/Raceway Alternative

As described in Subchapter 2.4, this alternative would retain many of the land uses of the Reuse Plan. Therefore, the land use effects for those uses would be essentially the same as the ones described for the Reuse Plan:

- Implementation would be done via a new zoning ordinance consistent with the plans of the town for its future land use; and
- Western lands of the site would be designated at Pine Barrens CPA; new development in the CPA would be done in a manner consistent with the Pine Barrens Plan.

The most significant difference between this alternative and the Reuse Plan is that an automobile raceway complex (approximately 835 acres or 338 hectares) would replace the air cargo/general aviation use. The land use components of the Enterprise Park/Raceway Alternative are displayed in Figure 2-4.

Because this alternative retains the industrial business park use and the existing 10,000-ft (3,048-m) runway for the raceway component, the amount of new building and paved area coverage would be

less than if development were to occur on an undisturbed site. Using the procedure described in Subchapter 4.1.2, an estimate was made of the amount of new building/paved area associated with this alternative. Approximately 250 acres (101 hectares) would be required for completely new building and paved area construction. In total, the site would have an estimated 690 acres (280 hectares) or 24 percent devoted to development uses with impervious surfaces. Open space would comprise 2,233 acres (904 hectares) or about 76 percent of the site.

The automobile raceway would occupy much of the same terrain as the proposed airport in the Reuse Plan. The raceway would incorporate the existing runway as part of the race course. The conceptual layout of the race course would enter a portion of the industrial business park. There would be a number of industrial/mixed use buildings in close proximity to the race track as conceptually designed (e.g., a portion of Building 7 would be as close as 150 ft (46 m) away). New infill development that occurs as part of the industrial business park plan would include buildings that may abut the race course on its western edge. Although there is no explicit land use incompatibility between these uses, noise could affect the adjacent properties in the industrial core during race events. Based on the noise analysis (Subchapter 4.6.3), it is estimated that there would be significant but short-term noise levels experienced both within and outside the fence during the scheduled racing events. These estimated noise levels would exceed the town of Riverhead's maximum permissible levels for residential, commercial, and industrial land uses during race events.

4.1.4 Peconic Village Alternative

As described in Subchapter 2.5, this alternative includes some of the land use features of the others (i.e., industrial business park, hotel conference center, golf course(s), and open space). However, the site would be developed primarily as an age-restricted residential community with two primary housing areas, 688 units of assisted living, and 1,350 units of senior housing.

It is estimated that approximately 260 acres (105 hectares) of new building and paved areas would be expected with full implementation of this alternative. Combined with the existing development, it is estimated that a total of 690 acres (280 hectares) would be developed as buildings and/or paved areas. Open space (including wetlands and surface water features) would comprise 2,233 acres (904 hectares) or about 76 percent of the site.

It is estimated that about 2,201 residents (1.63 residents per senior housing unit [Leisure Village, 1996]) would reside in the senior housing; 688 residents (one per unit) would live in the assisted (congregate) care units. The total resident population would be 2,889. The golf recreational component (one public and one private course) would provide an added market incentive to the development.

As shown in Figure 2-5, 438 acres (177 hectares) have been designated as Pine Barrens Core

Preservation Area (CPA). Any new development in the CPA or in the adjacent CGA would be consistent with the Pine Barrens Plan.

The residential uses proposed in this alternative are presently inconsistent with the existing Defense Institutional Zoning of the town. It is assumed that as with the Reuse Plan, the town would adopt a new PUD zone for implementation should it decide to develop the Peconic Village instead of the preferred Reuse Plan.

4.2 Socioeconomics

4.2.1 No Action Alternative

Demography

Under the no action alternative, the Navy would vacate and close NWIRP Calverton; there would be no permanent maintenance staff. Therefore, the no action alternative would have no demographic impacts.

Employment and Income

Under the no action alternative, there would be no redevelopment at the site and hence no new income would be generated by businesses, institutions, and their employees. The prolonged vacancy of the site could, however, detract from the quality of local conditions if vandalism or visual blight were to escalate.

Fiscal Impacts

There would be no redevelopment at the plant site and hence no new tax revenues would be collected from real property taxes, earned income taxes, sales taxes, or other relevant business taxes and fees. Local governments and the state would receive no revenues to off-set the loss of the former activity at NWIRP Calverton. Existing public infrastructure, facilities, and services would therefore have to be maintained from a reduced economic base.

Housing

Under the no action alternative there would be no redevelopment at the site, no new workers, and, hence, no potential new demand created for housing in the region by reuse of NWIRP Calverton.

4.2.2 Calverton Enterprise Park Reuse Plan

Demography

The demographic impacts of a proposed project can be both direct and indirect. There would be no direct demographic impacts from the Reuse Plan since the plan has no residential component. With respect to the potential for inducing new population growth, the proposed development should be assessed in the relative context of the Suffolk County labor force. The estimated increase of 3,175 jobs under the Reuse Plan represents only 0.5 percent of the 1995 resident labor force. If all prospective employees were drawn from the pool of Suffolk County unemployed workers, it would

reduce the numbers of those who were unemployed in 1995 by 8.5 percent (Table 3.2-8) from 37,216 to 34,041. The developed jobs represent a small proportion of the Suffolk County labor force and those presently unemployed; this implies that the Reuse Plan would be unlikely to cause an in-migration of new workers to fill the positions. Consequently, there would be no significant impacts on demographics of the county.

Employment and Income

Direct Employment

Table 4.2-1 identifies the proposed job development by activity for five-year intervals over the 20-year development timeframe. All fiscal estimates are based on that 20-year timeframe and a Reuse Plan that is subject to change. Of the estimated 3,175 total jobs, 1,775 (or 55.9 percent) would be derived from the industrial business park. The estimated annual payroll associated with redevelopment activities (other than aviation) would be $74.8 million in year 20 (1995 dollars) (HR&A Inc., February, 1996). With the aviation component included, year 20 total payroll would increase to $81.3 million (rounded) (Table 4.2-2). Of that total, the industrial business park would account for $55.7 million (rounded) or 68 percent of the total estimated payroll. In addition to direct permanent jobs, there would be indirect employment resulting from the earnings from direct employment circulating in the regional economy, and from construction employment generated by the construction activity implicit in the Reuse Plan.

Indirect Employment

Spending by the households of the 3,175 employed workers would generate additional indirect economic activity. Estimates of indirect jobs and earnings were derived from an econometric input/output model known as RIMS II, developed by the US Bureau of Economic Analysis for the Nassau-Suffolk region. Categories of employment are allocated to their respective standard industrial codes in the detailed 471 industry input/output (I/O) matrix, which is then used to obtain the industry-specific direct-effect multipliers (Table 4.2-3). The total employment and earnings generated by the proposed development are calculated and indirect effects are obtained by deducting the direct employment and earnings. Estimated total direct and indirect employment would be 6,726 jobs, with indirect employment representing 52.8 percent or 3,551 jobs. Total earnings are projected to be $151.8 million, of which $70.7 million are generated indirectly. These numbers are in 1995 dollars but the volume is based on the full build-out scenario in year 2017. As development is phased in as part of the Reuse Plan, the indirect jobs and earnings would grow proportionately.

Construction Employment

Table 4.2-4 presents the total capital expenditure estimate of $484 million for infrastructure (new roads, utilities, etc.) and the facilities to accommodate the new uses (e.g., theme park, business park, hotel/conference center). The Reuse Plan provided broad cost estimates only for the infrastructure

Table 4.2-1

Reuse Plan Phasing of Direct Employment

Year	Theme Park Attractions	Aviation Aircraft Use	Commercial/ Recreation	Industrial Business Park	Hotel/ Conference Center	Service Retail	Private Golf Course	Total Jobs
2002	257	183	14	275	135	56	na	920
2007	314	190	68	775	270	81	na	1,698
2012	428	197	68	1,275	360	144	na	2,472
2017	571	207	68	1,775	360	194	na	3,175

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. The Reuse Plan does not include a private golf course as in the Peconic Village Alternative and the public golf course employment is not disaggregated in the Reuse Plan (HR&A, 1996). It is assumed that about 15 jobs associated with this activity are included in the Commercial/Recreation Use.
na = not applicable
Source: HR&A, Inc. February, 1996.

Table 4.2-2

Reuse Plan Estimated Direct Employment and Earnings

Land Use	Jobs Year 20	Estimated Mean Annual Wage ($ 1995)	Estimated Total Annual Earnings $1,000s ($ 1995)
Theme Park Attractions	571	15,594	8,904
Aviation/Aircraft Use	207	31,355	6,490
Industrial Business Park	1,775	31,355	55,654
Commercial/Recreation	68	16,534	1,124
Hotel/Conference Center	360	16,414	5,909
Service Retail	194	16,394	3,180
Private Golf Course	-	-	-
Totals	3,175	-	81,261

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change.
The Reuse Plan does not include a private golf course as in the Peconic Village Alternative and the public golf course employment is not disaggregated in the Reuse Plan (HR&A, 1996). It is assumed that about 15 jobs associated with this activity are included in the Commercial/Recreation Use.
na = not applicable.
Source: HR&A, Inc., February 1996.

Table 4.2-3

Reuse Plan Estimated Direct and Indirect Employment & Earnings

Land Use	Industrial Code	Direct Jobs	Direct Earnings ($million)	Multipliers		Total Jobs	Indirect Jobs	Total Earnings ($million)	Indirect Earnings ($million)
				Jobs	Earnings				
Theme Park Attr.	76.0206	571	8.9	1.6283	1.7996	930	359	16.0	7.1
Comm. Recreation	76.0203	68	1.1	3.8742	2.1771	263	195	2.4	1.3
Aviation/Aircraft Use	65.0500	207	6.5	2.5681	2.0495	532	325	13.3	6.8
Industrial Bus. Park	62.0100	1,775	55.7	2.2986	1.8620	4,080	2,305	103.6	48.0
Hotel/Conference	72.0100	360	5.9	1.7898	1.9019	644	284	11.2	5.3
Service Retail	69.0200	194	3.2	1.4276	1.6810	277	83	5.3	2.2
Private Golf Course	-	-	-	-	-	-	-	-	-
Totals		3,175	81.3			6,726	3,551	151.8	70.7

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Dollars in 1995$ for build-out in year 20. It is assumed that about 15 jobs associated with the private golf course are included in the commercial/recreation use.
Source: US Bureau of Economic Analysis, RIMS II model of Nassau-Suffolk Region, 1996.

Table 4.2-4

Reuse Plan Estimated Construction Costs

Land Use	Costs ($millions - 1995$)
Theme Park (a)	204
Commercial/Recreation(b)	75
Aviation/Aircraft Use (c)	45
Industrial Business Park (d)	44
Hotel/Conference Center (e)	28
Service Retail (f)	15
Golf Course and Parks (g)	10
Infrastructure (h)	30
On-Site Improvements	
Off-Site Improvements	33
Total	484

Notes: Estimates are approximate based on a long-term (20-year) development plan that is subject to change. (a)Assumes $100 per sq ft;
(b) Rough order-of magnitude estimate;
(c) TAMS estimate of aviation improvements;
(d) Assumes 50% of space will be new at $100 per sq ft;
(e) Assumes $70,000 cost per room;
(f) Assumes $125 per sq ft;
(g) Rough order-of magnitude estimate;
(h) Uses the upper estimate of the Reuse Plan.

(i.e., $20-30 million for on-site improvements [water, sewer, wastewater, etc.] and $23-33 million for off-site improvements [roads]). The high end of these ranges was used for this analysis. Costs of specific activity components were not provided in the Reuse Plan and had to be estimated. This task is relatively straightforward for the more common land use elements where square footage of proposed construction (e.g., for the industrial business park and service retail) or the number of rooms (i.e., for the hotel/conference center) is provided. However, estimates are open to wide variations for the more atypical land uses such as the theme park and commercial recreation components. The size, and hence cost, of these elements is essentially unknown; thus, numbers analyzed here represent rough order-of-magnitude costs.

Based on the estimated Reuse Plan construction costs, it is possible to project the number of direct construction jobs and other indirect jobs generated by this construction activity. An estimate of the direct employment created by the construction activity was made first using the Urban Land Institute's (ULI) *Development Impact Assessment Handbook* (1994). The handbook provides a model based on national data showing that an estimated 4,865 direct construction jobs would be created based on the total construction value of $484 million. The construction jobs would be stretched over the 20-year development period, for an average of 243 jobs per year.

The total economic impact of the construction expenditures can be derived from the RIMS II model for the Nassau-Suffolk region. On the basis of the employment and earnings multipliers provided by the model, it is possible to estimate the direct and indirect employment and income effects of the temporary construction employment in the region. Construction employment projected by the RIMS II model is 10,650 person-year jobs, or an average of 533 jobs in each of the 20 years. Applying the ULI model results of 4,865 direct construction jobs to the RIMS II model results, it is estimated that 5,785 indirect jobs would be generated by construction activity of the Reuse Plan. Total direct and indirect earnings from construction are estimated at $307 million.

Fiscal Impacts

An analysis of the Reuse Plan shows substantial fiscal benefits being generated from the development of the site. This development would be newly entered onto the tax rolls for either property taxes or payments in lieu of taxes (PILOT). Reuse Plan employment would generate new earned-income and sales taxes, and the business activity would raise new revenues from business taxes and fees. Estimates of new revenues from the Reuse Plan are presented in Table 4.2-5. Table 4.2-5 shows estimated total property taxes of almost $3.8 million, sales taxes of $13.7 million, and income taxes of $2.8 million. The total annual estimated tax revenues at full build-out in year 20 are $20.4 million (rounded). These estimates are approximate because they assume full development of several vaguely defined land use elements; for example, the theme park and commercial recreation areas, which account for almost two-thirds of all tax revenues derived from the Reuse Plan.

Table 4.2-5

Reuse Plan Estimated Tax Revenues

Activity	Property Tax	Sales Tax	Income Tax	Total	Percent
Theme Park Attractions	1,687,500	9,562,500	311,640	11,561,640	56.6
Commercial Recreation	100,000	1,147,500	39,350	1,286,850	6.3
Aviation/Aircraft Use	359,000	1,014,000	227,164	1,600,164	7.8
Industrial Business Park	1,109,375	0	1,947,904	3,057,279	15.0
Hotel/Conference Center	280,000	310,250	206,815	797,065	3.9
Commercial/Retail	261,563	1,729,219	111,314	2,102,095	10.3
Private Golf Course	na	na	na	na	na
Totals	3,797,438	13,763,469	2,844,188	20,405,094	100

Notes: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Aviation component assumes effective property tax rate of $500 per acre; sales taxes are based on estimated usage by based and non-based aircraft and applicable NYS aviation gasoline and jet fuel taxes. Reuse Plan provides no estimate of sales taxes for the hotel/conference component; these are estimated here based on 50 percent occupancy at $50 daily rate and 8.5 percent sales tax.
Percent may not add exactly due to rounding.
Dollars in 1995$ at build-out in year 20.
na = not applicable.
Source: HR&A, February 1996.

The applicable tax revenues would be distributed among the various state and local government entities. Property taxes would be allocated approximately 25 percent to the Town of Riverhead, 56 percent to the Riverhead School District, 4.6 percent for the Town highway fund, 6.0 percent to Suffolk County, and 8.4 percent to Other (local fire districts, local lighting districts, etc.). Sales taxes are distributed 50 percent to the state and 50 percent to the county (with one quarter of one percent to the NYS Metropolitan Transportation Authority). Income taxes are collected 100 percent by the state.

Additional local revenues would flow from various licenses and fees; however, because these revenues are relatively small and difficult to predict, no estimate of increases in these revenues has been made. Additional tax revenues would be generated on a temporary basis during the construction of the site but are not estimated here because they would be spread over 20 years on an undetermined schedule.

Housing

No housing development is proposed under the Reuse Plan and under current new housing by the Reuse Plan is not anticipated because of the relatively small numbers of new employees in the context of the Suffolk labor market and the significant recession this region suffered since 1990. Sufficient existing resident labor is anticipated to fill the direct and indirect jobs, so that no new housing development is anticipated in the region attributable to the Reuse Plan.

4.2.3 Calverton Enterprise Park/Raceway Alternative

Demography

Similar to the Reuse Plan, the Enterprise Park/Raceway alternative would add no new residents to the site and is therefore not expected to induce new residential development in the region because it has no on-site residential component, and the estimated increase of 2,199 jobs represents less than 0.5 percent of the 1995 resident labor force and would be unlikely to cause in-migration of new workers.

Employment and Income

Direct Employment

The employment and earnings estimated for this alternative are shown in Table 4.2-6. Direct employment at full build-out is estimated to be 2,199 jobs, with associated earnings of $53.6 million (rounded). In addition to the direct permanent jobs, indirect employment would be created from the

earnings from direct employment circulating in the regional economy, and from temporary construction employment generated by construction activity.

Table 4.2-6

Enterprise Park/Raceway Alternative Estimated Direct Employment and Earnings

Land Use	Direct Jobs	Mean Annual Wage ($)	Total Annual Earnings ($1,000s)
Automobile Raceway	100	31,355	3,136
Theme Park	571	15,594	8,904
Industrial Business Park	1,100	31,355	34,503
Hotel/Conference Center	360	16,414	5,909
Commercial Recreation	68	16,534	1,124
Private Golf Course	-	-	-
Totals	2,199	-	53,576

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Dollars in 1995$ for build-out in year 20. na = not applicable.
Sources: HR&A, Inc., February, 1996; and Project Calverton, Inc., May, 1995.

Indirect Employment

Spending by the households of the 2,199 employed workers would also generate additional indirect economic activity. Estimates of these indirect jobs and earnings have been derived from the RIMS II model for the Nassau-Suffolk region in a manner similar to the Reuse Plan analysis. Total direct and indirect employment is computed at 4,612 jobs; indirect employment represents 52.2 percent of the total at 2,413 jobs (Table 4.2-7). Total earnings are projected to be $102 million, of which $48.4 million are generated indirectly. These numbers are in 1995 dollars but the amount is based on the full build-out scenario in year 2017. As the proposed development is phased in, the indirect jobs and earnings would grow proportionately.

Project Calverton, Inc (May 1995) anticipates up to 500,000 visitors per year, each staying an average of 2.5 days in the vicinity and spending $200 per day, or a total of $250 million per year. These visitors are in turn projected to generate 3,300 indirect jobs. Such numbers appear highly optimistic. In this EIS, the numbers of indirect jobs assigned to this activity in the RIMS II model and applied here are smaller, and thus more conservative for estimating employment and earnings.

Table 4.2-7

Enterprise Park/Raceway Alternative Estimated Direct and Indirect Employment & Earnings

Land Use	Industrial Code	Direct Jobs	Direct Earnings ($million)	Multipliers		Total Jobs	Indirect Jobs	Total Earnings ($million)	Indirect Earnings ($million)
				Jobs	Earnings				
Theme Park Attraction	76.0206	571	8.9	1.6283	1.7996	930	359	16.0	7.1
Commercial Recreation	76.0203	68	1.1	3.8742	2.1771	263	195	2.4	1.3
Automobile Raceway	76.0204	100	3.1	2.4671	2.6035	247	147	8.2	5.0
Industrial Business Park	62.0100	1,100	34.5	2.2986	1.8620	2,528	1,428	64.2	29.7
Hotel/Conference Center	72.0100	360	5.9	1.7898	1.9019	644	284	11.2	5.3
Private Golf Course	-	-	-	-	-	-	-	-	-
Totals		2,199	53.5			4,612	2,413	102.0	48.4

Note: Estimates are approximate based on a long-term (20-year) development plan that is subject to change. Dollars in 1995$ for build-out in year 20.
na = not applicable.
Source: US Bureau of Economic Analysis, RIMS II model of Nassau-Suffolk Region, 1996.

Construction Employment

Capital expenditures for infrastructure elements (new roads, utilities, etc.) would most likely be similar to the Reuse Plan's estimate of $63 million ($30 million and $33 million for on-site and off-site improvements, respectively; Table 4.2-4). Total construction costs (including infrastructure) are identified in Table 4.2-8 and are estimated at $432 million, somewhat less than the Reuse Plan's $484 million estimate. Based on the estimated construction costs, it is possible to project the number of direct construction jobs and other indirect jobs generated by construction activity. Following the same ULI and RIMS II modeling methodology identified for the Reuse Plan, an estimated 4,344 construction jobs would be created with this alternative. An additional 5,165 jobs would be created in other industries, thus generating a total of 9,509 direct and indirect jobs from the construction. Spread over the development period, the direct construction employment would average 217 jobs in each of the 20 years. Total earnings associated with construction are estimated to be $140 million for direct and $134 million for indirect employment.

Fiscal Impacts

As with the Reuse Plan, a fiscal analysis of the Enterprise Park/Raceway alternative identifies that substantial fiscal benefits would result from the redevelopment of NWIRP Calverton. Using similar assumptions as for the Reuse Plan, projections of real property, sales, and income taxes have been estimated and are presented in Table 4.2-9. Real property tax collections of $3.4 million are expected, including a $650,000 parking and gate tax for the raceway component (Project Calverton, Inc. 1995). Again, following assumptions made for the Reuse Plan in Table 4.2-5, these tax revenues would be distributed to the appropriate jurisdictions (town, school district, fire district, etc.). Sales taxes of $12.9 million are estimated to be collected for the New York State and Suffolk County; almost $1.9 million in income taxes would go to the state. Appropriate caution should be used with respect to these tax revenue estimates given that they assume full build-out by the year 2017 and that the alternative includes several speculative elements such as the theme park and the raceway, which together account for 78 percent of all revenues.

Housing

Like the Reuse Plan, no residential housing component is proposed under the Enterprise Park/Raceway alternative; therefore, inducement of new housing is not anticipated because of the relatively small numbers of new employees in the context of the overall Suffolk County labor market. Sufficient existing resident labor is anticipated to fill the direct and indirect jobs, so that no new housing development is anticipated in the region attributable to this alternative.

Table 4.2-8

Enterprise Park/Raceway Alternative Estimated Construction Costs

Land Use	Construction Costs ($millions)
Automobile Raceway	10
Theme Park Attractions	204
Industrial Business Park	42
Hotel/Conference Center	28
Commercial Recreation	75
Golf Course	10
Infrastructure	63
Total	432

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Dollars in 1995$.
Sources: Based on HR&A, Inc., February 1996; and Project Calverton, Inc., May 1995.

Table 4.2-9
Enterprise Park/Raceway Alternative Estimated Tax Revenues

Activity	Property Tax	Sales Tax	Income Tax	Total	Percent
Theme Park Attractions	1,687,500	9,562,500	311,640	11,561,640	63.5
Commercial Recreation	100,000	1,147,500	39,350	1,286,850	7.1
Automobile Raceway (a)	650,000	1,912,500	109,742	2,672,242	14.7
Industrial Business Park(b)	687,750	0	1,207,605	1,895,355	10.4
Hotel/Conference Center(c)	280,000	310,250	206,815	797,065	4.4
Private Golf Course	-	-	-	-	
Totals	3,405,250	12,932,750	1,875,152	18,213,152	100.0

Notes: (a) Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Raceway component assumes gate and parking taxes of $650,000 as per Project Calverton proposal, and assumes sales taxes based on 500,000 visitors each spending $45 (similar to theme park assumptions in Reuse Plan, Economics Worksheets (HR&A), February 1996); (b) no sales taxes are assumed for industrial activities as limited revenues would be generated; (c) Reuse Plan provides no estimate of sales taxes for the hotel component, these are estimated here based on 50 percent occupancy at $50 daily rate and 8.5 percent sales tax.
Percent may not add exactly due to rounding.
na = not applicable.
Sources: Reuse Plan, Development Economics Worksheets, February 1996; and Project Calverton, Inc., Mid Atlantic Race Complex, May 1995.

4.2.4 Peconic Village Alternative

Demography

This alternative is the only one that would introduce new residents to the site and to the region. The Peconic Village alternative would develop 688 units of assisted living and 1,350 units of senior housing. The total new resident population is estimated to be 2,889 and all these persons would be aged 55 or older. The estimated total number of employees at the site would be 1,923 (1,252 less than the Reuse Plan and 301 less than the Enterprise Park/Raceway alternative). The non-residential components of this alternative would not be expected to induce new resident in-migration to the region.

Employment and Income

Direct Employment

Employment and estimated earnings for the Peconic Village Alternative are shown in Table 4.2-10. Direct employment at full build-out in year 20 (1995 dollars) would be 1,923, with associated estimated earnings of $49.4 million. Employment of 25 full time equivalent jobs is estimated from the private and public golf courses. In addition to the direct permanent jobs, indirect employment would be created from the earnings from direct employment circulating in the regional economy, and from temporary construction employment generated by construction activity.

Table 4.2-10

Peconic Village Estimated Direct Employment and Earnings

Land Use	Jobs	Estimated Mean Annual Wage ($)	Estimated Total Annual Earnings ($1,000s)
Retirement Housing	0	0	0
Assisted Living	275	24,336	6,692
Industrial Business Park	1,036	31,355	32,484
Hotel/Conference Center	360	16,414	5,909
Retail	227	16,394	3,716
Golf Courses and Parks	25	25,000	625
Total	1,923		49,426

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Dollars in 1995$.
Source: HR&A, Inc., February, 1996.

Indirect Employment

Spending by the households of the 1,923 employed workers estimated under the Peconic Village Alternative will also generate additional secondary economic activity. Estimates of these secondary jobs and earnings have been derived from the RIMS II model for the Nassau-Suffolk region, as was done for the other alternatives. Table 4.2-11 shows that total direct and indirect employment at full build-out would be 3,809 jobs, with indirect employment representing 49.5 percent, or 1,886 jobs. Total earnings are projected to be $90.7 million, of which $41.3 million are generated indirectly. These numbers are in 1995 dollars but the volume is based on the full build-out scenario in year 2017. As the Peconic Village development is phased in, the indirect jobs and earnings would grow proportionately.

Construction Employment

Capital expenditures for infrastructure elements (new roads, utilities, etc.) would likely to be less than that of the Reuse Plans because of the reduced numbers of visitors. The theme park attraction component is eliminated and would draw many more visitors than the two golf courses that are part of this alternative. Data from the town's reuse planning process estimated that the Peconic Village infrastructure improvements would be in the range of $27 million to $49 million. The higher figure has been used for this analysis. Total construction costs (including infrastructure) are identified in Table 4.2-12 and are estimated to be $406.8 million, less than the Reuse Plan estimate of $484 million and the Enterprise Park/Raceway alternative estimate of $432 million. Using methods described for the Reuse Plan, an estimated 4,089 direct construction jobs and 4,862 indirect jobs would be generated from the construction activities. Earnings for the construction phase are estimated at $132 million for direct employment and $113 million for indirect employment.

Fiscal Impacts

As with the other alternatives, the Peconic Village alternative would result in fiscal benefits from redevelopment of NWIRP Calverton even though the estimated number of direct jobs (1,923) is 39 percent fewer than the Reuse Plan. Peconic Village direct employment earnings are estimated to be $49.4 million, about $31.9 million less than the Reuse Plan.

Using the same assumptions for the fiscal impacts of the Reuse Plan, and pro-rating them to the development associated with the Peconic Village alternative, projections of real property, sales, and income taxes were made and are shown in Table 4.2-13. Estimates include annual real property tax collections of $8.3 million (rounded); sales taxes of $2.3 million (rounded); and income taxes of $1.7 million. Again, using the same revenue distribution assumptions as were applied to the Reuse Plan anticipated tax revenues, the total $12.3 million in new revenues would be distributed to the appropriate jurisdictions.

Table 4.2-11

Peconic Village Estimated Direct and Indirect Employment and Earnings

Land Use	Industrial Code	Direct Jobs	Direct Earnings ($million)	Multipliers		Total Jobs	Indirect Jobs	Total Earnings ($million)	Indirect Earnings ($million)
				Jobs	Earnings				
Assisted Housing	77.0800	275	6.7	1.5207	1.742	418	143	11.7	5.0
Industrial Business Park	62.0100	1,036	32.5	2.2986	1.862	2,381	1,345	60.5	28.0
Hotel/Conference Center	72.0100	360	5.9	1.7898	1.9019	644	284	11.2	5.3
Retail	69.0200	227	3.7	1.4276	1.681	324	97	6.2	2.5
Golf Courses/Parks	76.0206	25	0.6	1.6283	1.7926	41	16	1.1	0.5
Totals		1,923	49.4			3,808	1,885	90.7	41.3

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Dollars in 1995$.
Source: US Bureau of Economic Analysis, RIMS II model of Nassau-Suffolk Region, 1996.

Table 4.2-12

Peconic Village Alternative Estimated Construction Costs

Land Use	Construction Costs ($millions)
Senior Housing	200
Assisted Housing	77
Industrial Business Park	26
Hotel/Conference Center	28
Retail	17
Golf Courses and Parks	10
Infrastructure	49
Totals	407

Note: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. Dollars in 1995$.
Source: Based on HR&A, Inc., February 1996.

Table 4.2-13
Peconic Village Estimated Tax Revenues

Activity	Property Tax	Sales Tax	Income Tax	Total	Percent
Senior Housing	5,130,000	0	0	5,130,000	41.7
Assisted Housing	1,960,800	0	234,234	2,195,034	17.8
Industrial Business Park	647,500	0	1,136,932	1,784,432	14.5
Hotel/Conference Center	280,000	310,250	206,815	797,065	6.5
Retail	306,000	1,963,500	130,059	2,399,559	19.5
Golf Courses/Parks	0	0	21,875	21,875	0.2
Totals	8,324,300	2,273,750	1,729,915	12,327,965	100

Notes: Estimates are approximate based on a long-term (20- year) development plan that is subject to change. The Reuse Plan provides no estimate of sales taxes for the hotel component, these are estimated here based on 50 percent occupancy at $50 daily rate and 8.5 percent sales tax.
Percents may not add due to rounding.
Source: HR&A, Development Economics Worksheets, February 1996.

Housing

The Peconic Village Alternative would develop new on-site housing for seniors, aged 55 or older (688 units of congregate care and 1,350 units of senior retirement housing). This proposal would make a major contribution to meeting assisted housing and senior housing needs in the region. A large proportion of the population of Riverhead, and Southampton in particular, is aged 65 and over (20.5 percent and 19 percent, respectively). No specific profile of anticipated housing costs or anticipated resident population was provided as part of the reuse planning process for the Peconic Village alternative; consequently, an assessment of how well the housing element of the Peconic Village would meet specific housing needs in the region is not possible.

4.3 Community Services

4.3.1 No Action Alternative

Under the no action alternative there would be no redevelopment at NWIRP Calverton. Consequently, there would be no new demand for community services. These conditions represent the baseline condition assumed for the no action alternative.

4.3.2 Calverton Enterprise Park Reuse Plan

No new housing units would be developed under the Reuse Plan and no new residential development is likely to be induced; therefore, there would be little or no effect upon those services usually focused on serving the residential population, particularly schools and health services. Other community services which relate more directly to the types of development envisioned at NWIRP Calverton under the Reuse Plan, particularly the emergency services of police, fire, and ambulance, would likely see additional demands.

Schools

As previously noted, no direct or indirect effects on school services and facilities are expected from the Reuse Plan since no new residents or their families are anticipated.

Health Care

The location and availability of hospitals and hospital beds were presented in Subchapter 3.3.2. Hospital occupancy rates are 78 percent at Stony Brook, 70 percent at Brookhaven, and 100 percent at Riverhead. In general, demand projections for medical/surgical and pediatric unit hospitals are declining, based largely on trends of reduced stays in hospitals. Given that no new residential population is projected under the Reuse Plan, the only new demands would be to serve the employees and visitor populations at the site.

The new worker population at the redeveloped NWIRP Calverton would increase to an estimated 3,175 employees by year 2017. Until the late 1980s, the facility employed approximately 2,800 workers and, consequently, the proposed employment under the Reuse Plan is within the range historically served by the local health facilities. The major difference would be the numbers of visitors drawn to the theme park and commercial/recreation activities proposed in the Reuse Plan. As many as 2,500,00 annual visitors are projected for the theme park and 300,000 to the sports venue. While this is a sizeable increase, the kinds of health services likely to be required would focus more on emergency/trauma conditions and would be likely to represent only a small daily increase to demands on the health facilities that serve Suffolk County's estimated 1994 resident population of 1,349,300.

The present availability of hospital beds and the possible decline in demand indicate that the redevelopment of NWIRP Calverton, including its associated visitor population, would be unlikely to present any particular problems for the county's health care facilities. The phased Reuse Plan development over 20 years would also provide ample lead time for expansion of facilities to meet any specific health services that may be affected.

Public Safety and Emergency Services

The redevelopment of NWIRP Calverton as the Reuse Plan would potentially present an increase in service demands on the surrounding communities' safety and security services. Discussions with township and district representatives indicated no anticipated problems in meeting this future demand, given the scope of redevelopment and the timeframe for implementation.

No new resident population would be expected from the Reuse Plan, service demands would relate to the new developments on site and the visitors drawn to them. The development of new structures would need to be constructed according to applicable fire and safety codes with sprinkler systems and, consequently, would present minimal fire risks. Existing structures at NWIRP Calverton are already so equipped. In addition, public safety would be reviewed for facilities drawing visitor populations of over 5,000, and the project would require permits issued by Suffolk County Health Department, Division of Emergency Services (NYS Sanitary Code, Part 18). Discussion with the Director of Regional EMS indicated that private facilities drawing large populations would be required to maintain their own emergency vehicles and facilities, proportionate to the population (Larkin, June 25, 1996).

Discussions with Town of Riverhead Police and Suffolk County Police indicated the probability that the fully developed Reuse Plan would be of a size and character requiring its own security force and would, therefore, present minimal increases in demand upon their services (Grattan, and Micheal, June 17 and June 20, 1996).

If increases in the demand for these community services were to occur during the 20-year development period, increases in demand for these community services resulted, there would be substantial new tax revenues available to assist in covering the costs of expanded services. Table 4.2-5 shows that increases in town and county revenues are projected to be $3.8 million in property taxes; of the total sales taxes generated, one-half or $6.4 million (rounded) would be distributed locally. The projected increase in property taxes represents approximately 20 percent of the Town of Riverhead's 1995 budget of $18.4 million. No significant financial difficulties would be expected, therefore, in meeting any potential growth in demand for these services.

Parks and Recreation

The Reuse Plan proposes the development of substantial designated open space, park, and

recreational facilities, totaling 884 acres (358 hectares), not counting the theme park and commercial recreation areas. This designated total is comprised of:

- 438 acres (176 hectares) of Pine Barrens Core Preservation Area;
- 137 acres (55 hectares) of natural undisturbed lands west of McKay Lake;
- 183 acres (74 hectares) for an active community park south of the industrial core fronting Grumman Boulevard;
- 24 acres (10 hectares) of buffer area along Route 25 adjacent to the Calverton National Cemetery;
- 27 acres (11 hectares) of lands for a park within the industrial core;
- 27 acres (11 hectares) of natural area in the northeast to serve as an endangered species habitat; and
- 48 acres (19 hectares) of additional open space.

The proposed 18-hole public golf course of 166 acres (67 hectares) would provide additional open space recreational opportunities.

The theme park attractions would provide a major regional recreational facility on 434 acres (176 hectares) of the site and is expected to draw 2,500,000 visitors per season. In addition, a commercial recreational center in the northeastern portion of the site would provide a family entertainment center, skating rink, and a sports stadium, with annual visitors estimated at 300,000. Successful development of these proposed elements would provide a major increment to existing recreational facilities in the region.

As a separate but related action, all of the buffer lands outside of the fence comprising 3,138 acres (1,241 hectares) would be disposed of and given to the NYSDEC. These lands would be legislatively mandated to remain in their natural state for conservation and recreational purposes (Subchapter 1.1).

4.3.3 Calverton Enterprise Park/Raceway Alternative

Many of the assumptions and much of the rationale for the Reuse Plan may also be applied to the Calverton Enterprise Park/Raceway Alternative. Like the Reuse Plan, there would be no new residents on site nor would induced population be likely. As described in Subchapter 2.4, the primary differences between this alternative and the Reuse Plan would be:

- A permanent automobile raceway replaces the aviation and aircraft use;
- Service retail (32 acres or 13 hectares) and the industrial core park recreation area (27 acres or 11 hectares) are eliminated; and
- The industrial business park is reduced in size from 282 acres (114 hectares) to 217 acres (88 hectares).

Schools

No direct or indirect effects on school services and facilities would result from the Enterprise Park/Raceway Alternative because no new residents or their families are anticipated.

Health Care

This alternative would create an estimated 2,199 jobs, or 30 percent fewer than the Reuse Plan (Subchapter 4.2.3). However, the raceway is estimated to increase the number of event visitors to the site by 500,000 per year (Project Calverton Inc., 1995). As with the Reuse Plan, and despite the increase in event visitors, the availability of health facilities and services described in Subchapter 3.3.2 would be adequate in coping with the temporary visitor population and workers at the site..

Public Safety and Emergency Services

While the Enterprise Park/Raceway Alternative would shift some of the development from new employment to new visitors (compared to the Reuse Plan), only modest net shifts in demand for these services would result. As noted in the discussion of impacts for the Reuse Plan (Subchapter 4.3.2), the provision of private security and emergency services on site, together with increases in the local tax base from private redevelopment of NWIRP Calverton would be expected to support the small increments in service capacity that may be required.

Parks and Recreation

The Calverton Enterprise Park/Raceway Alternative would provide an increment of 999 acres (405 hectares) of designated new open space, park, and recreation land to the community. The 27-acre (11-hectare) park in the industrial core would be eliminated to accommodate the automobile raceway. The private recreational components of the theme park attractions and the commercial recreation area would remain the same but would be joined by the 835-acre (338-hectare) raceway. Buffer lands would be disposed of to the NYSDEC for conservation and recreational activities. In summary, the provision of new public parkland and recreational facilities would represent a major increase in the availability of such facilities in the region.

4.3.4 Peconic Village Alternative

The Peconic Village Alternative is the only one that would introduce a residential population to the NWIRP Calverton site. Like the other alternatives, because of the scale of the potential job development (an estimated 1,923 jobs at full build-out in 20 years), the affected community services would relate directly to the redeveloped site itself, rather than to serving a new induced population off site.

Schools

As with the Reuse Plan and the Enterprise Park/Raceway Alternative, no direct or indirect effects on school services and facilities would be expected from the Peconic Village Alternative. This is because the new residents would be seniors without school-aged children, and the anticipated new employment (estimated at 1,923 jobs) would not be of a scale likely to induce new residents to the area.

Health Care

The Peconic Village Alternative would generate an estimated new senior population of 2,889 on site, of which 688 would live in congregate care units and 2,197 would live in senior housing. Consequently, the anticipated impacts on health care services, particularly geriatric services, would be greater than for the Reuse Plan and the Enterprise Park/Raceway Alternative. No plans or cooperative arrangements are cited in the Reuse Plan as having been developed with area hospitals for this alternative. Nonetheless, given the anticipated declining demand for hospital beds, the scale of existing health facilities, and the small increment the new population represents compared to the regional population, no significant health care impacts are expected. Moreover, given the 20-year development horizon of this residential alternative, any particular emergent health care problems would have substantial lead time to be addressed.

Public Safety and Emergency Services

The impact analysis of the Reuse Plan for safety and emergency services indicated no major problems in meeting the anticipated growth in demand created by the redevelopment of NWIRP Calverton. While the Peconic Village Alternative adds new residents to the site, projected employment is only 61 percent of the Reuse Plan employment (1,923 and 3,175 jobs, respectively). Moreover, the elimination of the theme park attractions and commercial recreation area would eliminate the large number of seasonal visitors to the site. The Peconic Village Alternative does, however, increase the retail component to 190,000 sq ft (17,763 sq m) compared to 100,000 sq ft (9,300 sq m) in the Reuse Plan. Overall, only modest net shifts in demand for public safety and emergency services are predicted and no adverse impacts are likely from the Peconic Village Alternative. In addition, the increase in the local tax base from private redevelopment of the site would be expected to support the small increments in service capacity that may be required.

Parks and Recreation

The Peconic Village Alternative would provide a substantial increment of parkland recreation facilities in the area - a total of 1,428 acres (578 hectares) of designated open space and parkland. In addition to the 168-acre (68-hectare) public golf course, common to both the Reuse Plan and the Peconic Village Alternative, there would be a 192-acre (78-hectares) private golf course. The Peconic Village Alternative would provide the greatest increment to public parkland of the three alternatives, but it would not provide the private recreational facilities of the theme park and commercial recreation areas proposed in the other alternatives.

4.4 Transportation

4.4.1 No Action Alternative

In order to predict future traffic volumes under the no action alternative, it is necessary to document historical traffic conditions and changes in the study area as well as future changes in traffic generators (residential and employment centers that will likely be constructed, expanded or closed by the build year of 2017). A growth rate of 2.5 percent per year was used to account for general background traffic growth in the area and was provided by NYSDOT (Thornwell, June 7, 1996). To document other developments that will be in operation by the build year, the townships of Riverhead and Brookhaven were consulted.

Several changes in traffic generation are expected to occur by 2017. The town of Riverhead provided a list of projects that will be operable and likely to have an impact within the study area. Trips generated by these projects were developed from trip generation rates published by the Institute of Transportation Engineers (ITE). The projects from Riverhead included the following:

- Office Complex at Edwards Avenue and Route 25 -This 74,800-sq-ft (6,949-sq-m) office development would generate additional trips along Edwards Avenue and Route 25, particularly during the weekday commuter peaks.

- Ice Rink & Recreational Facility - A 35,100-sq-ft (3,261-sq-m) recreational facility located along Edwards Avenue to the south of Route 25. Trips generated by this facility generally occur during the weekday pm peak and on the weekend.

- Omni Solid Waste Transfer Station - Located along Route 25 between Route 25A and Edwards Avenue, trips generated by this 17,500-sq-ft (1,626-sq-m) facility are limited to trucks during the weekdays.

- Tanger Outlet Expansion - The 450,000-sq-ft (41,805-sq-m) expansion of this commercial facility would generate additional trips along Route 25. It is located to the east of the Long Island Expressway on Route 25.

- Riverhead Center - A new 430,000-sq-ft (39,947-sq-m) commercial establishment is planned along Route 25 to the east of the Long Island Expressway. Some additional trips generated from this facility are expected along Route 25.

A review of development projects likely to be constructed and in operation in the town of Brookhaven by the build-out year was conducted. These projects within approximately two mi (3.2 km) of NWIRP Calverton were used to generate additional vehicle trips based on trip generation rates published by ITE. A summary of the developments considered included:

- 1,673 single family homes and condominiums;
- 1.6 million sq ft (148,640 sq m) of retail space;
- 69,000 sq ft (6,410 sq m) of commercial office space;
- 67,000 sq ft (6,224 sq m) of senior housing; and
- 157,000 sq ft (14,585 sq m) of industrial space.

Therefore, the future baseline traffic network uses existing (1996) volumes as a baseline, provides 2.5 percent per year background growth, and adds trips to account for the specific developments in Riverhead and Brookhaven. The street network is assumed to remain the same as there are presently no scheduled major changes by New York State, Suffolk County, or Riverhead.

LOS Analysis

Capacity analysis and Level of Service (LOS) determinations for the future baseline condition were performed for the same intersections studied as for existing conditions (Chapter 3.4). The significant background traffic growth, along with traffic generated by the future developments in Riverhead and Brookhaven, would result in most of the signalized intersections operating at or above capacity. Extensive delays and congestion would result. Under the no action alternative, for all the am, pm, and weekend peak hours at Locations 1 through 5 (except Location 3 on the weekend), the LOS would be F, which represents unacceptable conditions to most drivers where operations have delays in excess of 60 seconds per vehicle. LOS for all the am, pm, and weekend peak hours at Locations 5, 6, and 7 would be A, characterized as operations with very low delays (i.e., less than five seconds per vehicle). The results of the overall LOS analysis for am, pm, and Saturday peak hours is provided below in Table 4.4-1, and the complete LOS analysis is provided in Appendix C.

Table 4.4-1
Summary of Overall LOS Analysis - Future Baseline Conditions

Intersection	AM Peak Hour Overall LOS	PM Peak Hour Overall LOS	Weekend Peak Hour Overall LOS
Middle Country Road and Rocky Point Road (Location 1)	F	F	F
Middle Country Road and Edwards Road (Location 2)	F	F	F
Middle Country Road and North County Road (Location 3)	F	F	C
Middle Country Road and Manorville Road (Location 4)	F	F	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)	A	A	A
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)	A	A	A
Edwards Avenue and River Road (Location 7)	A	A	A

Public Transportation

The existing bus lines in the study area are expected to accommodate future increases in ridership demands without appreciable degradation in operation.

4.4.2 Calverton Enterprise Park Reuse Plan

The proposed Reuse Plan development incorporates a variety of land uses including the industrial business park, theme park, GA/cargo airport, commercial recreation area and a golf course.

Assumptions

Where applicable, trips generated by the Reuse Plan have been based on trip generation rates in *Trip Generation* (ITE, 1991). Otherwise, estimates of trip generation were developed using information from other sources as noted below. Table 4.4-2 provides a summary of proposed Reuse Plan land uses, trip generation rates, and generated vehicle trips for am, pm, and Saturday peak hours. Trips developed from ITE trip generation rates are identified by the ITE land use code.

The following additional assumptions have been used in the development of trips in Table 4.4-2:

- Within the Theme Park, trips generated by the "Attractions" land use component were developed based on trip generation characteristics for the Six Flags Great Adventure Theme Park in Jackson, New Jersey (McDonough & Rea Associates, 1996). The Great Adventure facility is a major theme park in the northeast and has operational characteristics similar to those expected for the theme park attractions with patrons arriving primarily by auto. The attractions would open at 10:00 am and operate until 11:00 pm during the summer peak season. Estimated vehicle trips were developed from the expected yearly attendance level at the theme attractions compared to actual yearly attendance recorded at Great Adventure. Annual attendance at Great Adventure was 4 million visitors in 1995 (McDonough & Rea, 1996), while expected maximum annual attendance for Reuse Plan attractions is 2.5 million visitors. A 4:2.5 proportion of attendance levels was applied to vehicle trips generated for Great Adventure to estimate theme park attraction vehicle trips. Vehicle trips generated for the theme park attractions were estimated to be 63 percent of the trips generated by Great Adventure during peak attendance levels.

Table 4.4-2

Generated Vehicle Trips
Calverton Enterprise Park Reuse Plan- Weekday

Land Use	ITE Code	Size	Units	Trip Generation Rate				Weekday Daily Trip Generation Rate	Generated Trips				Weekday Daily Trips
				AM		PM			AM		PM		
				Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Industrial Business Park	770	887,500	sq ft	0.0014	0.0002	0.0003	0.0011	0.01437	1243	178	266	976	12,753
Theme Park													
Attractions		434	acres	-	-	-	-	-	300	0	125	493	14,380
Hotel/Conference	310	400	rooms	0.402	0.268	0.410	0.350	8.70	161	107	164	140	3,480
Service Retail	814	100,000	sq ft	0.0016	0.0017	0.0014	0.0011	0.02033	160	170	140	110	2,033
Aviation/Aircraft Use		242	flights	-	-	-	-	-	64	64	64	64	855
Commercial Recreation													
Stadium		8,000	seats	-	-	-	-	-	15	0	1,350	135	6,490
Family Entertainment Center		137	acres	-	-	-	-	-	36	137	15	59	1,726
Public Golf Course	430	18	holes	2.673	.574	1.747	1.613	37.59	48	10	31	29	677
Open Space - Parkland	413	884	acres	0.03	0.03	0.03	0.03	0.50	27	27	27	27	442
Sewage Treatment Plant		18	acres	-	-	-	-	-	6	0	0	6	20
Total Trips									2,027	666	2,155	2,006	42,856

Table 4.4-2

Generated Vehicle Trips
Calverton Enterprise Park Reuse Plan - Saturday

Land Use	ITE Code	Size	Units	Trip Generation Rate		Saturday Daily Trip Generation Rate	Generated Trips		Saturday Daily Trips
				Saturday Peak Hour			Saturday Peak Hour		
				Enter	Exit		Enter	Exit	
Industrial Business Park	770	887,500	sq ft	0.0001	0.0001	0.00291	89	89	2,583
Theme Park									
Attractions		434	acres	-	-	-	0	2,375	14,380
Hotel/Conference	310	400	rooms	0.435	0.435	10.5	174	174	4,200
Service Retail	814	100,000	sq ft	-	-	0.02102	-	-	2,102
Aviation/Aircraft Use		242	flights	-	-	-	64	64	855
Commercial Recreation									
Stadium		8,000	seats	-	-	-	1,350	135	6,680
Family Entertainment Center		137	acres	-	-	-	0	285	1,725
Public Golf Course	430	18	holes	3.312	1.288	42.43	60	23	764
Open Space - Parkland		884	acres	0.03	0.03	0.61	27	27	539
Sewage Treatment Plant		18	acres	-	-	-	2	2	6
Total Trips							1,737	3,145	33,834

- To generate trips to the 8,000 seat stadium of the Commercial Recreation area, a sold-out event was assumed with a two-hour arrival pattern. Research has indicated auto occupancy for this type of facility is 3.0 persons per automobile (Weant and Levinson, 1990). Therefore, a sold-out (8,000 spectator) event would generate approximately 2,700 vehicles during a two-hour arrival pattern, or 1,350 vehicles per hour. In addition to the arriving volume, a ten percent exiting volume was applied for drop-off vehicle trips. Adjacent to the stadium, a Family Entertainment Center would generate 300,000 visitors per year.

Vehicle trips generated by these visitors were developed by applying a similar vehicle trip/visitor proportion as used for the Theme Park attractions.

- Trips to the Service Retail uses are expected to be pass-by or shared trips generated by other uses within the site. They would not contribute a substantial amount of additional trips to the roadway network. Therefore, trip rates as provided by ITE were reduced by 50 percent.

- Aviation land use vehicle trips were developed from anticipated employment and the number of expected daily flights.

- Trips generated by the industrial business park, hotel/conference center, golf course, and open space (parkland) land uses were based on trip rates in Trip Generation (ITE, 1996).

Traffic generation characteristics for the proposed uses exhibit varying temporal distributions. In order to develop the appropriate analysis time periods, the following assumptions were made:

- Industrial Business Park - Trips generated by this 887,500 sq ft (82,449 sq m) development would occur primarily during typical weekday am and pm commuter peaks. To a lesser degree, trips would also be generated on Saturdays.

- Theme Park - A major portion of this district would consist of the "attractions" land use, with support facilities such as a hotel, campgrounds, and retail uses. Assumed hours of operation were between 10:00 am and 11:00 pm. The McDonough & Rea study for Great Adventure notes the greatest number of trips after the park closes, between 11:00 pm and 12:00 am.

- Aviation/Aircraft Use - Aviation would be a mix of air cargo and general aviation operations. There would be 242 flights per day with generated vehicle trips occurring during am and pm commuter peaks. Although use on Saturdays would likely

decrease, hourly vehicle trips generated during weekday peaks would also be applied to the Saturday analysis period.

- Commercial Recreation - Trips generated by these facilities would occur during pm commuter and Saturday peaks. The actual time period of greatest impact would be dependent upon the starting time of the scheduled event.

- Public Golf Course - Trips generated by the 18-hole golf course would occur during am and pm commuter peaks, and the Saturday peak.

Analysis periods considered for weekday conditions are typical am and pm commuter peak periods. However, land uses for the Calverton Enterprise Park Reuse Plan would result in various traffic generation peaks throughout a Saturday. The appropriate traffic analysis time period on Saturday was developed considering the expected temporal distribution of generated trips for proposed land uses.

To determine the appropriate peak, Table 4.4-3 was developed to provide expected hourly trip generation characteristics of each use. A "worst case scenario" was modeled by assuming a stadium event would be scheduled for 8:00 pm on Saturday. As noted in the table, the most significant peak occurs between 11:00 pm and midnight, as the peak exiting volume from the theme park coincides with the peak stadium exiting volume.

Trips were distributed throughout the roadway network based on likely travel routes to the site. These trips account for new internal circulation routes, including a new entrance on River Road. Distribution of these trips on the local street network is provided in Figure 4.4-1 (Vehicle Trip Distribution).

Capacity analyses were performed for the same intersections considered under existing and future baseline conditions. The Reuse Plan would generate considerable additional trips: 2,693 additional peak hour trips are generated during the weekday am peak hour, 4,161 additional trips during the weekday pm peak, and 4,882 additional trips during the Saturday peak (Table 4.4-2). These additional trips would create a dramatic increase in congestion levels. Results of capacity analyses are provided in Table 4.4-4. A comparison of this table with the capacity analysis indicates that the Reuse Plan would significantly impact all of the study area intersections during both weekday and weekend analysis conditions. Under the future baseline condition, the intersections would operate poorly. The Reuse Plan would worsen these conditions. The LOS for Location 5 would change from A under the future baseline condition to F with the Reuse Plan for all peak hours. The pm peak hour LOS for Locations 6 and 7 are also adversely affected under the Reuse Plan; the LOS would change from A for both locations to E and F for Locations 6 and 7, respectively.

Table 4.4-3

Calverton Enterprise Park Reuse Plan - Weekend
24-Hour Vehicular Volumes

Time Period	Industrial Business Park			Theme Park						Aviation/Aircraft Use			Commercial Recreation						Golf Course/Open Space/ Sewage Treatment Plant			Hourly Totals (No. Of Cars)
				Attractions			Hotel/Conference/ Retail						Stadium			Family Entertainment Center						
	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-Way	
12-1	0	0	0	0	0	0	0	0	0	10	10	20	10	100	110	0	0	0	0	0	0	130
1-2	0	0	0	0	0	0	0	0	0	10	10	20	0	0	0	0	0	0	0	0	0	20
2-3	0	0	0	0	0	0	0	0	0	7	7	14	0	0	0	0	0	0	0	0	0	14
3-4	0	0	0	0	0	0	0	0	0	7	7	14	0	0	0	0	0	0	5	0	5	19
4-5	25	25	50	0	0	0	36	35	71	7	7	14	0	0	0	0	0	0	17	1	18	224
5-6	45	45	90	0	0	0	70	70	140	10	10	20	0	0	0	0	0	0	25	6	31	421
6-7	60	60	120	100	0	100	145	145	290	32	32	64	0	0	0	12	0	12	30	11	41	917
7-8	70	70	140	300	0	300	205	205	410	64	64	128	0	0	0	36	0	36	43	12	55	1479
8-9	80	80	160	475	0	475	215	215	430	32	32	64	0	0	0	57	0	57	57	14	71	1687
9-10	83	83	166	725	0	725	240	240	480	10	10	20	0	0	0	87	0	87	60	21	81	2039
10-11	85	85	170	1200	0	1200	250	254	504	10	10	20	5	5	10	144	0	144	70	31	101	2653
11-12	89	89	178	1200	0	1200	294	264	558	10	10	20	5	5	10	144	0	144	89	52	141	2809
12-1	85	85	170	938	25	963	270	265	535	10	10	20	5	5	10	113	3	116	57	52	109	2458
1-2	83	83	166	875	47	922	230	225	455	10	10	20	5	5	10	105	6	111	45	40	85	2224
2-3	81	81	162	625	74	699	210	200	410	10	10	20	15	5	20	75	9	84	35	41	76	1881
3-4	80	80	160	250	178	428	185	190	375	32	32	64	25	10	35	30	21	51	29	48	77	1565
4-5	77	77	154	188	244	432	162	165	327	64	64	128	50	50	100	23	29	52	29	52	81	1601
5-6	73	73	146	125	493	618	157	155	312	32	32	64	100	100	200	15	59	74	25	58	83	1809
6-7	67	67	134	89	469	558	151	152	303	10	10	20	1350	135	1485	11	56	67	23	78	101	2971
7-8	63	63	126	63	516	579	135	150	285	10	10	20	1350	135	1485	8	62	69	17	75	92	2941
8-9	55	55	110	31	738	769	100	115	215	10	10	20	50	35	85	4	89	92	6	41	47	1553
9-10	50	50	100	6	825	831	61	66	127	10	10	20	100	50	150	1	99	100	0	21	21	1476
10-11	40	40	80	0	1206	1206	35	40	75	10	10	20	135	1350	1485	0	145	145	0	7	7	3093
11-12	0	0	0	0	2375	2375	0	0	0	10	11	21	135	1350	1485	0	285	285	0	0	0	4166
Totals			2582			14380			6302			855			6680			1726			1323	

Vehicle Trip Distribution

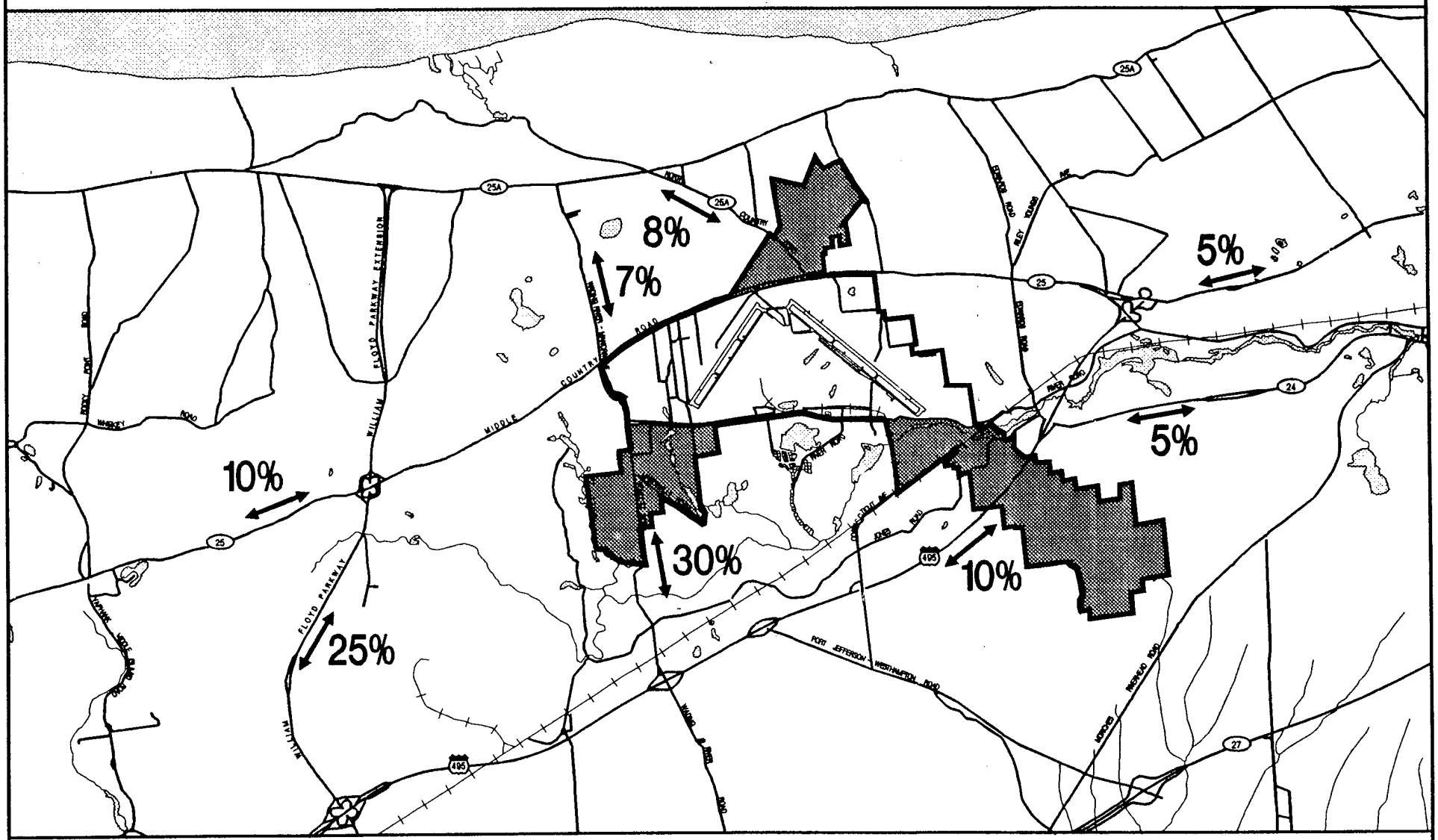


Figure 4.4-1

Table 4.4-4

Summary of Overall LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	AM Peak Hour Overall LOS	PM Peak Hour Overall LOS	Weekend Peak Hour Overall LOS
Middle Country Road and Rocky Point Road (Location 1)	F	F	F
Middle Country Road and Edwards Road (Location 2)	F	F	F
Middle Country Road and North County Road (Location 3)	F	F	C
Middle Country Road and Manorville Road (Location 4)	F	F	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)	F	F	F
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)	A	E	F
Edwards Avenue and River Road (Location 7)	A	F	C

Several options were investigated to mitigate these potential impacts. Signal timing adjustments, new phasing plans and geometric improvements were considered. These mitigative measures are discussed in Chapter 5.

Public Transportation

Minimal increases in existing public transit system use are expected under Reuse Plan. This is because the modal split for the generators would heavily favor the automobile. Therefore, the existing system would experience only minor impacts, and would continue to operate acceptably.

4.4.3 Calverton Enterprise Park/Raceway Alternative

The trips generated by the Enterprise Park/Raceway Alternative were developed using assumptions similar to the Reuse Plan. However, events at the automobile raceway introduce different trip generation characteristics. Attendance levels at the racetrack would vary considerably, depending on the event scheduled. Typically, local amateur events would be scheduled on weekends during the summer. According to Project Calverton Inc., approximately six major weekend events would be scheduled over the racing season; two of the major events, a Winston Cup Race and an Indy Car

Race, would expect attendance of up to 60,000 people. Performing capacity analysis and programming roadway improvements for these unusual events was not considered reasonable and was therefore not performed. Rather, an analysis of a smaller, more typical, "major" event was considered. For analysis purposes, a Sports Car Club of America Race with attendance of 21,000 was evaluated. The Sports Car Club of America event would likely generate peak hourly volumes of 2,300 vph (Dunn, January 18, 1996). Since these race events would occur only on weekends, racetrack-generated trips were applied to the Saturday peak. This alternative would generate 2,096 am peak vehicle trips and 3,707 pm peak vehicle trips during the week, and 7,460 vehicle trips during the Saturday peak (Table 4.4-5).

Analysis periods considered for weekday conditions were typical am and pm commuter peaks. Table 4.4-6 provides expected hourly trips generated by each land use. A weekend "worst case scenario" was considered, with an event at the stadium occurring at 1:00 pm. This condition would result in the peak inbound flows occurring simultaneously at the theme park, stadium, and racetrack. As noted in the table, peak flow would occur between 11:00 am and 12:00 pm. The peak volumes for the am and pm peak hours are 22 and 11 percent less, respectively than the peak volumes calculated for the Reuse Plan. The Saturday peak is more than 1.5 times greater than the Reuse Plan under the assumed major raceway event.

Capacity analyses were performed for the same intersections considered for the Reuse Plan. This alternative generates fewer weekday vehicle trips than the Reuse Plan, due to the reduced industrial business park component of the site. Hence, weekday impacts to the study area intersection are somewhat less than the Reuse Plan. However, the racetrack component of this alternative, and the scheduled weekend events, results in a substantially greater impact on the Saturday peak than the Reuse Plan. In terms of overall LOS, this alternative, like the Reuse Plan, would cause F-level conditions at Locations 1 through 5 for the am, pm, and weekend peak hours. Generally, overall LOS at Locations 6 and 7 are somewhat improved compared to the Reuse Plan, due to fewer weekday vehicle trips because of the reduced Industrial Business Park component of the site. However, the racetrack component of the this alternative and associated weekend events results in a substantially greater impact on the Saturday peak than the Reuse Plan. The overall results of the LOS analysis is provided in Table 4.4-7 and the complete analysis is contained in Appendix C. Capacity analyses were performed for the same intersections considered for the Reuse Plan. This alternative generates considerably fewer vehicle trips than the Reuse Plan. Hence, impacts to the study area intersections are likewise diminished. The overall results of the LOS analysis is provided in Table 4.4-7, with the complete results provided in Appendix C.

Table 4.4-5

Generated Vehicle Trips
Calverton Enterprise Park/Raceway Alternative - Weekday

Land Use	ITE Code	Size	Units	Trip Generation Rate				Weekday Daily Trip Generation Rate	Generated Trips				Weekday Daily Trips
				AM		PM			AM		PM		
				Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Industrial Business Park	770	682,900	sq ft	0.0014	0.0002	0.0003	0.0011	0.01437	956	137	205	751	9,813
Theme Park													
Attractions		434	acres	-	-	-	-	-	300	0	125	493	14,380
Hotel/Conference	310	400	rooms	0.402	0.268	0.410	0.350	8.7	161	107	164	140	3,480
Automobile Raceway		21,000	seats										
Manufacturing/Warehouse	150	69,000	sq ft	0.0004	0.0002	0.0003	0.0005	0.00488	28	14	21	35	337
Office Space	710	73,400	sq ft	0.0018	0.0002	0.0004	0.0017	0.01539	132	15	29	125	1,130
Commercial Recreation													
Stadium	-	8,000	seats	-	-	-	-	-	15	0	1,350	135	6,490
Family Entertainment Center	-	137	acres	-	-	-	-	-	36	137	15	59	1,726
Public Golf Course	-	18	holes	2.673	.574	1.747	1.613	37.59	48	10	31	29	677
Open Space - Parkland	-	999	acres	0.03	0.03	0.03	0.03	0.50	30	30	30	30	500
Sewage Treatment Plant	-	18	acres	-	-	-	-	-	6	0	0	6	20
Total Trips									1,676	420	1,940	1,767	38,553

Table 4.4-5

Generated Vehicle Trips
Calverton Enterprise Park/Raceway Alternative - Saturday

Land Use	ITE Code	Size	Units	Trip Generation Rate		Saturday Daily Trip Generation Rate	Generated Trips		Saturday Daily Trips
				Saturday Peak Hour			Saturday Peak Hour		
				Enter	Exit		Enter	Exit	
Industrial Business Park	770	682,900	sq ft	0.0001	0.0001	0.00291	68	68	1,987
Theme Park									
Attractions		434	acres	-	-	-	0	2,375	14,380
Hotel/Conference	310	400	rooms	0.435	0.435	10.50	174	174	4,200
Automobile Raceway		21,000	seats	-	-	-	2,300	230	14,480
Manufacturing/Warehouse	150	69,000	sq ft	0.0004	0.0004	0.00488	28	28	337
Office Space	710	73,400	sq ft	0.0011	0.0011	0.01539	81	81	1,130
Commercial Recreation									
Stadium		8,000	seats	-	-	-	1,350	135	6,880
Family Entertainment Center		137	acres	-	-	-	0	285	1,725
Public Golf Course	430	18	holes	3.312	1.288	42.43	60	23	764
Open Space - Parkland		999	acres	0.03	0.03	0.61	30	30	609
Sewage Treatment Plant		18	acres	-	-	-	2	2	6
Total Trips							4,061	3,399	46,498

Table 4.4-6

Calverton Enterprise Park/Raceway Alternative - Weekend
24-hour Vehicular Volumes

Time Period	Industrial Business Park			Theme Park						Automobile Raceway						Commercial Recreation						Golf Course/Open Space			Hourly Totals (No. Of Cars)
				Attractions			Hotel/Conference			Raceway			Man./Warehouse/ Office			Stadium			Family Entertainment Center			Sewage Treatment Plant			
	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-way	Enter	Exit	2-Way	
12-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	100
1-2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2-3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
3-4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	1	18	88
4-5	10	10	20	0	0	0	25	25	50	0	0	0	0	0	0	0	0	0	0	0	0	25	6	31	181
5-6	15	15	30	0	0	0	50	50	100	10	0	10	5	0	5	0	0	0	0	0	0	35	11	46	642
6-7	25	25	50	100	0	100	95	95	190	50	0	50	90	7	97	0	0	0	12	0	12	49	12	61	1201
7-8	43	43	86	300	0	300	130	130	260	80	0	80	160	29	189	0	0	0	36	0	36	63	19	82	1440
8-9	47	47	94	475	0	475	135	135	270	200	10	210	109	17	126	0	0	0	57	0	57	66	24	90	2464
9-10	51	51	102	725	0	725	155	155	310	950	100	1050	32	13	45	5	5	10	87	0	87	72	31	103	4161
10-11	54	54	108	1200	0	1200	165	165	330	2000	150	2150	20	13	33	50	10	60	144	0	144	92	55	147	4917
11-12	55	55	110	1200	0	1200	174	174	348	2300	230	2530	67	67	134	150	20	170	144	0	144	59	47	106	4476
12-1	54	54	108	938	25	963	165	165	330	1000	100	1100	67	67	134	1350	135	1485	113	3	116	47	40	87	3297
1-2	53	53	106	875	47	922	160	160	320	100	100	200	20	13	33	1350	135	1485	105	6	111	37	43	80	1733
2-3	52	52	104	625	74	699	140	140	280	50	200	250	20	13	33	150	20	170	75	9	84	31	45	76	3378
3-4	51	51	102	250	178	428	130	130	260	230	2000	2230	20	43	63	95	10	105	30	21	51	28	62	90	4789
4-5	50	50	100	188	244	432	110	110	220	200	2000	2200	30	75	105	135	1350	1485	23	29	52	25	68	93	4540
5-6	45	45	90	125	493	618	105	105	210	50	1500	1550	50	160	210	135	1350	1485	15	59	74	20	70	90	1849
6-7	43	43	86	89	469	558	100	100	200	20	450	470	24	85	109	10	150	160	11	56	67	17	71	88	1548
7-8	41	41	82	63	516	579	100	100	200	0	250	250	14	71	85	5	105	110	8	62	69	8	51	59	1432
8-9	40	40	80	31	738	769	75	75	150	0	125	125	6	45	51	5	50	55	4	89	92	0	30	30	1192
9-10	37	37	74	6	825	831	51	51	102	0	25	25	0	15	15	0	0	0	1	99	100	0	11	11	1476
10-11	22	22	44	0	1206	1206	35	35	70	0	0	0	0	0	0	0	0	0	0	145	145	0	0	0	2690
11-12	15	15	30	0	2375	2375	0	0	0	0	0	0	0	0	0	0	0	0	0	285	285				
Totals			1606			14380			4200			14480			1467			6880			1726			1393	

Table 4.4-7

Summary of Overall LOS Analysis - Calverton Enterprise Park/Raceway Alternative

Intersection	AM Peak Hour Overall LOS	PM Peak Hour Overall LOS	Weekend Peak Hour Overall LOS
Middle Country Road and Rocky Point Road (Location 1)	F	F	F
Middle Country Road and Edwards Road (Location 2)	F	F	F
Middle Country Road and North County Road (Location 3)	F	F	C
Middle Country Road and Manorville Road (Location 4)	F	F	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)	F	F	F
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)	A	C	F
Edwards Avenue and River Road (Location 7)	A	C	A

This alternative generates fewer trips than the preferred action and weekday operation is improved over the Reuse Plan; however, overall poor traffic operation is expected to continue under this alternative, similar to the future baseline condition. Operation at the study area intersections remains poor, with most lane group movements operating at LOS "F,"even though the v/c ratios are marginally improved in comparison to the Reuse Plan. Weekend conditions exhibit more constrained operations as compared with the Reuse Plan. Extensive delays and congestion can be expected as racetrack-, stadium-, and theme park-generated traffic are simultaneously destined for the site.

4.4.4 Peconic Village Alternative

Trips generated by the residential component of the Peconic Village Alternative were developed using ITE Trip Generation rates. It was assumed the private golf course would not generate additional trips on the surrounding roadway network as it would primarily serve residents.

Approximately 127,000 sq ft (11,798 sq m) of service retail would be developed primarily to serve residents and, as such, would not generate new trips on the surrounding roadway network. Adjacent to the Route 25/Route 25A intersection, approximately 63,000 sq ft (5,853 sq m) of commercial development would generate a mix of shared use and pass-by trips, as well as stand-alone trips to the adjacent roadway network. Hence, trip rates as provided by ITE were reduced by 50 percent to account for these new trips.

Using these methodologies and assumptions, data were developed to provide weekday- and Saturday-generated vehicle trips, reflected in Table 4.4-8. Comparing this table with Table 4.4-2, the Peconic

Village Alternative would generate markedly fewer vehicles than the Reuse Plan. This alternative would generate 1,885 vehicles during the am weekday peak and 2,038 vehicles during the pm peak, about 30 percent and 51 percent less than the Reuse Plan, respectively. The Saturday peak hour volume of 1,515 vehicles would be about 69 percent less than the Reuse Plan.

Capacity analyses were performed for the same intersections considered for the Reuse Plan. This alternative generates considerably fewer vehicle trips than the Reuse Plan. Hence, impacts to the study area intersections are diminished. At Locations 1, 2, 3, and 4 overall LOS levels in the Peconic Village Alternative would be most similar to the future baseline condition without the project. Locations 6 and 7 would also be similar to the future baseline condition where overall LOS as A for am, pm and weekend peak hours. At Location 5 under the Peconic Village Alternative, overall LOS would be more like the Reuse Plan for the am and pm weekday peak hours; however, on the weekend, the Peconic Village would be much better than the Reuse Plan - LOS would be at B, characterized by good traffic progression and short cycle lengths. The overall results of the LOS analysis is provided in Table 4.4-9, with the complete analysis provided in Appendix C.

Although this alternative generates fewer trips than the Reuse Plan, operation at the study area intersections remains poor with most lane group movements operating at LOS "F", although the v/c ratios are marginally improved in comparison to the Reuse Plan. Poor operation is expected to continue under this plan, as well as under the future baseline conditions.

Despite the fact that this alternative generates fewer trips than the preferred action and the v/c ratios are improved in comparison to the Reuse Plan, operation at the study area intersections remains poor, similar to the future baseline condition, with most lane group movements operating at LOS "F." In general, operation under this alternative would be slightly improved over the Reuse Plan.

Table 4.4-8

Generated Vehicle Trips
Peconic Village Alternative - Weekday

Land Use	ITE Code	Size	Units	Trip Generation Rate				Weekday Daily Trip Generation Rate	Generated Trips				Weekday Daily Trips
				AM		PM			AM		PM		
				Enter	Exit	Enter	Exit		Enter	Exit	Enter	Exit	
Industrial Business Park	770	582,000	sq ft	0.0014	0.0002	0.0003	0.0011	0.01437	815	116	175	640	8,363
Commercial/Retail													
Center of Site		127,000	sq ft	-	-	-	-	-	0	0	0	0	0
Route 25 & Route 25A	814	63,000	sq ft	0.002	0.002	0.002	0.002	0.020	126	126	126	126	1,260
Hotel/Conference	310	400	rooms	0.402	0.268	0.410	0.350	8.7	161	107	164	140	3,480
Residential (2,889 residents)													
Assisted Living	252	688	units	0.037	0.023	0.095	0.075	2.15	25	16	65	52	1,479
Retirement Village	250	1,350	units	0.077	0.094	0.157	0.123	2.76	104	127	212	166	3,726
Public Golf Course	430	18	holes	2.673	.574	1.747	1.613	37.59	48	10	31	29	677
Private Golf Course	-	18	holes	-	-	-	-	-	0	0	0	0	0
Civic Facilities	-	55	acres	-	-	-	-	-	10	2	10	10	200
Open Space - Parkland	-	1,428	acres	0.03	0.03	0.03	0.03	0.5	43	43	43	43	714
Sewage Treatment Plant	-	18	acres	-	-	-	-	-	6	0	0	6	20
Total Trips									1,338	547	826	1,212	19,919

Table 4.4-8

Generated Vehicle Trips
Peconic Village Alternative - Saturday

Land Use	ITE Code	Size	Units	Trip Generation Rate		Saturday Daily Trip Generation Rate	Generated Trips		Saturday Daily Trips
				Saturday Peak Hour			Saturday Peak Hour		
				Enter	Exit		Enter	Exit	
Industrial Business Park	770	582,000	sq ft	0.0001	0.0001	0.00291	58	58	1,694
Commercial/Retail									
Center of Site		127,000	sq ft	-	-	-	0	0	0
Route 25 & Route 25A	814	63,000	sq ft	0.003	0.003	0.021	189	189	1,323
Hotel/Conference	310	400	rooms	0.435	0.435	10.50	174	174	4,200
Residential									
Assisted Living	252	688	units	0.085	0.085	2.15	58	58	1,479
Retirement Village	250	1,350	units	0.135	0.135	2.76	182	182	3,726
Public Golf Course	430	18	holes	3.312	1.288	42.43	60	23	764
Private Golf Course	-	18	holes	-	-	-	0	0	0
Civic Facilities	-	55	acres	-	-	-	10	10	150
Open Space - Parkland	-	1,428	acres	0.03	0.03	0.61	43	43	871
Sewage Treatment Plant	-	18	acres	-	-	-	2	2	6
Total Trips							776	739	14,213

Table 4.4-9

Summary of Overall LOS Analysis - Peconic Village Alternative

Intersection	AM Peak Hour Overall LOS	PM Peak Hour Overall LOS	Weekend Peak Hour Overall LOS
Middle Country Road and Rocky Point Road (Location 1)	F	F	F
Middle Country Road and Edwards Road (Location 2)	F	F	F
Middle Country Road and North County Road (Location 3)	F	F	C
Middle Country Road and Manorville Road (Location 4)	F	F	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)	F	E	B
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)	A	A	A
Edwards Avenue and River Road (Location 7)	A	A	A

4.5 Air Quality

4.5.1 No Action Alternative

Mobile Sources

The purpose of performing a microscale air quality analysis is to evaluate the no action (future baseline) condition for comparison purposes with the Calverton Enterprise Park Reuse Plan and other alternatives. Average hourly CO concentrations were predicted for the peak am and pm one-hour traffic periods using the USEPA approved CAL3QHC air pollutant dispersion model. Peak weekend conditions were also analyzed, using the same method, because of heavy traffic volume in the area during the weekend. These concentrations were multiplied by a persistence factor of 0.7 to determine the eight-hour concentrations. Background CO concentrations (Subchapter 3.5.2) were added to the traffic-related concentrations predicted from the model to obtain a total CO impact level.

This analysis used the same receptor locations used in the study of existing conditions. The worst case weekday results of the microscale air quality analysis for the future no action alternative show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm (Table 4.5-1) and no violations during the peak weekend conditions (Table 4.5-2). The results indicate CO levels less than those under existing conditions due to a decrease in per vehicle emissions resulting from compliance with the Federal Vehicle Emission Control Program.

Stationary Sources

Under the no action alternative, all operational functions at NWIRP Calverton would be terminated. Therefore, there would be no stationary source emissions.

4.5.2 Calverton Enterprise Park Reuse Plan

Mobile Sources

Utilizing the same modeling assumptions described in Section 4.5.1, the results of the microscale air quality analysis for the Reuse Plan show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm (Tables 4.5-1 and 4.5-2). Although CO levels would be higher than the future baseline condition under the Reuse Plan due to increased traffic, the increases would not be significant.

Table 4.5-1
Weekday Peak Carbon Monoxide Levels
for No Action Alternative and Calverton Enterprise Park Reuse Plan (Year 2017)

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Reuse Plan	No Action Alternative	Reuse Plan
Route 25 / Middle Island Road	6.4	6.9	4.4	4.8
Route 25 / Edwards Avenue	5.6	5.6	3.9	3.9
Route 25 / Route 25A	5.1	5.1	3.5	3.5
Route 25 / Wading River-Manorville Road	5.1	6.1	3.5	4.2
LIE Eastbound Ramp / Schultz Road	4.2	4.6	2.9	3.2
LIE Westbound Ramp / Schultz Road	4.1	4.8	2.8	3.3
Edwards Avenue / River Road	4.4	4.9	3.0	3.4

Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). NAAQS CO one-hour standard is 35 ppm; CO eight-hour standard is 9 ppm.

Table 4.5-2
Weekend Peak Carbon Monoxide Levels
for No Action Alternative and Calverton Enterprise Park Reuse Plan (Year 2017)

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Reuse Plan	No Action Alternative	Reuse Plan
Route 25 / Middle Island Road	6.3	6.4	4.3	4.4
Route 25 / Edwards Avenue	5.5	5.5	3.8	3.8
Route 25 / Route 25A	4.8	5.0	3.3	3.4
Route 25 / Wading River-Manorville Road	4.9	6.3	3.4	4.3
LIE Eastbound Ramp / Schultz Road	4.1	4.5	2.8	3.1
LIE Westbound Ramp / Schultz Road	4.1	5.0	2.8	3.4
Edwards Avenue / River Road	4.2	4.7	2.9	3.2

Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). NAAQS CO one-hour standard is 35 ppm; CO eight-hour standard is 9 ppm.

Stationary Sources

Stationary source emissions would result from the use of boilers for heating and hot water in existing and newly constructed buildings on the site. Given the scale of proposed development and its capacity to generate the full-time jobs, the Reuse Plan anticipated that the currently permitted steam plant on base would be used to supply heat and hot water required for the industrial business park. The Reuse Plan does not call for any other facility on site to supply power demands. However, if any additional individual emissions sources would be generated in the future, the source would be built in compliance with CAA-related air permitting regulations to ensure that no significant adverse air quality impact would occur. These individual building sources would not likely be major sources.

Construction Impacts

The major air quality concerns during construction and demolition are fugitive dust from on-site construction activities and mobile source emissions from construction vehicles and equipment and the motor vehicles of construction workers.

Preventative measures such as the use of water to control dust during demolition and construction operations would sufficiently minimize significant airborne particulate release. Additionally, periodic sweeping and wetting of dirt or gravel paths, roadways, material stockpiles, and other surfaces may be necessary.

Mobile source emissions would be generated from construction vehicles and equipment and the motor vehicles of construction workers. However, these effects would not be significant and would be short-term in nature.

Clean Air Act Conformity

As discussed in Subchapter 3.5, the general conformity rules are not applicable to the proposed Reuse Plan (or the alternatives) for NWIRP Calverton under exemption XIX as stated in 40 CFR Part 153(c). A Record of Nonapplicability (RONA) is included in Appendix E.

4.5.3 Calverton Enterprise Park/Raceway Alternative

Mobile Sources

Utilizing the same modeling assumptions described in Section 4.5.1, the results of the microscale air quality analysis for the Calverton Enterprise Park/Raceway Alternative show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm (Tables 4.5-3, 4.5-4).

Table 4.5-3
Weekday Peak Carbon Monoxide Levels
for No Action and Calverton Enterprise Park/Raceway Alternative (Year 2017)

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Park/Raceway Alternative	No Action Alternative	Alternative
Route 25 / Middle Island Road	6.4	6.4	4.4	4.4
Route 25 / Edwards Avenue	5.6	5.6	3.9	3.9
Route 25 / Route 25A	5.1	5.2	3.5	3.6
Route 25 / Wading River-Manorville Road	5.1	5.9	3.5	4.0
LIE Eastbound Ramp / Schultz Road	4.2	4.6	2.9	3.2
LIE Westbound Ramp / Schultz Road	4.1	4.5	2.8	3.1
Edwards Avenue / River Road	4.4	4.7	3.0	3.2

Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). NAAQS CO one-hour standard is 35 ppm; CO eight-hour standard is 9 ppm.

Table 4.5-4
Weekend Peak Carbon Monoxide Levels
for No Action and Calverton Enterprise Park/Raceway Alternative (Year 2017)

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Park/Raceway Alternative	No Action Alternative	Alternative
Route 25 / Middle Island Road	6.3	6.5	4.3	4.5
Route 25 / Edwards Avenue	5.5	5.6	3.9	3.9
Route 25 / Route 25A	4.8	5.0	3.3	3.4
Route 25 / Wading River-Manorville Road	4.9	6.8	3.4	4.7
LIE Eastbound Ramp / Schultz Road	4.1	5.1	2.8	3.5
LIE Westbound Ramp / Schultz Road	4.1	5.4	2.8	3.7
Edwards Avenue / River Road	4.2	4.4	2.9	3.0

Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). NAAQS CO one-hour standard is 35 ppm; CO eight-hour standard is 9 ppm.

Although CO levels would be higher than the future no action condition with implementation of the alternative due to increased traffic, the increases would not be significant.

Stationary Sources and Construction Related Impacts

The impacts from stationary sources and construction activities related to this alternative would have equivalent impact levels as those described for the Reuse Plan due to the generally similar scale and characteristics of the proposed development.

4.5.4 Peconic Village Alternative

Mobile Sources

Utilizing the same modeling assumptions described in Subchapter 4.5.1, the results of the microscale air quality analysis for the Peconic Village residential alternative show no violations of the NAAQS CO one-hour standard of 35 ppm and eight-hour standard of nine ppm (Tables 4.5-5, 4.5-6). Although CO levels would be higher than the future no action condition with implementation of the alternative due to increased traffic, the increases would not be significant.

Stationary Sources and Construction Related Impacts

Since this alternative is primarily residential in nature, major land use components such as a theme park, an airport, etc., would not be part of this plan. Therefore, impacts from the stationary sources and construction activities related to this plan would have less impact compared to the other alternatives. Although heating boilers for residential use would be needed under this alternative, they are minor emission sources and no significant adverse impacts would be expected.

Table 4.5-5
Weekday Peak Carbon Monoxide Levels
for No Action and Peconic Village Alternative (Year 2017)

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Peconic Village Alternative	No Action Alternative	Alternative
Route 25 / Middle Island Road	6.4	6.4	4.4	4.4
Route 25 / Edwards Avenue	5.6	5.6	3.9	3.9
Route 25 / Route 25A	5.1	5.1	3.5	3.5
Route 25 / Wading River-Manorville Road	5.1	5.6	3.5	3.9
LIE Eastbound Ramp / Schultz Road	4.2	4.3	2.9	2.9
LIE Westbound Ramp / Schultz Road	4.1	4.2	2.8	2.9
Edwards Avenue / River Road	4.4	4.5	3.0	3.1
Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). NAAQS CO one-hour standard is 35 ppm; CO eight-hour standard is 9 ppm.				

Table 4.5-6
Weekend Peak Carbon Monoxide Levels
for No Action and Peconic Village Alternative (Year 2017)

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Peconic Village Alternative	No Action Alternative	Peconic Village Alternative
Route 25 / Middle Island Road	6.3	6.3	4.3	4.3
Route 25 / Edwards Avenue	5.5	5.5	3.8	3.8
Route 25 / Route 25A	4.8	4.9	3.3	3.4
Route 25 / Wading River-Manorville Road	4.9	5.4	3.4	3.7
LIE Eastbound Ramp / Schultz Road	4.1	4.2	2.8	2.9
LIE Westbound Ramp / Schultz Road	4.1	4.2	2.8	2.9
Edwards Avenue / River Road	4.2	4.3	2.9	2.9
Note: CO levels include background concentrations of 3.6 ppm (one-hour) and 2.45 ppm (eight-hour). NAAQS CO one-hour standard is 35 ppm; CO eight-hour standard is 9 ppm.				

4.6 Noise

Human response to changes in noise levels depends on many factors, including the quality of sound, the magnitude of the change, the time of day at which the changes take place, whether the noise is continuous or intermittent, and the individual's ability to perceive the changes. Noise levels are typically expressed in terms of decibels (dB). Decibels are a logarithmic expression of sound energy. Frequency weightings have been developed to more closely duplicate the human hearing response. A-weighted decibels, or dBA, is the weighting network most often applied to traffic and aircraft noise evaluation.

Human ability to perceive changes in noise levels varies widely with the individual, as does response to the perceived changes. However, the average ability of an individual to perceive changes in noise levels is well documented, as shown in Table 4.6-1.

Table 4.6-1

Average Ability to Perceive Changes in Noise Levels

Change in Decibels (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A "dramatic change"
40	Difference between a faintly audible sound and a very loud sound
Source: Bolt, Beranek and Neuman, Inc., June 1973.	

Generally, a 3 dBA or smaller change in noise level would be barely perceptible to most listeners but a 5 dBA level would be readily noticeable. A 10 dBA change is normally perceived as a doubling (or halving) of noise levels. These thresholds permit estimation of an individual's probable perception of changes in noise levels.

4.6.1 No Action Alternative

Mobile Sources

The methodology for predicting future mobile source noise levels is based on the assumptions that:

- Existing levels are dominated by, and are a function of, existing traffic volumes; and

- Future noise levels can be determined based on the proportional increase in traffic (on a logarithmic basis) associated with a project.

For example, if the existing volume on a street is 100 vehicles per hour, and if the future traffic were increased by 50 vehicles per hour for a total of 150 vehicles per hour, the noise levels would increase by approximately 1.8 decibels (based on the logarithmic ratio of traffic volumes). If future traffic were increased by 100 vehicles per hour to a total of 200 vehicles per hour, the noise levels would increase by three decibels.

Future predicted (baseline) noise levels for the no action alternative in the year 2017 are presented in Table 4.6-2 (weekday) and Table 4.6-3 (weekend). The noise computations are based on the traffic analyses presented in Subchapter 4.4. Because of both anticipated annual traffic growth and specific developments planned in the vicinity of the study area that would also increase traffic volume, there would be increases in peak hour noise levels from existing conditions to future no action conditions. Predicted hourly noise levels for each site are presented in Appendix D. In comparing Tables 3.6-4 and 3.6-5 for existing conditions to the future no action condition, increases in peak hour noise levels are predicted to range from 2 to 7 dBA at the six study sites. The corresponding 24-hour equivalent noise level ($L_{eq}[24]$) and day-night noise level (L_{dn}) increase would range from 2 to 5 dBA. Thus, as shown in Table 4.6-1, noise level increases would range from barely perceptible to readily noticeable.

4.6.2 Calverton Enterprise Park Reuse Plan

Ground Vehicles

Future (2017) noise levels for the Reuse Plan were calculated by adding the noise due to the projected development-generated traffic to noise levels previously calculated for the future no action. Tables 4.6-2 (weekday) and 4.6-3 (weekend) present the results of the am peak, midday peak, pm peak, pre-midnight, and 24-hour L_{eq} and L_{dn} analysis. These tables also identify for each site the specific hour of the day with the largest noise increase.

Weekday

The peak hour L_{eq} presented in Table 4.6-2 shows that at Sites 1, 3, and 6, noise levels would increase less than or equal to 1 dBA compared with levels under the no action condition. At sites 2, 4 and 5, the increase in peak hour noise levels due to traffic would be greater than 3 dBA (a 3 dBA or greater change in noise levels becomes perceptible to most listeners).

At Sites 2, 3, 4, 5, and 6, the largest increase in noise levels during a weekday would be between 11 pm to 12 midnight. These increases are shown in Table 4.6-2. Noise level increases equal to or greater

Table 4.6-2

Predicted Weekday Noise Levels for No Action and Calverton Enterprise Park Reuse Plan

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Reuse Plan	Net Increase
1	AM Peak	69	69	0
	Midday Peak	68	68	0
	PM Peak	71	72	1
	Pre midnight	63	63	0
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq}	67	67	0
	L_{dn}	69	70	1
2	AM Peak	72	75	3
	Midday Peak	69	72	3
	PM Peak	70	73	3
	Pre midnight	65	69	4
	11 pm - 12 am*	59	72	13
	24-Hour L_{eq}	68	72	4
	L_{dn}	72	76	4
3	AM Peak	65	65	1
	Midday Peak	64	65	1
	PM Peak	67	68	1
	Pre midnight	61	63	2
	11 pm - 12 am*	57	64	7
	24-Hour L_{eq}	63	64	1
	L_{dn}	66	68	2

Table 4.6-2 (continued)

Predicted Weekday Noise Levels for No Action and Calverton Enterprise Park Reuse Plan

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Reuse Plan	Net Increase
4	AM Peak	64	72	8
	Midday Peak	62	69	7
	PM Peak	63	70	7
	Pre midnight	59	68	9
	11 pm - 12 am*	55	72	17
	24-Hour L_{eq}	60	69	9
	L_{dn}	64	74	10
5	AM Peak	65	72	7
	Midday Peak	61	67	8
	PM Peak	63	69	6
	Pre midnight	58	66	8
	11 pm - 12 pm*	54	70	16
	24-Hour L_{eq}	61	68	7
	L_{dn}	64	72	8
6	AM Peak	69	70	1
	Midday Peak	67	67	0
	PM Peak	70	70	1
	Pre midnight	63	63	0
	11 am - 12 am*	59	62	3
	24-Hour L_{eq}	66	67	1
	L_{dn}	69	70	1

Note: * = specific hour of the day at a site with the largest noise increase

Table 4.6-3

Predicted Weekend Noise Levels for No Action and Calverton Enterprise Park Reuse Plan

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Reuse Plan	Net Increase
1	AM Peak	67	68	1
	Midday Peak	64	64	0
	PM Peak	69	69	0
	Pre midnight	63	64	1
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq}	66	66	0
	L_{dn}	69	69	0
2	AM Peak	68	70	2
	Midday Peak	68	71	3
	PM Peak	70	73	3
	Pre midnight	64	68	4
	11 pm - 12 am*	61	71	10
	24-Hour L_{eq}	67	70	3
	L_{dn}	70	74	4
3	AM Peak	65	66	1
	Midday Peak	62	64	2
	PM Peak	65	67	2
	Pre midnight	60	64	4
	11 pm - 12 am*	59	66	7
	24-Hour L_{eq}	63	65	2
	L_{dn}	67	69	2

Table 4.6-3 (continued)

Predicted Weekend Noise Levels for No Action and Calverton Enterprise Park Reuse Plan

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Reuse Plan	Net Increase
4	AM Peak	62	69	7
	Midday Peak	62	71	9
	PM Peak	62	70	8
	Pre midnight	58	68	10
	11 am - 12 am*	57	72	15
	24-Hour L_{eq}	60	69	9
	L_{dn}	63	73	10
5	AM Peak	62	66	4
	Midday Peak	62	70	8
	PM Peak	65	72	7
	Pre midnight	59	68	9
	11 pm - 12 pm*	58	72	14
	24-Hour L_{eq}	61	69	8
	L_{dn}	64	73	9
6	AM Peak	68	68	0
	Midday Peak	68	68	0
	PM Peak	69	69	0
	Pre midnight	62	63	1
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq}	66	67	1
	L_{dn}	69	70	1

Note: * = specific hour of the day at a site with the largest noise increase

then 3 dBA are noted below (these are not shown in Table 4.6-2; only the largest hourly increases are presented in the table):

- Site 2 (on north side of Route 25, near west end of project site) - weekdays would experience noise levels increases that are equal to or greater than 3 dBA for 13 hours of the day, with a maximum increase of 13 dBA occurring between 11 pm to 12 am.

- Site 3 (on east side of Wading River Road between Swan Pond Road/Grumman Boulevard and Route 25) - weekdays would experience noise level increases that are equal to or greater than 3 dBA for two hours of the day, with a maximum increase of 7 dBA occurring between 11 pm to 12 am.

- Site 4 (on Swan Pond Road/Grumman Blvd near site entrance) - weekdays would experience noise level increases that are equal to or greater than 3 dBA for 22 hours of the day, with a maximum increase of 17 dBA occurring between 11 pm to 12 am.

- Site 5 (on north side of River Road) - weekdays would experience noise level increases that are equal to or greater than 3 dBA for 21 hours of the day, with a maximum increase of 16 dBA occurring between 11 pm to 12 am.

The FHWA criterion for residential-level use, schools, parks, and recreation is 67 dBA. Predicted noise levels under the Reuse Plan during the weekday would exceed this criterion for the following total number of hours of the day at each site (number of hours for which there are exceedances for the no action alternative are shown in parenthesis):

- Site 1 - 14 hours (14 hours - no action);

- Site 2 - 19 hours (15 hours - no action);

- Site 3 - 3 hours (not exceeded - no action);

- Site 4 - 18 hours (not exceeded - no action);

- Site 5 - 13 hours (not exceeded - no action); and

- Site 6 - 11 hours (10 hours - no action).

The HUD criterion for acceptable noise levels at housing developments is an L_{dn} of 65 dBA. The increase in L_{dn} noise level from the no action to the Reuse Plan during the weekday would be less than or equal to one decibel at Sites 1 and 6. The differences between the no action and the Reuse Plan at Sites 2 and 3 would be barely perceptible. At Sites 4 and 5, the acceptable noise level criterion would be exceeded for the Reuse Plan, but would not be exceeded for the no action condition.

Weekend

The peak hour L_{eq} presented in Table 4.6-3 for the weekend shows that at Sites 1 and 6, noise levels would increase less than or equal to 1 dBA compared with levels under no action condition. At sites 2, 4, and 5, the increase in noise levels due to traffic would be equal to or greater than 3 dBA. The increase of peak hour L_{eq} at Site 3 would be 2 dBA.

At Sites 2, 3, 4, and 5, the largest increase in noise levels during a weekend would be between 11 pm to 12 midnight due to the departure of vehicles primarily from the theme park attractions.(Table 4.6-3). Noise level increases equal to or greater then 3 dBA are noted below (these are not shown in Table 4.6-2; only the largest increases are presented):

- Site 2 (on north side of Route 25, near west end of project site) - weekends would experience noise level increases that are equal to or more than 3 dBA for 11 hours of the day, with a maximum increase of 10 dBA occurring between 11 pm to 12 am.

- Site 3 (on east side of Wading River Road between Grumman Boulevard and Route 25) - weekends would experience noise level increases that are equal to or more than 3 dBA for six hours of the day, with a maximum increase of 8 dBA occurring between 11 pm to 12 am.

- Site 4 (on Swan Pond Road/Grumman Blvd near site entrance) - weekends would experience increases in noise levels that are equal to or more than 3 dBA for 21 hours of the day, with a maximum increase of 15 dBA occurring between 11 pm to 12 am.

- Site 5 (on north side of River Road) - weekends would experience increases in noise levels that are equal to or more than 3 dBA for 21 hours of the day, with a maximum increase of 14 dBA occurring between 11 pm to 12 am.

Predicted weekend noise levels would exceed the FHWA criterion for residential-level use, schools, parks, and recreation (67 dBA). Exceedances of this criterion for the total number of hours of the day at each site (number of hours for which there are exceedances for the no action alternative are shown in parenthesis) are listed below:

- Site 1 - 8 hours (8 hours - no action);

- Site 2 -18 hours (13 hours - no action);

- Site 3 - 3 hours (not exceeded - no action);

- Site 4 - 17 hours (not exceeded - no action);
- Site 5 - 17 hours (not exceeded - no action); and
- Site 6 - 11 hours (12 hours - no action).

The HUD criterion for acceptable noise levels at housing developments is an L_{dn} of 65 dBA. This criterion would be exceeded at all monitored sites under the Reuse Plan during the weekend. It should be noted that the monitored locations are located on the perimeter of the site and noise levels from ground vehicles inside the site would likely be lower.

Aircraft

Aircraft noise levels are also typically expressed in terms of dBA. Two types of noise metrics are typically used: single event metrics and cumulative metrics. The single event metrics describe individual aircraft events. Two types of single-event energy metrics include:

- EPNL - Effective Perceived Noise Level; and
- SEL - Sound Exposure Level.

The cumulative metrics describe average noise levels over a period of time. Several cumulative metrics derived from EPNL or SEL are available to describe aircraft noise. Of these, the Day-Night Average Sound Level (DNL) is currently the officially accepted metric of the Federal Aviation Administration (FAA).

In June 1980, a Federal Interagency Committee (FIC) on Urban Noise published guidelines (FIC, June 1980) relating DNL to compatible land uses. Since the issuance of these guidelines, federal agencies have generally adopted these guidelines for their noise analyses.

Following the lead of the committee, the DOD and the FAA adopted the concept of land-use compatibility as the accepted measure of aircraft noise effect. The FAA included the committee's guidelines in the Federal Aviation Regulations. Although these guidelines are not mandatory, they provide a method for determining noise impact in airport communities. In general, residential land uses are not normally compatible with outdoor DNL above 65 dB; the extent of land areas and populations exposed to DNL of 65 dB and higher provide measures for assessing the noise impacts of alternative aircraft actions.

In 1990 a new FIC on Noise was formed to review the manner in which aviation noise effects are assessed and presented. This group released its report in 1992 and reaffirmed the use of DNL as the best metric for this purpose (FIC, August 1992).

The DNL is the average of aircraft sound levels at a location over a complete 24-hour period, with a ten-decibel "penalty" added to those noise events which take place between 10:00 pm and 7:00 am (local time) the following morning. This ten-decibel adjustment represents the added intrusiveness of sounds that occur during normal sleeping hours, both because of the increased sensitivity to noise during those hours and because ambient sound levels during nighttime are typically about 10 dB lower than during daytime hours. For this analysis, levels of DNL equal to and greater than 65 dB were used for assessing community noise impact.

Three ranges of projected based aircraft and resultant operational forecasts were developed:

- High-Range: equal to 85 percent of registered aircraft owners in zip codes within a 30-minute average travel time from the site;
- Mid-Range: equal to 45 percent of the registered aircraft. This is the average percentage of the registered aircraft within the market areas of two nearby airports (Brookhaven and Long Island MacArthur) that are actually based at these airports;
- Low-Range: equal to 20 percent of the registered aircraft. This is similar to the average percentage of the registered aircraft within the market area of Mattituck Airbase and Suffolk County Airport that is actually based there.

The detailed methodology and assumptions used to derive the forecast can be found in Appendix B. Assumptions used for the following noise analysis are in Appendix D.

The FAA-preferred computer model, Integrated Noise Model (INM, version 5.0), was utilized to predict the noise impact from the forecasted high-, mid-, and low-range aircraft operations. INM was developed by the FAA as a planning tool for determining approximate aircraft noise levels at and around airports. The model incorporates a database of known sound levels from various aircraft and uses mathematical processes which consider the degradation of sound energy over distance.

The annual operations forecasted for high-, mid-, and low-range scenarios and the type of the aircraft used in INM model are summarized in Table 4.6-4 for general aviation and Table 4.6-5 for cargo operations, respectively. Figure 4.6-1 displays the flight tracks. The DNL 65 dB through 85 dB contours for high-, mid-, and low-range activities are presented in Figures 4.6-2, 4.6-3, and 4.6-4 (DNL Contours for Calverton Enterprise Park Reuse Plan), respectively. The results indicate that the areas with noise levels above 65 dBA are contained primarily within the airport runway buffer zones for all operational ranges, except that high-range activities would result in a 65 dB contour extending outside the northern buffer zone, encompassing an area of approximately 18 acres (seven hectares). Because residential land uses are not generally compatible with outdoor DNL above 65 dB as previously described, this would result in an impact on the 18-acre (seven-hectare) area beyond the

Flight Tracks

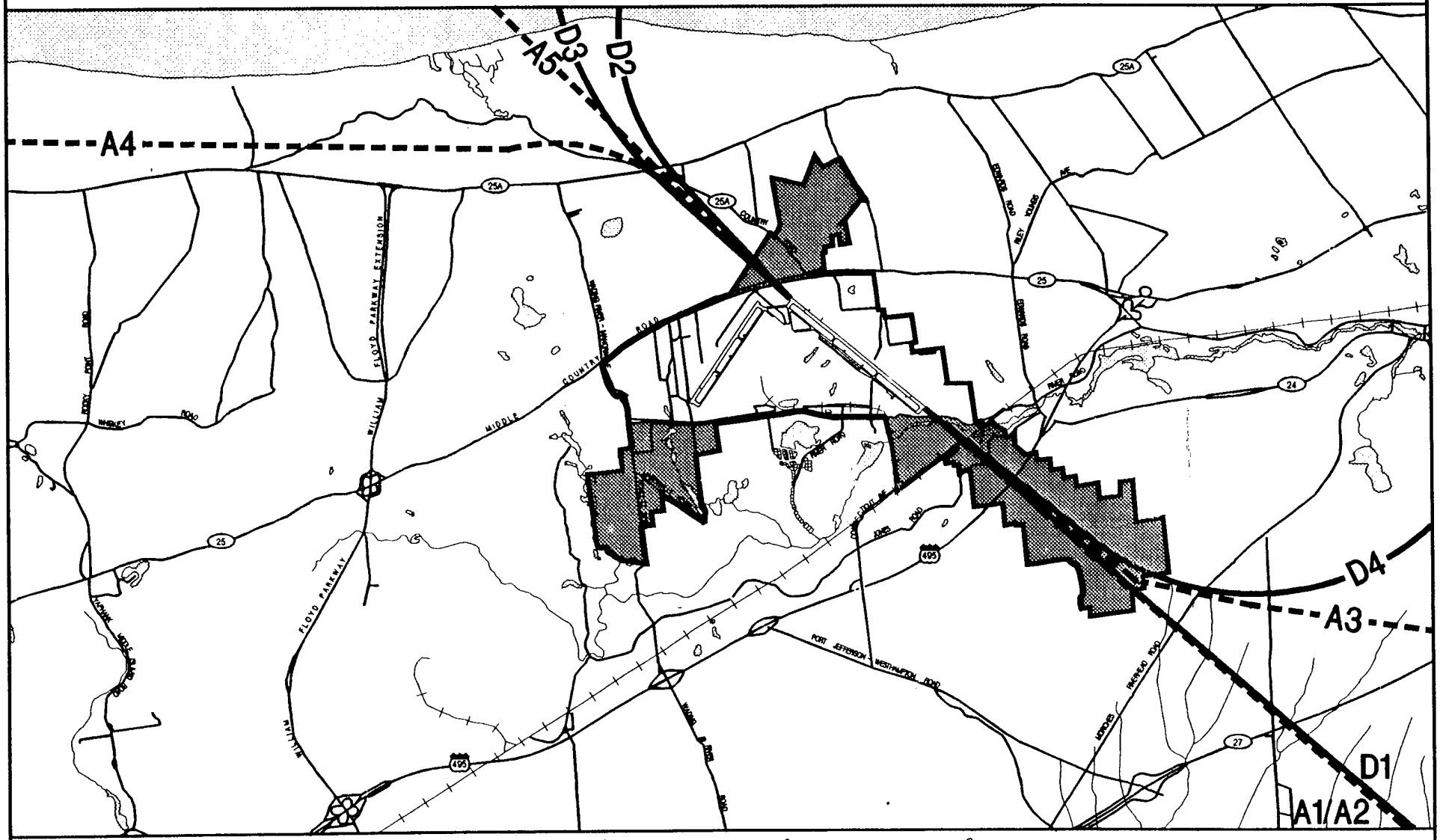
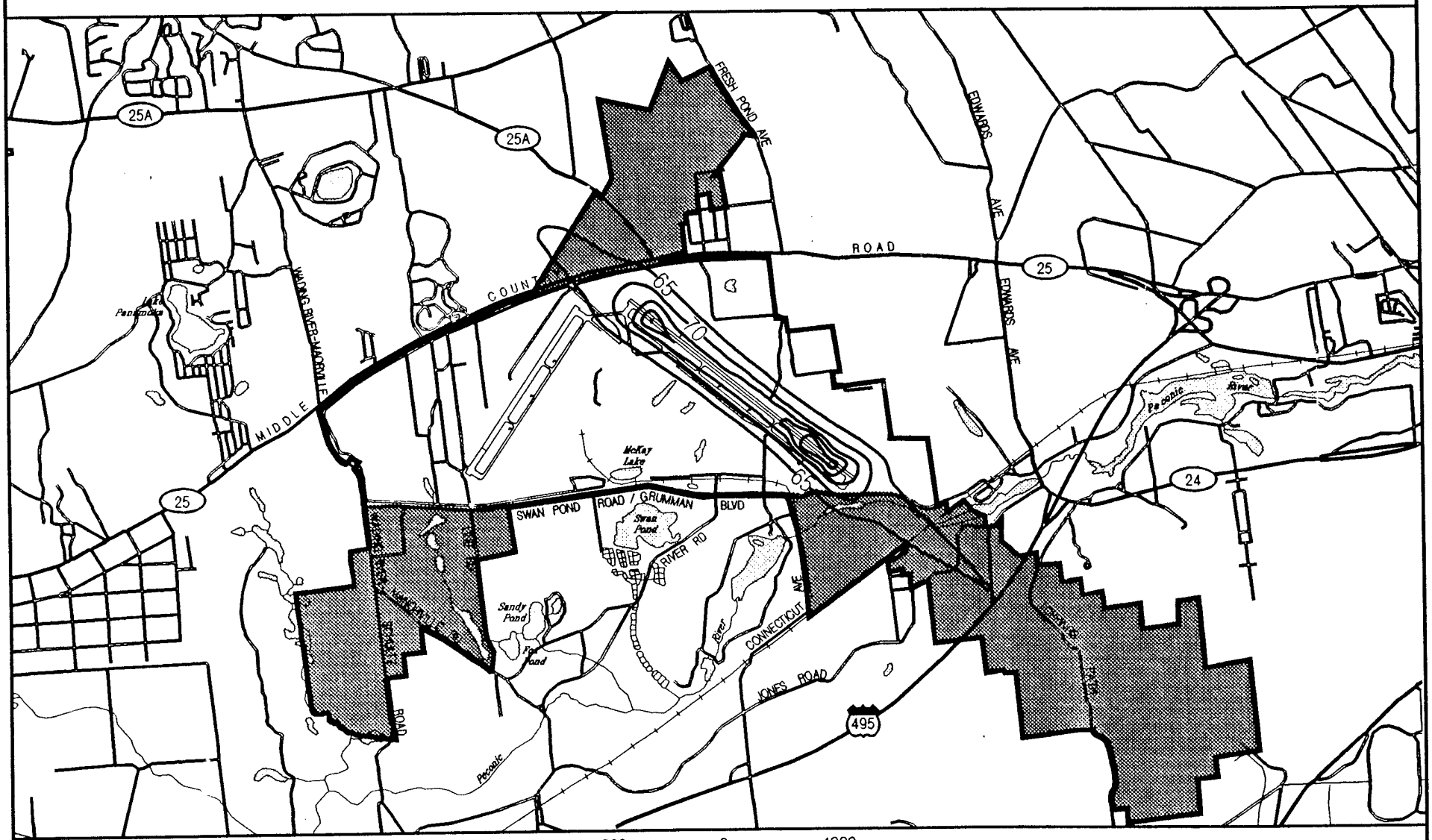


Figure 4.6-1

DNL Contours for Calverton Enterprise Park Reuse Plan (High-Range)



65 Average Daily DNL Contour

Property (within the fence)

Buffer Zones (outside of fence)

4000 0 4000
Scale in Feet

1000 0 1000
Scale in Meters

N

Figure 4.6-2

DNL Contours for Calverton Enterprise Park Reuse Plan (Medium-Range)



—65— Average Daily DNL Contour

Property (within the fence)

Buffer Zones (outside of fence)

4000 0 4000
Scale in Feet

1000 0 1000
Scale in Meters

N

Figure 4.6-3

DNL Contours for Calverton Enterprise Park Reuse Plan (Low-Range)

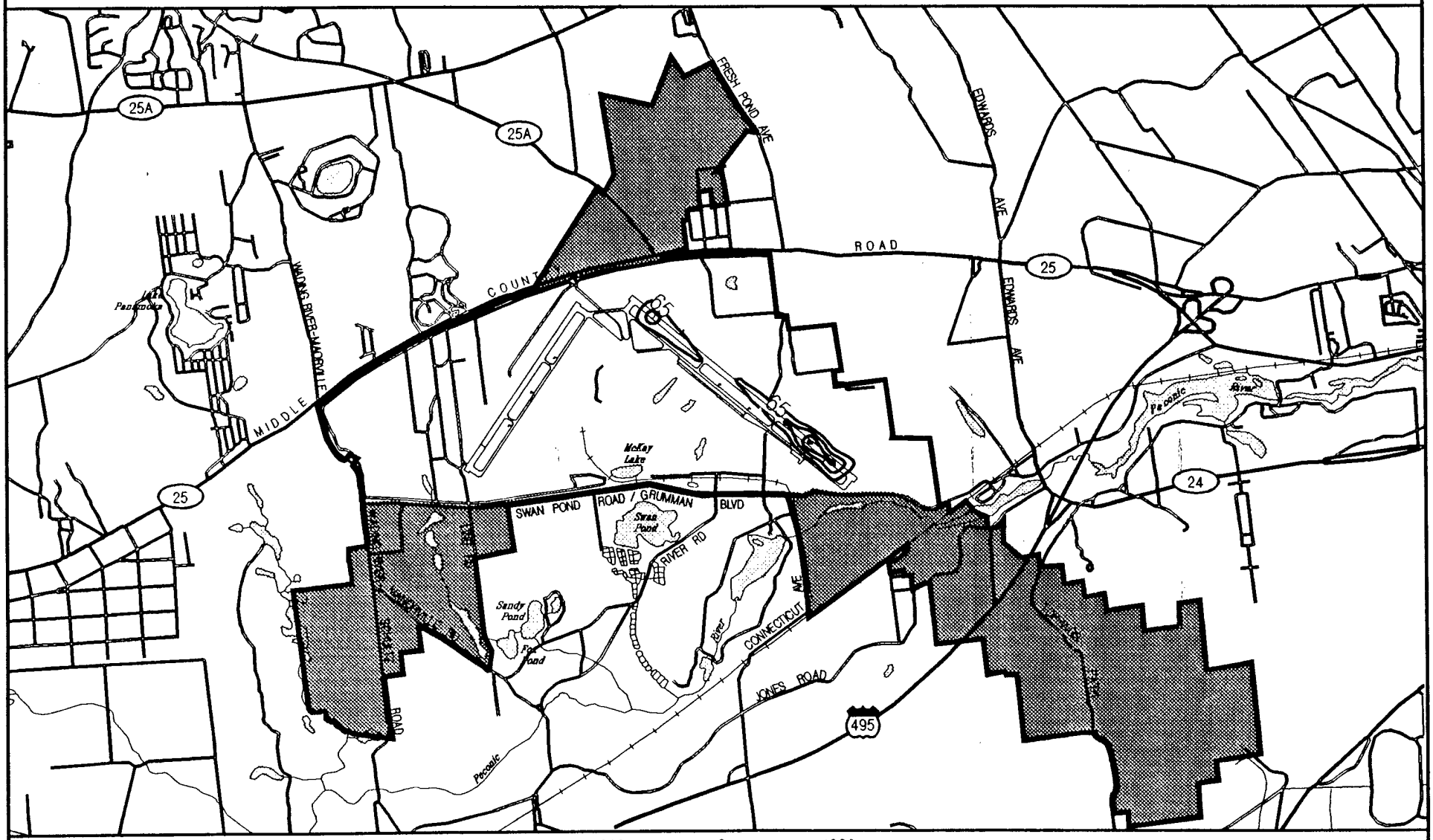


Figure 4.6-4

Table 4.6-4

Forecast General Aviation Annual Aircraft Operations and INM Model Type

Aircraft Type	INM Model Type	High-Range		Mid-Range		Low-Range	
		Day	Night	Day	Night	Day	Night
Single Engine Piston - CNA177	GASEPF	300,050	3,050	76,800	800	23,700	250
Multi Engine Piston - BEC58P	BEC58P	27,600	400	7,500	100	2,150	50
Turboprop - CNA441	CNA441	5,650	650	1,450	150	500	50
Turbojet -LEAR35	LEAR35	1,250	150	350	50	0	0
TOTAL		334,550	4,250	86,100	1,100	26,350	350
Note : Units represent number of operations (take offs and landings).							

Table 4.6-5

Forecast Cargo Annual Aircraft Operations and INM Model Type

Aircraft Type	INM Model Type	High-Range		Mid-Range		Low-Range	
		Day	Night	Day	Night	Day	Night
Turboprop - Cessna Caravan	GASEPV	0	2,650	0	850	0	250
Turbojet -B-727, DC-9 and MD-11	B-727200, DC-9Q9, and MD-11 (PW)	0	1,300	0	400	0	100
TOTAL		0	3,950	0	1,250	0	350
Note: Units represent number of operations (take offs and landings).							

existing runway buffer zones. Table 4.6-6 shows the land area (in acres and hectares) affected by predicted noise levels that are equal to or greater than 65 dB.

For the purposes of comparing potential future effects with historical aircraft noise, noise contours at NWIRP Calverton for the year 1991 are presented in Figure 4.6-5 (1991 Historic Noise Contours). As displayed in the figure, areas affected by aircraft activity that year were substantially greater than what is predicted for the Reuse Plan under high-range operational conditions. Operations in 1991 mainly involved military jets that generated more noise than the aviation aircraft proposed in the Reuse Plan.

Stationary Sources

Any exterior mechanical equipment (e.g., fans, compressors) would be designed to comply with all local and state noise ordinances. As a result, increased noise levels from such mechanical equipment at the site under the Reuse Plan would not be anticipated.

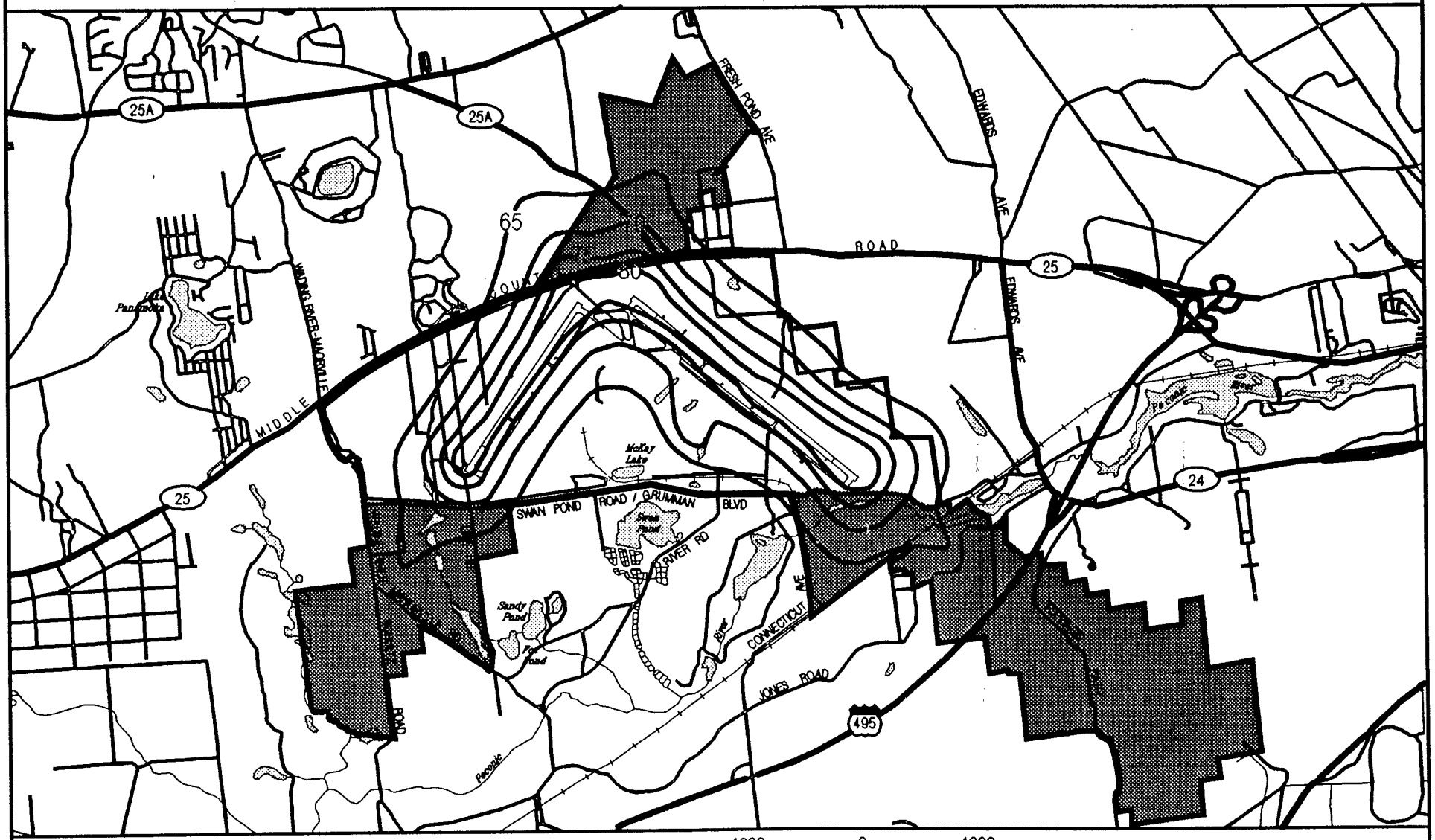
Construction Impacts

Impacts on community noise levels during construction of the Reuse Plan would include noise from construction equipment operating at the site and construction vehicles/delivery vehicles traveling to and from the site. Noise impacts would also vary widely, depending on the phase of construction - demolition, land clearing and excavations, foundation and capping, erection of structural steel, construction of exterior walls, etc. - and the specific task being undertaken. Increased noise levels would be greatest during the early stages of each construction phase, although these periods would be of relatively short duration. The noise generated would be similar other construction projects in the county and all phases of construction would comply with the restrictions specified in the local noise ordinance.

Noise levels at a given receptor location would depend on the type and number of pieces of construction equipment being operated and the distance from the construction-site. Typical noise levels for construction equipment are shown in Table 4.6-7.

In addition, small increases in noise levels would be expected as a result of the operation of delivery trucks and other construction vehicles. These short-term increases would be expected mainly along a few defined truck routes and close to the development site.

1991 Historic Noise Contours



65 — 1991 DNL Noise Contour

Property (within the fence)

Buffer Zones (outside of fence)

4000 0 4000
Scale in Feet
1000 0 1000
Scale in Meters

N

Figure 4.6-5

Table 4.6-6

Land Areas Within Noise Exposure Contours

DNL Contour	Total Land Area					
	High-Range		Mid-Range		Low-Range	
	Acres	Hectares	Acres	Hectares	Acres	Hectares
65	806	326	339	137	109	44
70	345	140	160	65	32	13
75	160	65	45	18	6	2
80	45	18	13	5	0	0
85	13	5	0	0	0	0

4.6.3 Calverton Enterprise Park/Raceway Alternative

Ground Vehicles

Weekdays

Predicted hourly noise levels with implementation of the Enterprise Park/Raceway Alternative are presented in Appendix D. The peak hour L_{eq} analysis presented in Table 4.6-8 shows that with the exception of Sites 2, 4, and 5 noise levels would increase less than or equal to one decibel from the no action condition to the Enterprise Park/Raceway Alternative. At Sites 2, 4 and 5, increases in noise levels greater than 3 dBA would take place during the day and night. At Sites 2, 3, 4, and 5, the largest increase in noise levels during a weekday would be between 11 pm and 12 am. These increases are shown in Table 4.6-8. Noise level increases equal to or greater than 3 dBA are noted below (these are not shown in Table 4.6-8; only the largest hourly increases are presented in the table):

- Site 2 (on north side of Route 25, near west end of project site) - weekdays would experience noise level increases equal to or greater than 3 dBA for 15 hours of the day, with a maximum increase of 13 dBA occurring between 11 pm to 12 am.

Table 4.6-7

Typical Noise Emission Levels for Construction Equipment

Type of Equipment	Noise Level at 50 feet (dBA)
Air Compressor	81
Asphalt Spreader (paver)	89
Asphalt truck	88
Backhoe	85
Bulldozer	87
Compactor	80
Concrete Plant	83
Concrete Spreader	89
Concrete Mixer	85
Concrete Vibrator	76
Crane (derrick)	88
Delivery Truck	88
Diamond Saw	90
Dredge	88
Dump Truck	88
Front End Loader	84
Gas-Driven Vibro-compactor	76
Hoist	76
Jackhammer (Paving Breaker)	88
Line Drill	98
Motor Crane	83
Pile Driver/Extractor	101
Pump	76
Roller	80
Shovel	82
Truck	88
Tug	85
Vibratory Pile Driver/Extractor	89

Source: Patterson, et al., 1974.

Table 4.6-8

Predicted Weekday Noise Levels for the No Action and Calverton Enterprise Park /Raceway Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
1	AM Peak Midday Peak PM Peak Pre midnight	69 68 71 63	69 68 71 63	0 0 0 0
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq} L_{dn}	67 70	67 69	0 1
2	AM Peak Midday Peak PM Peak Pre midnight	72 69 70 65	75 73 74 69	3 4 4 4
	11 pm - 12 pm*	59	72	13
	24-Hour L_{eq} L_{dn}	68 72	72 76	4 4
3	AM Peak Midday Peak PM Peak Pre midnight	65 64 67 61	67 65 68 63	2 1 1 2
	11 pm - 12 am *	57	64	7
	24-Hour L_{eq} L_{dn}	63 66	65 68	2 2

Table 4.6-8 (continued)

Predicted Weekday Noise Levels for the No Action and Calverton Enterprise Park /Raceway Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
4	AM Peak	64	71	7
	Midday Peak	62	70	8
	PM Peak	63	71	8
	Pre midnight	59	68	9
	11 pm - 12 pm *	55	72	17
	24-hour L_{eq}	60	69	9
	L_{dn}	64	74	10
5	AM Peak	65	71	6
	Midday Peak	61	68	7
	PM Peak	63	70	7
	Pre midnight	58	66	8
	11 pm - 12 am *	54	70	16
	24-Hour L_{eq}	61	68	7
	L_{dn}	64	72	8
6	AM Peak	69	69	0
	Midday Peak	67	67	0
	PM Peak	71	71	0
	Pre midnight	63	63	0
	11 pm - 12 am *	59	62	3
	24-Hour L_{eq}	66	67	1
	L_{dn}	69	70	1

Note: * = specific hour of the day at a site with the largest increase

- Site 3 (on east side of Wading River Road between Swan Pond Road/Grumman Blvd and Route 25) - weekdays would experience increases equal to or greater than 3 dBA for two hours of the day, with a maximum increase of 7 dBA occurring between 11 pm and 12 am.

- Site 4 (on Swan Pond Road/Grumman Blvd near site entrance) - weekdays would experience increase in noise levels that are equal to or greater than 3 dBA for 21 hours of the day, with a maximum increase of 17 dBA occurring between 11 pm and 12 am.

- Site 5 (on north side of River Road) - weekdays would experience noise level increases equal to or greater than 3 dBA for 21 hours of the day, with a maximum increase of 16 dBA occurring between 11 pm and 12 am.

Predicted noise levels under the Enterprise Park/Raceway Alternative during the weekday would exceed the FHWA criterion of 67 dBA for the following total number of hours of the day at each site (number of hours for which there are exceedances for the no action alternative are shown in parenthesis):

- Site 1 - 14 hours (14 hours - no action);

- Site 2 - 18 hours (15 hours - no action);

- Site 3 - 3 hours (not exceeded - no action);

- Site 4 - 18 hours (not exceeded - no action);

- Site 5 - 15 hours (not exceeded - no action); and

- Site 6 - 11 hours (10 hours - no action).

The HUD criterion (L_{dn} of 65 dBA) would be exceeded for this alternative at all six monitored sites.

Weekend

The peak hour L_{eq} for the weekend shows that at Sites 1 and 6, noise levels would increase less than or equal to 1 dBA compared with levels under no action condition (Table 4.6-9). At Sites 2, 4, and 5, the increase in noise levels due to traffic would be greater than 3 dBA. The peak hour L_{eq} at Site 3 would be 2 dBA.

Predicted noise levels under the Enterprise Park/Raceway Alternative during the weekday would exceed the FHWA criterion of 67 dBA for the following total number of hours of the day at each site (number of hours for which there are exceedances for the no action alternative are shown in parenthesis):

- Site 1 - 8 hours (8 hours - no action);
- Site 2 - 17 hours (13 hours - no action);
- Site 3 - 4 hours (not exceeded - no action);
- Site 4 - 17 hours (not exceeded - no action);
- Site 5 - 17 hours (not exceeded - no action); and
- Site 6 - 12 hours (11 hours - no action).

The HUD criterion (L_{dn} of 65 dBA) would be exceeded for this alternative at all six sites.

At Sites 2, 3, 4, and 5, the greatest increase in noise levels during a weekend would be between 11 pm and 12 midnight (Table 4.6-9). Noise level increases equal to or greater then 3 dBA are noted below (these are not shown in Table 4.6-9; only the largest increases are presented in the table):

- Site 2 - weekends would experience increases in noise levels that are equal to or greater than 3 dBA for 15 hours of the day, with a maximum increase of 8 dBA between 11 pm to 12 am.
- Site 3 - weekends would experience noise level increases that are equal to or greater than 3 dBA for 11 hours of the day, with a maximum increase of 6 dBA between 11 pm to 12 am.
- Site 4 - weekends would experience noise level increases equal to or greater than 3 dBA for 21 hours of the day, with a maximum increase of 13 dBA between 11 pm and 12 am.
- Site 5 - weekends would experience increases in noise levels that are equal to or greater than 3 dBA for 21 hours of the day, with a maximum increase of 12 dBA between 11 pm and 12 am.

Table 4.6-9

Predicted Weekend Noise Levels for No Action and Calverton Enterprise Park /Raceway Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
1	AM Peak Midday Peak PM Peak Pre midnight	67 64 69 63	67 65 69 64	0 1 0 1
	No hours with net change of ≥ 3 dBA	--	--	--
	24-Hour L_{eq} L_{dn}	66 69	66 69	0 0
2	AM Peak Midday Peak PM Peak Pre midnight	68 69 70 64	70 73 75 68	2 4 5 4
	11 pm - 12 am *	61	69	8
	24-Hour L_{eq} L_{dn}	67 70	71 73	4 3
3	AM Peak Midday Peak PM Peak Pre midnight	65 62 65 60	67 66 69 63	2 4 4 3
	11 pm - 12 am *	59	65	6
	24-Hour L_{eq} L_{dn}	63 67	65 69	2 2

Table 4.6-9 (continued)

Predicted Weekend Noise Levels for No Action and Calverton Enterprise Park /Raceway Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
4	AM Peak	62	69	7
	Midday Peak	62	73	11
	PM Peak	62	73	11
	Pre midnight	58	68	10
	11 pm - 12 am*	57	70	13
	24-Hour L_{eq}	60	70	10
	L_{dn}	63	73	10
5	AM Peak	62	68	6
	Midday Peak	62	72	10
	PM Peak	65	75	10
	Pre midnight	59	68	9
	11 pm - 12 am	58	70	12
	24-Hour L_{eq}	61	70	9
	L_{dn}	64	73	9
6	AM Peak	68	68	0
	Midday Peak	68	69	1
	PM Peak	69	70	1
	Pre midnight	62	63	1
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq}	66	67	1
	L_{dn}	69	70	1

Note: * = specific hour of the day at a site with the largest noise increase

The increase in L_{dn} noise level from the no action to the Enterprise Park/Raceway Alternative during the weekday would be less than or equal to one decibel at Sites 1 and 6. The differences between the no action and the Enterprise Park/Raceway Alternative at Sites 1, 2, and 3 would be barely perceptible. At Sites 4 and 5, the HUD noise criterion (L_{dn} of 65 dBA) would be exceeded for the Enterprise Park/Raceway Alternative, but would not be exceeded for the no action condition.

Automobile Raceway

Noise impacts from the raceway element of this alternative on the local community would result from racing events that are scheduled for the daytime on six weekends each year; therefore, the impact would be considered to have a short duration.

Assumptions

For purposes of this analysis, a racing car was treated as a point noise source on the race track that would radiate acoustic energy equally in all directions. Over hard site terrain, a point source noise level is reduced 6 dB per doubling of distance (e.g., 118 dB at 50 ft (15 m), 112 dB at 100 ft (30 m), 106 dB at 200 ft (61 m), etc.). Over an acoustically soft site (e.g., a site containing trees, shrubs, etc.), the noise reduction would be even greater. For a conservative analysis, an acoustically hard site was assumed.

Two race track configurations are proposed as part of the raceway element. The Club Track would be a 2.4-mile road racing circuit encompassing a triangular area around the northern end of Runway 32-14. The National Track would be 3.4 mi (5.5 km) in length, and it would include an extra stretch of Runway 32-14 in addition to the Club Track circuit. Noise analyses were performed for the National Track configuration because greater noise levels would be expected given the longer race track and potentially higher speeds.

The automobile race track would be the site of various type of amateur and professional racing events; however, it is the professional race events that would cause the greatest potential noise impact. Most amateur cars are not customized as are professional vehicles and they would be run at much lower speeds and in fewer numbers. Therefore, noise levels would be substantially lower than the professional events modeled. Table 4.6-10 presents the racing specifics for three types of potential professional events. The noise level at any location outside the raceway would depend upon the type of car, the number of cars, and their location on the track. Although the SCCA event would have the largest number of cars (85), it was determined that the CART/Indy Cars would generate the worst noise impact due to the high reference noise level per car (118 dB) and number of cars (32). The cumulative noise impacts at the reference point (50 ft [15 m]) from SCCA and CART car operations were calculated to be 124 and 133 dB, respectively. Therefore, a CART/Indy racing event was used for the noise analysis.

Table 4.6-10

General Racing Specifications

	CART[1]	SCCA[2]	IMSA[3]
Race Class	Indy Cars	Sport Cars	World Sports Cars
Race Speed Limit (mph)	240	95	200
Race Capacity (cars)	32	85	15
Race Duration (hour)	3	1 to 5	3
Daily Races	2	<5	<4
Reference Noise Level (dB)[4]	118	105	108
Reference Distance (feet)	50	50	50

Notes: [1] CART - Championship Auto Racing Teams;
[2] SCCA - Sports Car Club of America;
[3] IMSA - International Motorsports Association;
[4] Noise level per car provided by individual race organization.
Source: Jambhekar Strauss Architects PC, June 4 and July 23, 1996;
Project Calverton, Inc., 1995 and 1996.

Noise levels at a given receptor location would vary minute-by-minute of the race. It is anticipated that the maximum instantaneous noise level would occur in the beginning of race when the packed cars would pass by the point with the shortest distance between source and receptor. After a few laps of racing, those packed cars would be separated over longer distances, with some of the cars dropping out of the race; therefore, the hourly average noise level (L_{eq}) during the first racing hour would be a representative worst-case hourly impact. The following additional assumptions were used for predicting the noise level from a racing event:

- The average racing speed would be 130 mi (209 km) per hour (Macchio, June 26, 1996);
- The average time for one lap would be 1.6 minutes;
- Noise barriers would not be present;
- The race track would be at ground level;
- Four cars are assumed to run as a group that pass the same point on the race track at the same time; i.e., a total of eight car groups (equivalent to a total of 32 cars) would be in each race;

- Eight car groups are packed for the first 30-minute racing period (approximately 19 laps);
- The distance between every two-packed car groups would be 197 ft (60 m);
- During the first 30-minute period, an average of eight seconds (approximately the time each car runs through the length of eight packed car groups) in each lap would be required to generate the worst noise impact at a given receptor location; and for the remaining lap time, the noise impact on a given receptor location would be contributed by eight car groups that are evenly distributed over the whole race track; and
- During the second 30-minute period, the noise impact would result from eight car groups that are spread evenly over the race track.

The basic acoustical principle of 6 dB attenuation per doubling of distance was used for noise level estimation in association with the time weighting factors described above. The average noise levels of the first racing hour were estimated at 60 grid points. These grid points were placed on five rings around the race track with 1,000-ft (305-m) spacing ranging from 1,000 ft (305 m) to 5,000 ft (1,524 m). Each ring consisted of 12 points approximately located with a 30-degree interval. Additional receptor locations analyzed included the proposed land development areas (e.g., industrial business park, theme attractions, etc.) (Table 4.6-13). Three peak hour noise contours (Figure 4.6-6, LEQ Contours for Calverton Enterprise Park/Raceway Alternative) were developed based on the analyses at those grid points.

Results

It is predicted that noise levels on and near the project site would exceed the FHWA Noise Abatement Criteria (Table 3.6-1) and the town of Riverhead noise standard (Table 3.6-3). Based on available weekend daytime noise monitoring measurements presented in Tables 3.6-4 and 3.6-5 for six locations near the site, the noise levels near the race track would be expected to increase 20 dB or more (Table 4.6-11), a significant increase in noise level. However, the noise impacts predicted here are based on a set of conservative assumptions that represent a potential worst case peak hour operational scenario. Moreover, the calculations incorporate no potential noise attenuation due to the presence of barriers, berms, vegetation and trees, building walls, etc.

The major race events would be scheduled six times a year for a period of three days, including the weekend. Therefore, based on two races of three hours duration per day, the total number of racing hours over an entire year would be 108 hours, or 1.2 percent of the year. In addition, the race events would occur only during the daytime, when noise impacts are generally less disruptive than at night. Therefore, the race event noise impacts, though significant with respect to generated noise levels, would be of short duration and relatively infrequent occurrence as presently scheduled.

Table 4.6-11

Automobile Race Event Peak Hour Noise Levels

Land Use Receptor	Peak Hour L_{eq} (dB)
Industrial Business Park	>98
Theme Park	
Attractions	92
Hotel/Conference Center	98
Commercial Recreation	
Stadium	98
Family Entertainment Center	94
Public Golf Course	95
Open Space	
Pine Barrens Core	86
McKay Lake (west)	96
Community Park	>98
National Cemetery Buffer	90
Natural Area	93

4.6.4 Peconic Village Alternative

Ground Vehicles

Weekdays

The peak hour L_{eq} analysis shows that at Sites 1, 3, and 6, noise levels would increase less than 2 dBA compared with levels under no action conditions (Table 4.6-12). At Sites 4 and 5, increases in noise levels greater than 3 dBA would take place over the cause of day and night time hours. Noise level increases equal to or greater than 3 dBA are noted below:

- Site 4 (on Swan Pond Road/Grumman Blvd near site entrance) - weekdays would experience increases in noise levels that are equal to or greater than 3 dBA for 9 hours of the day, with a maximum increase of 9 dBA occurring between 4 and 5 am.

LEQ Contours for Calverton Enterprise Park/Raceway Alternative

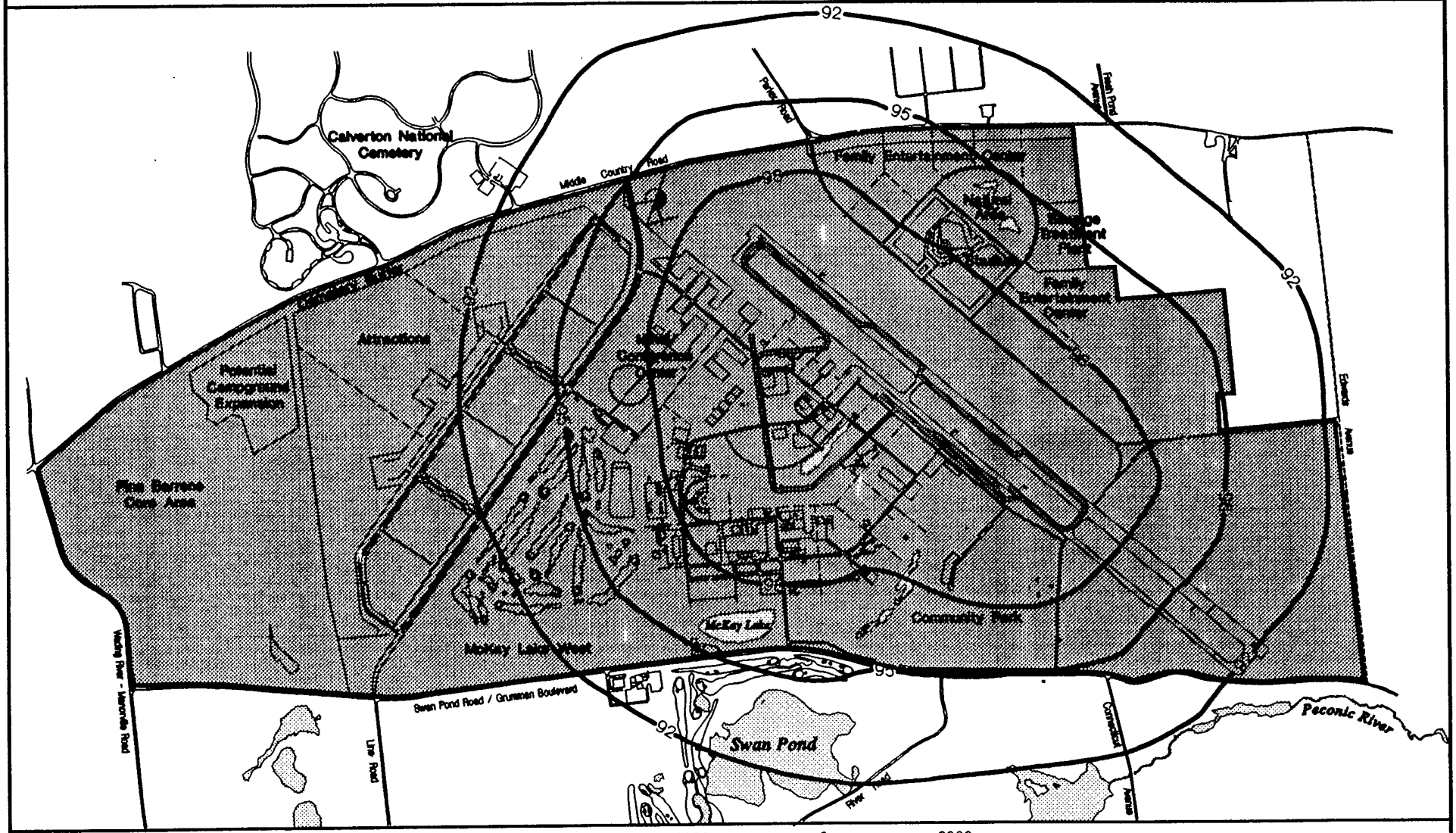


Figure 4.6-6

Table 4.6-12

Predicted Weekday Noise Levels for No Action and the Peconic Village Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
1	AM Peak Midday Peak PM Peak Pre midnight	69 68 71 63	69 68 71 63	0 0 0 0
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq} L_{dn}	67 69	67 70	0 1
2	AM Peak Midday Peak PM Peak Pre midnight	72 69 70 65	74 71 72 67	2 2 2 2
	No hours with net change of ≥ 3 dBA			
	24-Hour L_{eq} L_{dn}	68 72	70 74	2 2
3	AM Peak Midday Peak PM Peak Pre midnight	65 64 67 61	66 64 68 61	1 0 1 0
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq} L_{dn}	63 66	64 67	1 1

Table 4.6-12 (continued)

Predicted Weekday Noise Levels for No Action and the Peconic Village Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
4	AM Peak	64	71	7
	Midday Peak	62	67	5
	PM Peak	63	69	6
	Pre midnight	59	64	5
	4 am - 5 am	50	59	9
	5 am - 6 am *	55	64	9
	24-Hour L_{eq}	60	66	6
	L_{dn}	64	70	6
5	AM Peak	65	71	6
	Midday Peak	61	65	4
	PM Peak	63	68	5
	Pre midnight	58	62	4
	4 am - 5 am	49	57	8
	5 am - 6 am *	54	62	8
	24-Hour L_{eq}	61	65	4
	L_{dn}	64	69	5
6	AM Peak	69	69	0
	Midday Peak	67	67	0
	PM Peak	71	71	0
	Pre midnight	63	63	0
	No hours with net change of ≥ 3 dBA	–	–	–
	24-Hour L_{eq}	66	66	0
	L_{dn}	69	69	0

Note: * = specific hour of the day at a site with the largest noise increase

- Site 5 (on north side of River Road) - weekdays would experience noise level increases equal to or greater than 3 dBA for 19 hours of the day, with a maximum increase of 8 dBA occurring between 4 and 5 am.

Predicted noise levels under the Enterprise Park/Raceway Alternative during the weekday would exceed the FHWA criterion of 67 dBA for the following total number of hours of the day at each site (number of hours for which there are exceedances for the no action alternative are shown in parenthesis):

- Site 1 - 14 hours (14 hours - no action);
- Site 2 - 15 hours (15 hours - no action);
- Site 3 - 2 hours (not exceeded - no action);
- Site 4 - 19 hours (not exceeded - no action);
- Site 5 - 8 hours (not exceeded - no action); and
- Site 6 - 11 hours (10 hours - no action).

The HUD criterion (L_{dn} of 65 dBA) would be exceeded for this alternative at all six monitored sites.

Weekend

The peak hour L_{eq} analysis presented in Table 4.6-13 shows that at Sites 1, 3, and 6, noise levels would increase less than 1 dBA compared with levels under the no action condition. At Sites 4 and 5, increases in noise levels greater than 3 dBA would take place over the course of day and night time hours. Noise level increases equal to or greater than 3 dBA are noted below:

- Site 4 - weekend noise level increases would be equal to or greater than 3 dBA for 19 hours of the day, with a maximum increase of 7 dBA occurring between 4 am and 5 am.
- Site 5 - weekends would experience noise level increases equal to or greater than 3 dBA for 19 hours of the day, with a maximum increase of 6 dBA occurring between 4 am and 5 am.

Predicted noise levels under the Peconic Village Alternative during the weekend would exceed the FHWA criterion of 67 dBA for the following total number of hours of the day at each site (number of hours for which there are exceedances for the no action alternative are shown in parenthesis):

- Site 1 - 8 hours (8 hours - no action);
- Site 2 - 14 hours (13 hours - no action);
- Site 3 - 1 hour (not exceeded - no action);
- Site 4 - 4 hours (not exceeded - no action);
- Site 5 - 16 hours (not exceeded - no action); and
- Site 6 - 11 hours (11 hours - no action).

The HUD criterion (L_{dn} of 65 dBA) would be exceeded for this alternative at all six sites.

Table 4.6-13

Predicted Weekend Noise Levels for No Action and the Peconic Village Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
1	AM Peak	67	67	0
	Midday Peak	64	64	0
	PM Peak	69	69	0
	Pre midnight	63	63	0
	No hours with net change of ≥ 3 dBA			
	24-Hour L_{eq}	65	65	0
	L_{dn}	69	69	0
2	AM Peak	68	69	1
	Midday Peak	68	69	1
	PM Peak	70	71	1
	Pre midnight	64	65	1
	No hours with net change of ≥ 3 dBA			
	24-Hour L_{eq}	67	68	1
	L_{dn}	70	71	1
3	AM Peak	65	67	1
	Midday Peak	62	65	1
	PM Peak	65	68	1
	Pre midnight	60	63	1
	No hours with net change of ≥ 3 dBA			
	24-Hour L_{eq}	63	64	1
	L_{dn}	67	67	1

Table 4.6-13 (continued)

Predicted Weekend Noise Levels for No Action and the Peconic Village Alternative

Site	Hour	Noise Level (L_{eq} in dBA)		
		No Action	Alternative	Net Increase
4	AM Peak Midday Peak PM Peak Pre midnight	62 62 62 58	68 67 67 63	6 5 5 5
	4 am - 5 am 5 am - 6 am *	51	58	7
	L_{eq} L_{dn}	60 63	65 68	5 5
5	AM Peak Midday Peak PM Peak Pre midnight	62 62 65 59	67 66 69 64	5 4 4 5
	4 am - 5 am 5 am - 6 am *	52 56	58 62	6 6
	24-Hour L_{eq} L_{dn}	61 64	65 68	4 4
6	AM Peak Midday Peak PM Peak Pre midnight	68 68 69 62	68 68 69 62	0 0 0 0
	No hours with net change of ≥ 3 dBA			
	24-Hour L_{eq} L_{dn}	66 69	66 69	0 0

Note: * = specific hour of the day at a site with the largest noise increase

4.7 Infrastructure

4.7.1 No Action Alternative

Under the no action alternative, there would be minimal demand for utilities since the facility would be closed and no permanent maintenance staff would be retained. All unused existing utility systems would be abandoned in place and permanently closed according to the *Base Realignment and Closure Facility Layaway and Caretaker Maintenance Standards* (Naval Facilities Engineering Command, September 1994).

4.7.2 Calverton Enterprise Park Reuse Plan

Water Supply

As described in Subchapter 3.7, existing buildings within the fence at NWIRP Calverton are supplied with water from on-site wells. According to the Reuse Plan, these wells and well pumps are old, low capacity and, therefore, would not ultimately be used for the proposed new development in year 20 at full build-out. According to the Reuse Plan, the town of Riverhead would ultimately provide a source of water supply for the site under the proposed Reuse Plan. The Riverhead Water District has identified nine possible well field sites (LIRPB, 1992). This source would include a network of water distribution mains along the main thoroughfares subdividing the parcels of land subject to future development. NWIRP Calverton is contiguous to existing water mains running within the right-of-way (ROW) of New York State Route 25. As demand for water begins to exceed the capacity of the existing system, the Reuse Plan proposes that the Riverhead Water District be extended to serve the site, and be integrated with the existing distribution network. It is expected that this extension would facilitate an adequate water supply to NWIRP Calverton.

Table 4.7-1 provides typical per capita water use rates for various uses. Table 4.7-2 presents the per capita water usage estimated for the Calverton Enterprise Park Reuse Plan based on: 1) the projected number of employees; 2) the projected maximum number of visitors for the proposed theme park and commercial recreation components; 3) the number of hotel rooms anticipated; 4) the typical per capita water use rates provided in Table 4.7-1; and 5) typical daily water use rates at golf courses. As indicated in Table 4.7-2, the estimated future water use under this alternative is 490,100 gallons (1.9 million liters) per day. According to HR&A (1996), NWIRP Calverton had a permit to pump up to 1.97 million gallons (7.5 million liters) of water per day. Total water use under this alternative would therefore be less than the existing permit limitations; however, the existing wells would not ultimately be used to supply water to the site.

Table 4.7-1

Typical Per Capita Daily Water Use Rates

Land Use	Per Capita Flow Rates	
	Gallons per day	Liters per day
Industrial Business Park[1]	35	132
Theme Park[2]	8	30
Aviation/Aircraft Use (employee)[1]	15	57
Commercial/Recreation[1]	5	19
Automobile/Raceway[1]	5	19
Hotel/Conference[3] Employee Guest	 10 50	 38 189
Residential[3]	100	379

Sources: [1]New York State Department of Environmental Conservation 1988;
[2]Dejong, July 9, 1996; and
[3]Tchobanoglous and Burton, 1991.

Table 4.7-2

Calverton Enterprise Park Reuse Plan Estimated Daily Water Use

Land Use	No. of employees	Per capita use gallons (liters)	No. of visitors	Per capita use gallons (liters)	Total Use (gallons)	Total Use (liters)
Industrial Business Park	1,775	35 (132)	na		62,125	235,143
Theme Park Attractions	571	10 (38)	30,000[1]	8 (30)	245,710	930,012
Hotel/Conference Center	360	10 (38)	400[2]	50 (189)	23,600	89,326
Service Retail	194	35 (132)	na		6,790	25,700
Aviation	207	15 (57)	na		3,105	11,752
Commercial Recreation Stadium Family Entertainment Subtotal	68	10 (38)	8,000[3] 820[4]	5 (19) 5 (19)	680 40,000 4100 [44,780]	2,574 151,400 15,519 169,492
Private Golf Course	na				104,000[5]	393,682
TOTAL	3,175				490,100	1.9 million

Notes: [1] maximum number of visitors - 30,000 (10,000 parking spaces x 3 people/car).
[2] assumes maximum use at 400 rooms.
[3] assumes maximum number of spectators at 8,000.
[4] based on 300,000 visitors per year.
[5] adapted from SCPD, 1990.
na - not applicable

Storm Drainage

Development of areas that are currently unpaved would result in an increase in the amount of impervious surfaces. As discussed in Subchapter 4.1.2, it is estimated that the amount of impervious surfaces would increase by 320 acres (130 hectares) for a total of 797 acres on the site (including 477 acres or 193 hectares of existing impervious surface). This would increase the total volume and rate of stormwater discharge and would require new storm sewer construction. In accordance with the Town of Riverhead's zoning ordinance (Article XIII, Part 108-60, J), it would be necessary to accommodate additional stormwater on site in a set of recharge basins. Recharge basins are designed to capture stormwater, thereby reducing the amount and velocity of overland water flow, reducing sediment loads to waterways, and providing retention time for recharge to groundwater. Although their location would be dependent on site specific development, it is estimated that the total area on site needed for recharge basins would be approximately 30 to 35 acres (12 to 14 hectares) (based on a formula in the Town of Riverhead's zoning ordinance). This estimate assumes that the existing storage capacity is needed for the 477 acres (193 hectares) of impervious surface already on-site. Incremental construction would require state General Stormwater Discharge Permits to address stormwater runoff from industrial uses, including a plan for minimizing pollutants in runoff.

Sanitary Sewer

As described in Subchapter 3.7.2, portions of the NWIRP Calverton site are presently served by a wastewater treatment plant with a total capacity of 65,000 gallons (246,000 liters) per day. Actual water use at NWIRP Calverton may once have been as high as 70,000 gallons (264,950 liters), with an assumed single shift of 2,000 workers. Several buildings on site had their own septic systems so that water would not have passed through the STP. Future daily sanitary flow is estimated to be approximately 386,110 gallons (1.5 million liters) (based on the water use estimates provided in Table 4.7-2, excluding the golf course). This flow would exceed historic usage of wastewater treated via the STP and the septic systems.

The Reuse Plan proposes that improvements to the existing wastewater system be made; furthermore, the feasibility of developing a new and expanded wastewater treatment facility north of the groundwater divide would be investigated (Figure 3.10-2). The total estimated cost for providing a sanitary sewer system (sanitary sewer network and an on-site wastewater treatment plant) for the Reuse Plan is in the order of magnitude of $8 - $11 million (HR&A, 1995). With these improvements and additions, it is anticipated that the sanitary sewer system would be of adequate capacity to serve the Calverton Enterprise Park Reuse Plan.

With respect to relevant permits, State Pollution Discharge and Elimination Permits (SPDES) would be required for any new surface and groundwater discharges. The conveyance of permits from the Navy to the town for the existing STP would require demonstration of the town's capability to operate the plant to the NYSDEC.

Other Utility Systems

Electric

When NWIRP Calverton was operational, electrical service was provided by the PASNY. Currently, incoming electrical service is provided by LILCO. According to the Reuse Plan, in the event that lower cost electrical energy cannot be transmitted to the site by either LILCO or PASNY, there exists the potential for on-site generation and distribution of electricity at competitive rates per kilowatt hour (HR&A, 1996). Although the Reuse Plan indicates this possibility, permitting, impacts, and costs for such a facility were neither discussed nor provided in the plan. Given the uncertainty of this matter and the potential scope of analysis associated with evaluating an on-site generating facility, the potential effects of an such a facility are not addressed in this EIS. It is assumed that power for the Reuse Plan would be provided from off the site (LILCO or PASNY).

Gas

There is a four-in (ten-cm) high-pressure gas main extending into NWIRP at Gate 14 that formerly fed into the heating plant (Brooks, August 23, 1996). This line has been cut and capped. Although the Reuse Plan does not specifically indicate this possibility, the presently defunct main could provide gas to the site for a variety of uses proposed as part of the Reuse Plan.

Steam Distribution

The main buildings of NWIRP Calverton are currently supplied by steam, with condensate return from the steam plant. The steam plant is presently undergoing a major boiler replacement with an estimated completion date of mid-1997. Steam would continue to be supplied to buildings in the industrial core as conceived in the Reuse Plan. It is anticipated that there would be ample steam available for future heating and industrial use in the industrial business park.

4.7.3 Calverton Enterprise Park/Raceway Alternative

Water Supply

Table 4.7-3 presents the per capita water usage estimated for the Calverton Enterprise Park Raceway Alternative based on: 1) the projected number of employees; 2) the projected maximum number of visitors for the proposed theme park, automobile raceway, and commercial recreation components; 3) the number of hotel rooms anticipated; 4) the typical per capita water use rates provided in Table 4.7-1; and 5) typical daily water use rates at golf courses. As indicated in Table 4.7-3, the estimated future water use under this alternative is 562,590 gallons (2.1 million liters) per day. According to HR&A (1996), NWIRP Calverton had a permit to pump up to 1.97 million gallons (7.5 million liters)

Table 4.7-3

Calverton Enterprise Park/ Raceway Alternative Estimated Daily Water Use

Land Use	No. of employees	Per capita use gallons (liters)	No. of visitors	Per capita use gallons (liters)	Total Use (gallons)	Total Use (liters)
Industrial Business Park	1,100	35 (132)	na		38,500	145,733
Theme Park Attractions	571	10 (38)	30,000[1]	8 (30)	245,710	930,012
Hotel/Conference Center	360	10 (38)	400[2]	50 (189)	23,600	89,326
Automobile Raceway	100	10 (38)	21,000 [6]	5 (19)	106,000	401,210
Commercial Recreation Stadium Family Entertainment Subtotal	68	10 (38)	 8,000[3] 820[4]	 5 (19) 5 (19)	680 40,000 4100 [44,780]	2,574 151,400 15,519 169,492
Private Golf Course	na				104,000[5]	393,682
TOTAL	2,199				562,590	2.1 million

Notes: [1] maximum number of visitors - 30,000 (10,000 parking spaces x 3 people/car).
[2] assumes maximum use at 400 rooms.
[3] assumes maximum number of spectators at 8,000.
[4] based on 300,000 visitors per year.
[5] adapted from SCPD, 1990.
[6] assumes 21,000 spectators per day.
na - not applicable

of water per day. Total water use under this alternative would therefore be less than the existing permit limit. However, as with the Reuse Plan, it is anticipated that the Riverhead Water District would ultimately be extended to serve the site and integrate with the existing distribution network. It is expected that this extension would provide a suitable water supply to the site.

Storm Drainage

Development of areas that are currently unpaved for the Calverton Enterprise Park/Raceway Alternative would result in an increase in the amount of impervious surfaces. It is estimated that impervious surfaces would increase by 250 acres (101 hectares), from 477 acres (193 hectares) to an on-site total of 690 acres (280 hectares) (Subchapter 4.1.3). This would be about 70 acres (78 hectares) less than the Reuse Plan. This would increase the total volume and rate of stormwater discharge and would require new storm sewer construction. Using the estimation method as for the Reuse Plan, approximately 20 to 25 acres of land would be needed to accommodate the additional stormwater. Incremental construction would require state General Stormwater Discharge Permits to address stormwater runoff from industrial uses, including a plan for minimizing pollutants in runoff.

Sanitary Sewer

Future sanitary flow is estimated to be approximately 458,590 gallons (1.7 million liters) (based on the water usage estimates provided in Table 4.7-3, excluding the golf course). This would exceed the capacity of the existing wastewater treatment plant. Similar to the Reuse Plan, improvements and additions to the sanitary sewer system would be expected to provide adequate capacity. As discussed for the Reuse Plan, SPDES permits would be required for any new surface and groundwater discharges.

Other Utility Systems

Electric

As with the Reuse Plan, it is assumed that electrical service would be provided by LILCO or PASNY.

Gas

Like the Reuse Plan, the presently out-of-service four-in gas main could provide service to the site for a variety of uses proposed as part of the Enterprise Park/Raceway Alternative.

Steam Distribution

Steam would continue to be supplied to buildings of the industrial business park as conceptualized in the Reuse Plan. It is anticipated that there would be ample steam available for future heating and industrial use.

4.7.4 Peconic Village Alternative

Water Supply

Table 4.7-4 presents the per capita water usage estimated for the Peconic Village Alternative based on: 1) the projected number of employees; 2) the projected number of residential units (assisted living and senior housing); 3) the number of hotel rooms anticipated; 4) the typical per capita water use rates provided in Table 4.7-1 and typical daily water use rates at golf courses. As indicated in Table 4.7-4, the estimated total future water use under this alternative is 482,605 gallons (1.8 million liters) per day, including the golf courses. According to HR&A (1996), NWIRP Calverton had a permit to pump up to 1.97 million gallons (7.5 million liters) of water per day. Total water use under this alternative would therefore be below that allowed under existing permit. It is assumed that water would ultimately be provided via an extension of the Riverhead Water District.

Storm Drainage

The development of areas that are currently unpaved for the Peconic Village Alternative would result in an increase in the amount of on-site impervious surfaces. This would increase the total volume and rate of discharge of stormwater and would require new storm sewer construction. It is estimated that 260 acres (105 hectares) of impervious surface would be added to the existing 477 acres (193 hectares) for a total of 690 acres (280 hectares). In accordance with the Town of Riverhead's requirement for on-site storage of stormwater, it is estimated that approximately 25 to 30 acres (12 to 14 hectares) of land would be needed for recharge basins. Incremental construction of the alternative would require state General Stormwater Discharge Permits to address stormwater runoff from industrial uses, including a plan for minimizing pollutants in runoff.

Sanitary Sewer

For purposes of this analysis, it is expected that improvements and additions to the sanitary sewer system would be made to provide adequate capacity to serve the Peconic Village Alternative. As discussed for the proposed Reuse Plan, SPDES permits would be required for any new surface and groundwater discharges. Future sanitary flow is estimated to be approximately 274,605 gallons (1.0 million liters) (based on the water use estimates provided in Table 4.7-3, but excluding the golf courses).

Table 4.7-4

Peconic Village Alternative Daily Estimated Water Use

Land Use	# of employees	Per capita use gallons (liters)	# of visitors or housing units	Per capita use gallons (liters)	Total Use (gallons)	Total Use (liters)
Industrial Business Park	1,036	35 (132)	na		36,260	137,244
Commercial/Retail	227	35 (132)	na		7,945	30,072
Hotel/Conference Center	360	10 (38)	400[1]	50 (189)	23,600	89,326
Residential - Assisted Living	275	10 (38)	688	100	71,550	270,817
Residential - Senior Living	na		1,350	100	135,000	510,975
Golf Courses	25	10 (38)			208,250[2]	787,402
TOTAL	1,923				482,605	1.8 million

Notes: [1] assumes maximum use at 400 rooms.
[2] Adapted from SCPD, 1990.
na - not applicable

Other Utility Systems

Electric

As with the other alternatives, it is assumed that electrical power supply would be provided by LILCO or PASNY. No on-site electrical generation would take place.

Gas

Like the other alternatives, natural gas would be available to service the site and any of the uses proposed under the Peconic Village Alternative.

Steam Distribution

Steam would continue to be supplied to buildings of the industrial business park under the Peconic Village Alternative. It is anticipated that there would be ample steam available for future heating and industrial use.

4.8 Cultural Resources

Section 106 of the National Historic Preservation Act provides that federal agencies take into account the effect of their actions on any district, site, buildings, structures, or objects included in or eligible for inclusion in the National Register of Historic Places. Implementing regulations for Section 106 are contained in 36 CFR 800, *Protection of Historic Properties*. These regulations provide specific criteria for assessing the effect of federal undertakings on historic properties and identifying adverse effects of proposed undertakings on historic properties. The effects that a proposed undertaking will have on a cultural resource are predicted based on the significant characteristics or distinguishing elements of the resource and the design and anticipated consequences of the undertaking. Effects to cultural resources on or eligible for listing in the National Register of Historic Places are evaluated with regard to the *Criteria of Effect and Adverse Effect*, established by the Advisory Council on Historic Preservation (36 CFR 800.9). These criteria are summarized in Table 4.8-1.

The cultural resources survey conducted at NWIRP Calverton (TAMS Consultants Inc. and Historical Perspectives, Inc., 1996) identified three structures that could be considered eligible for the National Register of Historic Places (Figure 3.8-1). Built within the past 50 years, these structures are considered to be individually eligible for several reasons. Plant 6 and Plant 7 (built in 1953) are excellent examples of military-industrial architecture of wide-span steel frame and precast concrete panel curtain wall construction. The Grumman aircraft developed and manufactured in these final assembly, experimental, and production flight testing facilities had unmatched capabilities and made up three-quarters of the US Navy's carrier-based aircraft. The Anechoic Chamber (built in 1968) was a prototypical research, development, testing, and evaluation facility for the testing of the electronic and radar systems of aircraft such as the EA-6B Prowler, A-6 Intruder, and F-14 Tomcat. It was the largest such facility in the free world when it was built, housing an entire aircraft; it was used as a model for all later anechoic chambers of this kind.

These three facilities are historically significant for their critical role in research, development, and production of important Cold War weapons systems, including fighter, attack, and electronic warfare aircraft. Each one retains historic integrity and clearly conveys a strong association with military activities. Therefore, this analysis addresses the impacts of implementing the Reuse Plan and the alternatives on the character of the individual buildings.

For purposes of this analysis, it is assumed that the conveyance document from the Navy to the Town of Riverhead CDA would contain covenants to ensure the protection of all National Register-eligible properties. This would satisfy the requirements of 36 CFR 800.9[b], and would result in no adverse effect on the eligible historic resources.

Table 4.8-1

Criteria of Effect and Adverse Effect

An undertaking has an effect on a historic property when it may alter characteristics of the property that may qualify the property for inclusion in the National Register. For purposes of determining effect, alteration to features of the property's location, setting, or use may be significant depending on a property's significant characteristics and should be considered (36 CFR 800.9[a]).
An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to: 1. Physical destruction, damage, or alteration of all or part of the property; 2. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register; 3. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting; 4. Neglect of a property resulting in its deterioration or destruction; and 5. Transfer, lease, or sale of the property (36 CFR 800.9[b]).
Effects of an undertaking that would otherwise be found to be adverse may be considered as being not adverse for the purpose of these regulations: 1. When the historic property is of value only for its potential contribution to archeological, historic, or architectural research, and when such value can be substantially preserved through the conduct of appropriate research, and such research is conducted in accordance with applicable professional standards and guidelines; 2. When the undertaking is limited to the rehabilitation of buildings and structures and is conducted in a manner that preserves the historical and architectural value of the affected historic property through conformance with the Secretary's "Standards for Rehabilitation and Guidelines for Rehabilitating Buildings;" or 3. When the undertaking is limited to the transfer, lease or sale of a historic property, and adequate restrictions or conditions are included to ensure preservation of the property's significant historic features (36 CFR 800.9[c]).

4.8.1 No Action Alternative

Under future baseline (no action) conditions, there would be no new construction or alteration in the area of the historic buildings. Closure of NWIRP Calverton would follow the standards and procedures for mothballing facilities published in *Base Realignment and Closure Facility Layaway and Caretaker Maintenance Standards* (Naval Facilities Engineering Command, September 1994). These guidelines and procedures meet the requirements for mothballing historic structures outlined by the National Park Service in *Preservation Brief 31: Mothballing Historic Buildings* (National Park Service, September 1993). By following these Navy and National Park Service guidelines, there would be no adverse effect on the historic structures under the no action alternative.

4.8.2 Calverton Enterprise Park Reuse Plan

Under the Reuse Plan, NWIRP Calverton would be redeveloped for a variety of commercial, recreational, industrial, and open space uses (Subchapter 2.3).

Architecture

Plant 6, an aircraft assembly facility built in 1953, would be part of the industrial business park in the Reuse Plan. It was constructed as a wide-span, steel-framed structure clad with a pre-cast, reinforced concrete panel curtain wall. Plant 7 was built in the same year and in the same fashion as Plant 6; it too would be part of the industrial business park. Assuming that any exterior renovations are made in accordance with the Secretary of Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, there would be no adverse effect on these structures.

The Anechoic Chamber, built in 1968 of steel frame sheathed with insulated, corrugated metal panels, was used as a research, development, testing, and evaluation facility for electronic and radar aircraft systems. The interior of the Anechoic Chamber is intrinsic to its significance because the material lining the walls of the chamber was the key element responsible for the effective testing of the aircraft systems. If renovations to either the interior or exterior of the Anechoic Chamber are carried out according to the Secretary of Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, then there would be no adverse effect.

Archaeology

There are an estimated 300 acres (121 hectares) of high archaeological sensitivity within the fence of NWIRP Calverton (Figure 3.8-2). These areas are found primarily in and around former and existing bodies of water. The largest contiguous area of high archaeological sensitivity is located southwest of the main (east) runway within the core area of the site.

Under the Reuse Plan, archaeological resources of high sensitivity may be disturbed in the area of the industrial business park and the commercial recreation area. Areas already paved (i.e., runways and much of the industrial core) may border areas of high sensitivity but are not in themselves considered highly sensitive. In order to fully determine potential effect, a Phase 1B archaeological survey should be carried out where ground disturbance would occur in high sensitivity areas. The remainder of NWIRP Calverton contains areas of medium to low potential for finding prehistoric sites. As noted in Subchapter 5.1.8, the Navy would consult with the Advisory Council on Historic Preservation and the New York SHPO in accordance with Section 106 of the NHPA. This process would result in the preparation of a Memorandum of Agreement (MOA) between the three parties providing for appropriate mitigation.

4.8.3 Calverton Enterprise Park/Raceway Alternative

Under the Calverton Enterprise Park/Raceway Alternative, NWIRP Calverton would be redeveloped similar to the Reuse Plan, except in the area of the eastern runway and part of the industrial core, where an automobile raceway would replace the aviation/aircraft use (Subchapter 2.4). There would be few differences between the archaeological and architectural impacts of this alternative and the Reuse Plan.

Architecture

Plants 6 and 7 would be within the industrial business park of this alternative. Assuming that the any exterior renovations are made in accordance with the Secretary of Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, there would be no adverse effect on these structures. In this alternative, the Anechoic Chamber would be part of the property associated with the racing complex. The raceway site plan of Project Calverton Inc. shows the Anechoic Chamber as a workshop. As described previously, the interior is intrinsic to the significance of the structure. Therefore, if any proposed renovations to both the interior and exterior of this structure are be carried out in accordance with the Secretary of Interior's Standards, no adverse effect would occur.

Archaeology

Any new development and paving in areas of high archaeological sensitivity would first require that a Phase 1B archaeological survey be performed before potential effect could fully be determined. As described in Subchapter 4.8.2 an MOA would be prepared.

4.8.4 Peconic Village Alternative

The Peconic Village Alternative would include a combination of senior housing, recreation, open space, commercial, and industrial uses (Subchapter 2.5).

Architecture

Plant 6, the assembly and administration building, would be part of the industrial business park under this alternative. Plant 7, the hangar and operations building, would be situated in the civic facilities area of this alternative. Assuming that any exterior renovations would be carried out according to the Secretary of Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, there would be no adverse effect on these structures. Under the Peconic Village Alternative, the Anechoic Chamber would be demolished to make way for senior citizen assisted living housing. This action would have an adverse effect because it involves the physical destruction, damage, or alteration of all or part of the property (36 CFR 800.9[b]1). Specific measures, as described in Chapter 5, would be required to mitigate this impact.

Archaeology

Under this alternative archaeological resources of high sensitivity may be disturbed in these areas: assisted living housing; commercial use adjacent to the east runway; in the area of senior housing directly east of the industrial core; and in the area of the Sewage Treatment Plant. A Phase 1B survey would need to be done before any development occurs in order to fully determine potential effect on areas of high archaeological sensitivity. As with the other alternatives, an MOA would be prepared.

4.9 Topography, Geology and Soils

Given the gently sloping relief of the NWIRP Calverton fenced-in area, with slopes generally under six percent, none of the action alternatives would significantly affect existing topography. Construction of the proposed uses within each alternative (e.g., industrial business complex, airport, automobile raceway, senior housing) would not likely require extensive regrading, excavation, or filling. Because none of the proposed construction projects would entail deep excavations, no direct impacts to geologic resources are anticipated.

With respect to soils, construction elements of all three alternatives generally fall within the Haven-Riverhead Association. The soils of this association are typically deep, nearly level to gently sloping, and well-drained (Subchapter 3.9). Development as proposed in the alternatives is generally considered compatible with the soils association, because of its good drainage and the ease of excavation. In places where there may be a high water table or where soils are on steep slopes, construction procedures to reduce effects on groundwater and on soils would need to be implemented Although these site-specific issues cannot be addressed at this time given the existing conceptual level of the alternatives, a soil erosion and sediment control plan would be prepared prior to construction to address these issues. The plan is typically designed to achieve the following objectives:

- Minimize potential impacts during construction;
- Limit work areas to the immediate area of construction, to minimize disruption of adjacent lands; and
- Restore and revegetate adjacent lands as quickly as possible to the extent practicable following construction of a particular facility.

The Pine Barrens Plan (Volume 1, Chapter 5, CPBJP&PC, 1995) defines a set of standards and guidelines for land use that would be applicable to all of the alternatives - the lands proposed for development for each alternative are within Compatible Growth Area of the Central Pine Barrens. Areas of the site to be cleared would need to comply with the clearance standards that include:

- Residential uses - maximum site clearances range from 90 percent for 10,000 sq ft (930 sq m) on 0.25 acres (0.10 hectares) (zoning lot size) to 20 percent for 160,000 sq ft to 200,000 sq ft (14,880 sq m to 18,600 sq m); and
- Commercial, industrial and other or mixed uses - 65 percent maximum site clearance.

Guidelines for soils include:

- Maximize placement of site clearing on slopes less that ten percent;

- Prepare slope analysis maps showing slopes in the ranges zero to ten percent, and 11-15 percent, and 15 percent and greater;
- Develop erosion and sediment control plans for areas of 15 percent or greater slopes;
- Design roads and driveways to minimize traversing slopes greater than ten percent and to minimize cuts and fills; and
- Revise details of retaining walls and erosion control structures should be provided for roads and driveways that traverse slopes greater than ten percent.

Suffolk County's Pine Barrens Review Commission (PBRC) has similar guidelines for soils (PBRC, 1989).

4.10 Water Quality and Hydrology

4.10.1 No Action Alternative

Under the no action alternative (future baseline condition), water quality and hydrologic resources would not be adversely affected. With the site vacant and the facility closed, the existing Calverton STP would not be operating; therefore, its discharge to McKay Lake (and then to the Peconic River) would be eliminated. Additional stormwater would not be produced, nor would recharge to the underground aquifers be affected, because there would be no change in the amount of existing impervious (e.g., buildings and paved areas) surface at the site.

Under the no action alternative where the facility is retained by the US government and no reuse or redevelopment occurs, the Navy's IR Program (Chapter 3.12), designed to identify contamination and to institute corrective measures, would continue to be implemented and completed. Consequently, the potential for future contamination of surface and groundwater from the 30 acres (12 hectares) of IR-property on site would be eliminated.

4.10.2 Calverton Enterprise Park Reuse Plan

Surface Water

The New York SPDES program (Environmental Conservation Law (ECL), Article 17, Parts 750-757) is designed to control industrial waste discharges, sewage discharges, and stormwater discharges into waters of New York. The state regulates point source discharges such as effluent from a STP as well as non-point sources such as stormwater from industrial facilities and construction sites. In Suffolk County, the SCDHS has permit authority for this program. The Reuse Plan, as well as the other alternatives, would be subject to SPDES regulations for the control of stormwater and STP (existing and new) discharges.

Specific impacts of the Reuse Plan on surface waters would depend on site-specific development within each of the major land use categories (e.g., industrial business park, commercial recreation area, theme park, etc.). Given the large size of the site, the 20-year time frame for redevelopment, and the relatively small amount of surface waters present, existing surface water features would not be directly affected by construction operations such as filling or elimination, (i.e., existing surface water features would be incorporated within the final design plans of the Reuse Plan). Existing on-site surface water features and the Peconic River, located just outside the fenced-in area of NWIRP Calverton, are displayed in Figure 3.10-1.

Stormwater

Stormwater runoff is that part of precipitation that flows over the surface of the land. In natural conditions, stormwater normally flows to lower elevations where it drains to streams, rivers, and other surface water bodies or is recharged to the groundwater. The amount of stormwater in an area depends on a number of variables, including vegetative cover, soils, slope, existing drainage systems, and the amount of impervious surface area. Sources of contaminants transported by stormwater include fertilizers, pesticides, by-products of urban development and industrial facilities such as sediment, oils and grease, improper storage/disposal of toxics, and air-borne contaminants.

Construction activities associated with development of the Reuse Plan would be subject to the state construction site general permit issued under the SPDES program. Stormwater pollution prevention plans (SWP3s), including elements addressing sedimentation basins, would need to be prepared prior to a formal approval for general permit coverage. The SWP3s would need to include applicable components of the local sediment and erosion control site plan standards, site permits, stormwater management site plans, and other duly adopted regulations. The state general permit requires that stormwater flows be diverted from exposed soils and that runoff from exposed areas be limited "to the degree attainable." Such practices may include sediment traps and sedimentation basins. Given the scope of potential redevelopment at NWIRP Calverton, it is likely that areas of ten acres (four hectares) or more would be disturbed; therefore, temporary or permanent sediment basins that provide at least 3,600 cu ft (101 cu m) of storage per acre drained would need to be provided "where attainable" until final site stabilization.

Construction stormwater management controls in the SWP3 must conform to the State Guidelines for New Development (Article 17, Titles 7 and 8, ECL). Compliance with the state Erosion and Sediment Control Guidelines would also be required. These guidelines mandate that waters downstream from construction areas not show any substantial visible contrast to upstream reaches with respect to color, taste, odor, turbidity, or sediment deposition.

NWIRP Calverton has a general stormwater permit for runoff from the existing industrial areas that will expire in 1998. For the continuation of similar industrial activities, the general stormwater permit would need to be maintained and/or modified. For new industrial uses the applicability of the SPDES general industrial stormwater permit requirements would need to be assessed at the time specific industrial reuses are identified. All industrial stormwater discharges must comply with state water quality standards under Article 17 of the ECL.

The Pine Barrens Comprehensive Land Use Plan (CPBJP&PC, 1995 [Volume 1, Chapter 5]) defines a standard requiring on-site storage capacity for stormwater discharges:

> "Development projects must provide that all stormwater originating from the development of the property is recharged on site unless surplus capacity exists in an off site drainage system."

According to the CPBJP&PC, the construction of large excavated recharge basins is discouraged within the pine barrens area. The use of alternative natural recharge areas and/or drainage systems that would cause less disturbance of the site "may be encouraged" per the Pine Barrens Plan. Alternatives include, but are not limited to, the use of natural swales and depressions and/or the installation of perforated pipe, vertical drains or dry wells. The Pine Barrens Plan recommends that ponds be constructed and planted to create shallow marsh habitat to filter runoff to the maximum extent practicable; ponds should only be created in place of recharge basins, not for aesthetic purposes.

It is estimated that the potential increase in impervious surfaces would be about 320 acres (130 hectares), with full build-out of the Reuse Plan. Presently, there are about 477 acres (193 hectares) of impervious surface on the 2,923-acre (1,184-hectare) site. In order to accommodate the additional volume of stormwater, it is estimated that approximately 30 to 35 surface acres (12 to 14 hectares) of additional land would be needed for stormwater recharge basins of five ft (1.5 m) in depth. This represents an order of magnitude estimate only, and has not been calculated for preliminary site engineering purposes; it is based on the following assumptions:

- Amount and type of development proposed in the Reuse Plan;
- The town of Riverhead's allowable building coverages and parking requirements as defined in its existing zoning ordinance;
- Estimate of an area-weighted runoff coefficient; and
- The town requirements for estimating recharge basins as defined in the Zoning Ordinance (Chapter 108, Article XIII, 108-60).

STP Surface Water Discharge

The existing Calverton STP is permitted to discharge treated sanitary and process wastewater as well as non-contact cooling water to McKay Lake at a flow capacity of 62,000 gallons (234,670 liters) per day. The existing permit will expire on in February, 2000. According to the original engineering report, the plant's treatment capacity could be increased fourfold with the addition of new tankage (HR&A, 1996). Because of the estimated wastewater treatment demands of the Reuse Plan (Subchapter 4.7), a new groundwater discharging STP is ultimately proposed in the northern area of the site. As discussed in Subchapter 4.7.3, it is estimated that at full build-out of this alternative there would be a daily maximum of approximately 386,110 gallons (1.5 million liters) of wastewater generated. In the interim, it would be possible to operate the existing STP, with a modified permit for any proposed volume or treatment-related changes necessary. Continuing operation of the STP would require a transfer of ownership or name change, which is also considered a SPDES permit modification. A change in the type of wastestream would also likely necessitate a permit modification.

Groundwater

The Reuse Plan would result in the development of the fenced-in portion of the site on both sides of the groundwater divide (Figure 3.10-2). Groundwater in the shallow aquifer zones beneath the northern buffer zones and the northern half of the fenced-in area flows to the northeast, probably discharging to Long Island Sound. Shallow aquifer zone groundwater beneath the southern half of the fenced-in area as well as the southern buffer zones probably discharges into the Peconic River and its associated ponds and wetlands.

The industrial business park, airport, and commercial uses have the potential for accidental pollution of groundwater (and surface water) or endangerment of public health. These uses would be required to prepare Spill Contingency Plans. In general, the NYSDEC requires spill plans to be submitted for review and approval as part of the SPDES permit application.

Nitrates from fertilizers that would be used on the golf course of the Reuse Plan are of potential concern, considering that groundwater is the primary source of drinking water in the vicinity of NWIRP Calverton. Nitrates have been associated with several environmental issues: surface water quality (eutrophication), productivity, acid rain, and the depletion of stratosphere ozone. Potential human health risks associated with nitrates include birth defects, cancer, nervous system impairments, and the blue baby syndrome - methemoglobinemia (LIRPB, 1992). The consumption of nitrates reduces the oxygen-carrying capacity of the blood, particularly in infants less than three months old who are not yet on solid food. There have been however, virtually no reports of methemoglobinemia in the US in recent years. The USEPA recommends the maximum concentration limit of ten mg of nitrate-N per liter, or ten ppm, in drinking water.

Research has shown the occurrence of nitrate leaching when excessive amounts of nitrogen have been used, highly soluble nitrogen sources are used, fertilizer is applied in a dormant or semi-dormant period of plant uptake, and excessive irrigation has caused greater amounts of leaching (LIRPB, 1992). Consequently, the causes of leaching lend themselves to being controlled by best management practices (BMPs) including:

- Applying slow release nitrogen sources;
- Reducing the total yearly amount of nitrogen fertilizer applied;
- Avoiding fertilization with higher amounts of soluble nitrogen in cool, wet conditions;
- Using grasses with low nitrogen requirements;
- Reducing the size of greens, tees, and fairways;
- Using an irrigation system capable of replacing only the amount of water used by the grasses and other vegetation that is not supplied by the rainfall; and
- Recycling water by applying it back to the turfgrass surface to allow chemicals to pass through the natural biological filter of the soil and not into groundwater (SCPD, 1990).

The Long Island Special Groundwater Protection Area (SGPA) Plan addresses protective measures for Nassau and Suffolk County, including the Central Suffolk SGPA within which NWIRP Calverton is located. A set of BMPs is identified for a variety of land uses. All development that would occur as part of the Reuse Plan would require review and approval by Suffolk County. The SGPA Plan requires that new land uses produce no net increase in the levels of polluting constituents in the groundwater supply. The SGPA Plan recommends that new commercial or industrial land be severely restricted in the SGPAs. However, where these uses exist or are developed, natural areas should be retained.

Similarly, a policy contained in the Pine Barrens Plan encourages the rezoning of vacant industrial sites within the Pine Barrens Zone (Core Preservation Area and Compatible Growth Area) to less intensive/less potentially hazardous uses, and concentrating industrial development outside the Pine Barrens boundaries.

Peconic Scenic River Corridor

As described in Subchapter 3.10.1, a portion of the Peconic River scenic corridor traverses the site (Figure 3.10-1). Pertinent regulations as well as the Peconic Estuary Program's Comprehensive Conservation and Management Plan (CCMP) recommend setbacks of 250 ft (76 m) for new buildings in the scenic portion of the Peconic River. Based on the existing scenic corridor boundary, it is estimated that approximately 526 acres (213 hectares) of land within the fence of NWIRP Calverton (and Compatible Growth Area of the pine barrens) would be restricted from development. The land uses that are crossed by the scenic corridor in the Reuse Plan include the GA/cargo airport, community park, industrial business park (and associated parklands), golf course, natural area, theme attraction area, and Pine Barrens Core Preservation Area. Therefore, with the present scenic corridor boundary, these uses of the Reuse Plan would be inconsistent with the regulations and could not be developed.

That portion of the Peconic River Scenic Corridor on NWIRP Calverton was specifically discussed in the Findings Statement for the Central Pine Barrens Plan. Essentially, it was stated that the Pine Barrens Commission (CPBJP&PC) would support and recommend that the northerly boundary of the scenic river area (Figure 3.10-1) within the Compatible Growth Area of NWIRP Calverton be moved to a point coterminous with the Core Preservation Area boundary line, under the following conditions:

- adherence to the pine barrens standards and guidelines through adoption of a planned development district (PDD) or, in other words, a planned unit development (PUD) that is consistent with the Pine Barrens Plan; and
- incorporation of plans for wastewater treatment plant infrastructure improvements for the Calverton STP.

If these conditions were met, the scenic corridor could be relocated outside the fenced-in area, south of Swan Pond/Grumman Boulevard where development would occur, and would therefore pose no restriction to Reuse Plan implementation. The Reuse Plan complies with the Pine Barrens Plan in general. However, it does not address infrastructure improvements to the Calverton STP but proposes the development of a new STP in the future. If the scenic corridor boundary did not change, redevelopment of the site as proposed in the Reuse Plan would be restricted on those lands within the corridor.

Regulations of the Wild, Scenic and Recreational River Systems Act (Title 27, Article 15, Environmental Conservation Law) do provide for variances under certain conditions:

- for use variances where there is an unnecessary hardship on the applicant;
- for area variances where the area or dimensional provisions would cause practical difficulty; and
- where applicants are state agencies or municipal corporations, the variance must fulfill a public health, safety or welfare function while remaining as environmentally protective of river values as the regulations themselves (Part 666.2(e)).

The town of Riverhead and/or its CDA would qualify as an applicant to whom a variance could be granted if the other requirements (compliance with pine barrens standards and improvements to the Calverton STP) were fulfilled.

Regulations (Part 666) pursuant to the Wild, Scenic and Recreational River Systems Act (ECL Title 27, Article 15) address the water quality issues:

- New discharges from point sources (like the Calverton and Riverhead STPs) are not allowed unless it is shown that the discharge will not have a detrimental impact on river area resources;
- Existing point source discharges are to be minimized or eliminated;
- Stormwater runoff from a new development will not exceed pre-developmental (natural) conditions. Stormwater runoff must be managed to the extent practicable within each newly created lot. Development plans must provide for control of the first ½-inch of runoff from all disturbed and otherwise developed areas.

Peconic Estuary Program

McKay Lake is the existing discharge location for the Calverton STP. As discussed in Subchapter 4.7, the Reuse Plan would generate sanitary waste discharge well above the existing STP capacity of 65,000 gallons (246,025 liters) per day. Consequently, an expanded treatment facility or a new treatment facility would need to be constructed. As described in Subchapter 2.3.7, 18 acres (seven hectares) of land would be allocated to a new STP.

The Calverton STP (and Brookhaven National Lab STP) have been identified as contributors of nutrients to the Peconic Estuary by the Peconic Estuary Program (PEP) CCMP. The Calverton STP is of particular concern because of its direct discharge into the environmentally sensitive Peconic River (SCDHS, 1995). The CCMP recommended that no net increase in the quantity of nitrogen discharged to surface waters be allowed from the Calverton STP. The CCMP recommended that the permit be modified to include nitrogen limits and subsequent monitoring requirements. Although nitrogen itself does not directly impair the Peconic Estuary environment, excess nitrogen can lead to excessive algal blooms in the Peconic Estuary; this in turn lowers dissolved oxygen levels resulting in adverse effects on water quality and biota (SCDHS, 1995). According to the CCMP, NYSDEC would be seeking agreements from operators of the STPs for defining nitrogen limits and effluent monitoring.

The most significant of all controllable nitrogen loadings in terms of impact on the Peconic estuary system is the Riverhead STP, due to the discharge's concentrated nature and the STP's location near the mouth of the Peconic River, a poorly-flushed area of the estuary (SCDHS, 1995). Based on the modeling done for the PEP CCMP, improvements in wastewater treatment and disposal at the Riverhead STP would result in achieving the total nitrogen standard of 0.5 mg/l throughout the tidal areas of the estuary. The Town of Riverhead has voluntarily committed to a freeze in additional nitrogen loading from its STP and has implemented a fee for new sewer hook-ups to fund denitrification upgrades. According to the CCMP, the improvements for the Riverhead STP could include any of the following:

- A groundwater discharge (containing 10 mg/l total nitrogen);
- A relocated surface water discharge (to central or eastern Flanders Bay); or
- A surface water discharge at the existing discharge location with an effluent limitation of 4 mg/l total nitrogen.

The PEP CCMP further recommends that new groundwater-discharging STPs be avoided in the Peconic River area. New groundwater-discharging plants should be considered only under these circumstances:

- If best available denitrification technology is used;
- If the project is associated with significant natural resources, and/or surface water quality benefits; and

- If additional analysis shows that impacts on the Peconic River would be negligible.

BTCAMP, a study preceding the working draft CCMP that addressed brown tides in the Peconic estuary, recommended that groundwater recharge seemed to be the most desirable alternative for the Riverhead STP from a natural resources and surface water quality perspective. This recharge would allow additional filtration of effluent through soil and elimination of the potential of surface water contamination during upset conditions (SCDHS, 1995).

The Final Pine Barrens Comprehensive Land Use Plan (Subchapters 3.1 and 4.1) also addresses the issue of wastewater discharges (Volume 1, Chapter 5 of the Land Use Plan). In the Compatible Growth Area, where redevelopment would occur as part of the Reuse Plan, STP discharges "shall be outside and downgradient of the Central Pine Barrens...where deemed practical" and approved denitrification systems "may be used in lieu of a sewage treatment plant." The proposed location of the new STP is within the Compatible Growth Area of the Pine Barrens. Based on the location of the groundwater divide, flow from the STP discharge would be to the north, away from the Pine Barrens and toward the Long Island Sound.

4.10.3 Calverton Enterprise Park/Raceway Alternative

Specific impacts of the Enterprise Park/Raceway alternative on surface waters would depend on site-specific development within each of the major land use categories as discussed in Subchapter 4.10.2 for the Reuse Plan. Development would be designed to meet all surface water regulations of the Town of Riverhead, the County of Suffolk, and NYSDEC for water quality, industrial waste discharges, sewage discharges, and stormwater.

Surface Water

Like the Reuse Plan, this alternative would be subject to all applicable regulations of the SPDES program administered by Suffolk County for construction and for industrial stormwater discharges.

With complete build-out of this alternative, the estimated potential increase in impervious surfaces would be about 250 acres (101 hectares) (Subchapter 4.1.3). Using the same estimation method and similar assumptions as for the Reuse Plan, it is estimated that the total area on site needed for additional recharge basins would be approximately 20 to 25 acres (eight to ten hectares). This estimate assumes that the present on-site drainage capacity is needed for the existing 477 acres (193 hectares) of impervious surface.

The standards and guidelines of the Pine Barrens Plan concerning stormwater discharges and recharge basins, as discussed in Subchapter 4.10.2 for the Reuse Plan would be applicable in the same way to this alternative.

The requirements of the SPDES program administered by Suffolk County for point source discharges from the existing and newly proposed STPs would also be applicable to the Enterprise Park/Raceway Alternative. As discussed in Subchapter 4.7.3, it is estimated that at full build-out of this alternative there would be a daily maximum of approximately 562,600 gallons (rounded) (2.1 million liters) of wastewater generated.

Groundwater

Because many of the land uses are similar to the Reuse Plan (including the industrial business park, theme park, commercial recreation area, golf course, and infrastructure [STP]), issues concerning potential groundwater effects would be similar. The automobile raceway and its ancillary uses, like other industrial uses on site (and the GA/cargo airport use in the Reuse Plan), would be required to prepare a spill plan for review and approval by NYSDEC.

The standards and guidelines of the Pine Barrens Plan concerning groundwater as discussed in Subchapter 4.10.2 for the Reuse Plan would be applicable in the same way to this alternative. BMPs identified in the Long Island SGPA Plan would be also applicable; likewise, protective measures and policies defined in the SGPA plan would require compliance.

Peconic River Scenic Corridor

The Peconic River scenic corridor would traverse (from east to west) the following land uses in this alternative - automobile raceway, community park, industrial business park, golf course, natural area, theme attractions, and Pine Barrens Core Preservation Area. Approximately 526 acres (213 hectares) of land within the fence would be restricted from development (Figure 3.10-1). As discussed in Subchapter 4.10.2, unless the scenic corridor were to be relocated, reuse of those lands as proposed in this alternative within the corridor boundaries would be severely limited

Peconic Estuary Program

The recommendations of the PEP CCMP as discussed in Subchapter 4.10.2 would be applicable to the Calverton Enterprise Park/Raceway alternative in the same way as for the Reuse Plan. Most land uses are similar to the Reuse Plan; the raceway replaces the GA/cargo airport in the same on-site location (Figure 2-4). A new STP is proposed as part of this alternative and it would need to comply with the recommended actions of the CCMP. The STP and its discharge are proposed in the same location as the Reuse Plan - within the Compatible Growth Area of the Pine Barrens with a discharge flowing to the north, away from the pine barrens.

4.10.4 Peconic Village Alternative

Like the other two build alternatives, specific impacts of the Peconic Village on surface waters would depend on site-specific development within each of the major land use categories. As with the other alternatives, development would be designed to meet all surface water regulations of the Town of Riverhead, the County of Suffolk, and NYSDEC for water quality, industrial waste discharges, sewage discharges, and stormwater.

Surface Water

Assuming full development of this alternative, the estimated potential increase in impervious surfaces would be about 260 acres (105 hectares) (Subchapter 4.1.4). Using the same estimation method as for the Reuse Plan and the Enterprise Park/Raceway Alternative and similar assumptions, the total area on site needed for recharge basins would be approximately 25 acres to 30 acres (10 to 12 hectares).

The standards and guidelines of the Pine Barrens Plan concerning stormwater discharges and recharge basins, that are discussed in Subchapter 4.10.2 for the Reuse Plan (and Subchapter 4.10.3 for the Enterprise Park/Raceway alternative) would be applicable in the same way to the Peconic Village Alternative.

All applicable SPDES regulations for construction and industrial stormwater discharges as well as for the existing and newly proposed STP would require compliance with implementation of this alternative. As discussed in Subchapter 4.7.3, it is estimated that at full build-out of this alternative there would be a daily maximum of approximately 378,400 gallons (rounded) (1.4 million liters) of wastewater generated.

Groundwater

Senior housing of the Peconic Village is the major difference in land use from the other two alternatives; moreover, the following uses do not exist in this alternative - GA/cargo airport, raceway, theme park, and commercial recreation area. However, because the industrial park remains (as well as commercial uses, golf course(s), and infrastructure [STP]), the potential for impacts to the groundwater would exist. The industrial business park (and its variety of individual uses) would be required to prepare spill plan(s) for review and approval by NYSDEC.

The standards and guidelines of the Pine Barrens Plan concerning groundwater as discussed in Subchapter 4.10.2 for the Reuse Plan (and 4.10.3 for the Enterprise Park/Raceway Alternative), would be applicable to the Peconic Village Alternative. BMPs identified in the Long Island SGPA Plan would be applicable; protective measures and policies defined in the SGPA Plan would also require compliance.

Peconic River Scenic Corridor

The Peconic River scenic corridor would traverse (from east to west) the following land uses in the Peconic Village: senior housing, public golf course, open space/natural area, commercial, industrial business park, senior housing, private golf course, open space/natural area, and pine barrens core area. About 526 acres (213 hectares) of land would be restricted from development on site (Figure 3.10-1). As discussed in Subchapter 4.10.2, the scenic corridor on NWIRP Calverton would be considered for relocation to the area outside of where development would occur as part of this alternative provided that: 1) certain infrastructure improvements to the Calverton STP and 2) adherence to the Pine Barrens Plan standards and guidelines were met via a new zoning ordinance to be enacted by Riverhead. Unless such actions were to be taken in the future by the Town of Riverhead, the scenic corridor would severely limit development opportunities on-site.

Peconic Estuary Program

The recommendations of the PEP CCMP as discussed in Subchapter 4.10.2 for the Reuse Plan (and Subchapter 4.10.3 for the Enterprise Park/Raceway Alternative) would be applicable to the Peconic Village Alternative. A new STP is proposed as part of this alternative (Figure 2-5) and it would need to comply with the recommendations and actions of the CCMP. The STP is proposed for the same location as in the Reuse Plan and the Enterprise Park/Raceway Alternative - in the Compatible Growth Area of the Pine Barrens and with a discharge flowing away from the Pine Barrens.

The SGPA Plan outlines a set of BMPs for the residential uses that are the primary land use in this alternative. In areas that are already cleared and would likely require new landscaping, the amount of fertilizer, watering, and overall use of the grassed areas is to be controlled. Turf management is recommended to include increased use of fescue varieties of grass that require less irrigation and less fertilizer.

4.11 Terrestrial and Aquatic Environment

For the purposes of this EIS, the terrestrial environment includes vegetation, wetlands, and threatened and endangered species concerns for lands within the fenced area at NWIRP Calverton.

4.11.1 No Action Alternative

Vegetation

The major impacts to the vegetative communities within the fenced area of NWIRP Calverton as a result of the no action alternative would primarily be in the maintained and semi-maintained management areas. These areas would no longer be maintained due to the lack of personnel on site and would soon become successional old fields, with the encroachment of woody vegetation gradually resulting in a loss of grassland habitat.

Naturally-introduced fire is required to maintain pine and pine/oak communities. However, while NWIRP Calverton was an active facility, naturally-introduced fires were retarded on site. Under a no action alternative, unless forest fires are quickly identified and surrounding fire departments respond promptly, naturally-introduced fires in the unimproved areas may increase in their intensity and duration.

There would be no impact to the buffer zone areas under the no action alternative.

Wetlands

No impacts to on-site wetlands would occur under the no action alternative.

Wildlife

Under the no action alternative the continued overpopulation of animals, primarily deer, and associated problems (e.g., over-grazing, limited genetic exchange) would persist within NWIRP Calverton. The deer population is currently trapped within the NWIRP facility by 12-ft (3.7-m) fences, which are too high for deer to jump over. No natural predators live within the fenced area, and there is only limited recreational hunting to cull the herd. Unless a deer management program is developed and implemented, the deer population will continue to increase, resulting in over-grazing of the vegetation and an eventual population crash due to limited food resources. Management of the deer herd would keep overpopulation, over-grazing, and disease to a minimum; however, no such program is proposed as part of the Reuse Plan.

Threatened and Endangered Species

No impacts to protected species identified on site would occur under a no action alternative.

4.11.2 Calverton Enterprise Park Reuse Plan

It is estimated that the Reuse Plan would require an additional 320 acres (130 hectares) of new building/paved area for a total of 797 acres (323 hectares) of developed land. The majority of development is planned in the industrial core of NWIRP Calverton, where most of the vegetation is considered to be improved (i.e., grass). However, the Reuse Plan would substantially increase land use at: 1) the area northwest of runway 5-23, which would be used for a theme park; 2) the area between runway 5-23 and the industrial area, which would be used for a golf course; and 3) the areas northeast of runway 14-32, which would be used for commercial recreation (Figure 2-3). The eastern end of NWIRP Calverton would be used for aviation; however, most support facilities for the airfield would be located in the industrial business core.

Vegetation

The improved and semi-improved vegetation within the fenced area comprises 856 acres (347 hectares) (Table 3.11-1). The unimproved area within the fence contains 1,590 acres (643 hectares), of which 1,562 acres (632 hectares) is forested and 28 acres (11 hectares) consists of water and wetland areas.

Vegetation impacts would result from the removal or clearing of vegetation for development. The largest impact to unimproved lands would be from the 415-acre (168-hectare) theme park attractions area in the western side of the site, approximately half of which is covered by either hardwood-pine forest or pine plantation. The second largest impact would be from the proposed 160-acre (65-hectare) public golf course, to be located on land that is presently covered by hardwood-pine vegetation. The third largest impact to forest communities would be in the proposed commercial recreation area, 103 acres (42 hectares) currently dominated by hardwood-pine forest, with sections of pine plantation, old field/scrub and grass. The remaining land use components of the Reuse Plan would have less significant impacts because they do not involve forested land within the fence, but would nonetheless disturb existing plant communities.

Three conservation areas totaling 580 acres (235 hectares) are identified in the Reuse Plan. These areas include the Pine Barrens Core Area (438 acres [177 hectares]), McKay Lake West, (137 acres [52 hectares]) and a natural area of 27 acres (11 hectares) that would not be impacted by the proposed development.

Wetlands

Seven distinct wetland areas are located within the main development footprint of the Reuse Plan, between the two runways (Wetlands 4, 5, 6, 7, 8, 10, and 27 on Figure 3.11-2). Together they cover approximately 16.8 acres (6.8 hectares) of the 33.4 acres (13.5 hectares) of wetlands located within the fenced area. In addition, two wetlands (Wetlands 2 and 3) are located in the northeastern corner of the site, in the vicinity of the proposed 27-acre (11-hectare) natural area. McKay Lake (wetland 9) is located on the southern edge of the site, outside the development footprint.

Wetlands could be potentially impacted by future development, depending on the ultimate site configuration. All disturbances to regulated wetlands would require a permit from the US Army Corps of Engineers (COE) and NYSDEC approval on wetlands that have an area of at least 12.4 acres (5 hectares), or smaller if they have unusual local importance. Although all potentially impacted wetlands are less than 12.4 acres (five hectares), NYSDEC has jurisdiction over four of the seven wetlands within the core area (Wetlands 4, 5, 6, and 8) and the two wetlands (2 and 3) in the vicinity of the proposed natural area. Therefore, coordination with both NYSDEC and the COE is anticipated.

Wetland permit applications would require, at a minimum, an alternatives analysis; mitigation plan; impact analysis; a surveyed wetland boundary; and a stormwater management analysis. In connection with the alternatives analysis, the *Memorandum of Agreement Between the Environmental Protection Agency and the Department of the Army Concerning the Determination of Mitigation under the Clean Water Act Section 404 (b)(1) Guidelines* emphasizes:

- Avoidance - avoid potential impacts to the maximum extent practicable;
- Minimization - take appropriate and practicable steps to minimize the adverse impacts (e.g., limit the anticipated impact to an area of the wetland with lesser value than other areas, or reduce the actual size of the impacted area); and
- Compensatory Mitigation - take appropriate and practicable compensatory mitigation action for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required (created a new wetland area, restore existing degraded wetland, or enhance low value wetland into improved wetland).

Proposed projects impacting wetlands would have to obtain a Section 404 permit.

Wildlife

NWIRP Calverton facility has a total of 2,446 acres (990 hectares) of potential wildlife habitat within the fenced area (Myers and Gaffney, 1989). The amount of vegetation lost directly correlates to the amount of habitat lost to mammal, bird, fish, amphibian and insect populations. The surrounding

woodland and grassland communities can potentially absorb some of the additional vacating population, but the deer population within the fenced area of NWIRP Calverton is already estimated to be greater than the carrying capacity of the land (Myers and Gaffney, 1989). There would also be a loss of some species of wildlife (e.g., rabbits, squirrels, opossums) due to road crossing and a limited ability to move during construction phases.

Threatened and Endangered Species

In order to protect rare plants, rare animals, and significant natural communities, the specific locations of site-identified species are not included in this report, as requested by the NY Natural Heritage Program. The disclosure of specific location information could further endanger the continued existence of these species.

A total of six NYS-listed threatened and endangered species (three animal, three plant) have been found at six locations within the fenced area of NWIRP Calverton (as described in Subchapter 3.11). Four of these locations are in the Pine Barrens Core Area and would not be directly impacted by development. One of the remaining two locations, where only the tiger salamander was found, is within the natural area/open space in the areas planned for a community park. The last location, where the spotted salamander (special concern species), tiger salamander, and Nuttall's lobelia were found, is in the northeast portion of the site, where commercial and recreational uses are planned around a natural area. The ultimate recipient of the property would have to consult with the NYSDEC regarding locations for any significant construction activity potentially affecting the habitats.

4.11.3 Calverton Enterprise Park/Raceway Alternative

The overall acreage of development was calculated to be 1,924 acres (779 hectares) for this alternative, slightly less than the 2,039 acres (825 hectares) calculated for the Calverton Enterprise Park Reuse Plan. The major difference between the plans is land use. Instead of using the eastern area for aviation and aircraft use, this plan utilizes that area, as well as portions of the industrial business park area, to accommodate a motor racing complex for both road racing and drag racing events. The raceway would include fencing, removable concrete barriers, tire walls, and semi-permanent bleachers, probably resulting in a greater impact to the surrounding habitat than the aviation alternative. The remaining impacts from this alternative, including the impacts from the theme park, golf course, and the commercial recreation are similar to those discussed for the Calverton Enterprise Park Reuse Plan.

Vegetation

The vegetation impacts for this alternative would be similar to the Reuse Plan. The raceway alternative would result in the loss of 45 acres (18 hectares) of natural area for use as an industrial park. The natural area is dominated by hardwood-pine forest, which would be impacted by development.

Wetlands

The same wetland areas described for the Reuse Plan are located within the core area of this alternative. The 45-acre (18-hectare) industrial park recreation area would have a greater impact on the 2.2-acre (0.9-hectare) wetland present (Wetland 4), than the Reuse Plan. As discussed in subchapter 4.11.2, all disturbances to wetlands would require a permit from the COE.

Wildlife

The habitat loss impacts would be similar to those of the Reuse Plan, with the loss of an additional 45 acres (18 hectares) from the center of the development and less habitat loss in the southeastern region. The natural area in the center of the development would provide an "island" of habitat for wildlife, as the center of Calverton Enterprise Park would be developed.

Noise from the six major racing events each year would likely disturb some on-site species on a temporary basis.

Threatened and Endangered Species

This alternative would have the similar impacts on state-listed threatened and endangered species as would the Reuse Plan (Subchapter 4.11.2). The ultimate recipient of the property would have to consult with the NYSDEC regarding locations for any significant construction activity potentially affecting the habitats.

4.11.4 Peconic Village Alternative

In this alternative, the commercial, recreation/raceway, and theme park acreage of the previous two alternatives would be eliminated to facilitate both housing and two golf courses. The acreage of development was calculated to be 1,495 acres (605 hectares), which is less than the 1,924 acres (779 hectares) for the Calverton Enterprise Park /Raceway Alternative and the 2,039 acres (825 hectares) calculated for the Calverton Enterprise Park Reuse Plan.

Vegetation

The overall footprint of development differs from the previous alternatives by having less impact on the forests in the northeastern section of the development, but more impact on the central and southeastern portions of the site. More open space and natural areas remain; however, the areas near the roadways are likely to be improved vegetation of little habitat value. Nonetheless, "corridors" of open space/natural area would be present throughout the site.

Wetlands

The same seven wetland areas located within the proposed development areas of the Reuse Plan would be potentially impacted by development (Subchapter 4.11.2). The other two wetlands located in the northeastern corner of the site, would probably not be impacted, since a larger natural area is planned in this alternative. As discussed previously, all disturbances to wetlands would require a permit from the COE.

Wildlife

A higher proportion of land in this alternative would be natural areas or open space, including the hardwood-pine forest in the northeast of the site. In addition, "corridors" of open space or natural areas would be left, which could allow wildlife to move more easily between areas. Many of the open areas, however, are located near roadways, so that some mortality would probably be associated with moving between areas. The impacts to wildlife for this alternative would be slightly less than the impacts from the Calverton Enterprise Park plans, due to the potential reduction in habitat loss.

Threatened and Endangered Species

This alternative would potentially impact one location where the tiger salamander was reported. The location in the northeast portion of the site, where the spotted salamander (special concern species), tiger salamander, and Nuttall's lobelia were recorded would remain as a natural area, and therefore most likely would not be impacted. The ultimate recipient of the property would have to consult with the the NYSDEC regarding locations for any significant construction activity potentially affecting the habitats.

4.12 Petroleum and Hazardous Substances

4.12.1 No Action Alternative

Under the no action alternative (Chapter 2.5) the US Government would retain ownership of NWIRP Calverton in a caretaker status. The Navy would continue to provide for cleanup of contaminated sites as identified in the EBS (US Navy, October 1995) and the *Phase II Field Sampling Plan* (US Navy, 1996). Use of hazardous materials would cease, with the exception of maintenance operations, due to the cessation of all mission-related activities.

As part of the closure activities for NWIRP Calverton, the Navy is obligated to comply with DoD Defense Environmental Security Council policies for radon (May 6, 1994), lead-based paint (May 10, 1994), and asbestos-containing material (ACM) (May 10, 1994). These policies provide guidance for addressing radon, lead-based paint, and asbestos-containing material at installations before their demolition, transfer, or disposal, as follows:

Radon: DoD policy is to ensure that any available and relevant radon assessment data pertaining to property being transferred is included in property transfer documents. No radon assessment and mitigation is to be performed prior to transfer unless required by applicable law.

Lead-based paint: DoD policies on lead-based paint differ depending upon the date of the property transfer and the date of construction of the residential housing being transferred. Target housing constructed after 1960 and before 1978 must be inspected for lead-based paint hazards, although no abatement is required. Target housing constructed before 1960 must be inspected for lead-based paint hazards, and such hazards must be abated. However, DoD policy does not require lead-based paint inspection and abatement when a building is scheduled for demolition by the transferees and the transfer document prohibits occupation of the building prior to demolition or when a building is not targeted for reuse.

Asbestos-containing material: The DoD policy with regard to asbestos-containing material is to manage it in a manner protective of human health and the environment, and to comply with all applicable federal, state, and local laws and regulations governing asbestos-containing material hazards. Unless it is determined by a certified industrial hygienist that asbestos-containing material at the property does pose a threat to human health at the time of transfer, all property containing ACM would be conveyed, leased, or otherwise disposed of "as is." Asbestos remediation is not required when a building is scheduled for demolition by the transferees and the transfer document prohibits building occupancy before demolition. Assuming the previous conditions are met, the transferee assumes responsibility for the future management of asbestos-containing material in accordance with applicable laws.

The status of the radon assessment, lead-based paint survey, and asbestos survey is outlined in Chapter 3.12.4.

4.12.2 Calverton Enterprise Park Reuse Plan

Hazardous Substances/Waste Quantities

The Calverton Enterprise Park Reuse Plan (Subchapter 2.2) includes an industrial business park, theme park, aviation/aircraft use, commercial recreation areas, a golf course, and open space. Some hazardous substances would be generated by operation and maintenance activities of theme park, aviation/aircraft operations, and the industrial business park. Herbicides and pesticides would probably be used for grounds maintenance, particularly for the golf course. The amount of hazardous substances that might be used by the industries in the industrial business park cannot be quantified at this time as the specific nature of the industries is not yet known. Hazardous substances users would be subject to inspection by the Suffolk County Fire Department and would be required to file information on hazardous material usage with the Suffolk County Department of Health Services and NYSDEC.

Site Contamination

The transfer of excess DoD property involves the following: 1) review of currently available information and preparation of an Environmental Baseline Survey (EBS); and 2) preparation of a Finding of Suitability for Transfer (FOST). The purpose of the FOST is to report the environmental suitability of a parcel for transfer to nonfederal agencies or to the public by disclosing that one of the following is true:

- No hazardous substances were stored for one year or more, or known to have been released or disposed of on the parcel; or
- The requirements CERCLA 120(h)(3) have been met for the parcel being transferred, which specifies that where item (1) above does not apply, deeds to transfer must disclose/contain:
  - information on the type and quantity of the release of hazardous substances, and a description of the remedial action (RA) taken;
  - a covenant warranting that approved remedial design has been completed and the remedy has been demonstrated to USEPA to be operating properly and successfully and any additional remedial action found to be necessary after the date of such transfer shall be conducted by the federal government; and

- a clause granting the federal government access to the property for remedial action.

Completion of remedial action does not necessarily have to take place prior to property transfer. If the construction and installation of an approved remedial design has been completed, and the remedy has been demonstrated to the USEPA to be operating properly and successfully, the property could be transferred prior to complete remediation.

Groundwater Contamination

Volatile organic contaminants have been detected in the production wells at concentrations above drinking water standards (Chapter 3.12.3). Groundwater would be treated (e.g., carbon filtration unit) prior to usage to prevent any adverse health effects. In addition, water quality would be monitored to ensure that contaminants are removed from the system prior to use.

Building Use and Reuse by the Community

Any reuse, modification, renovation, and/or demolition of buildings will have to address the issues of lead-based paint and asbestos:

Lead-based Paint - Due to the age of most of the buildings at the NWIRP Calverton, the presence of some lead-based paint should be assumed as a possibility. Reuse and/or modifications to any of the buildings would take into consideration the likelihood of a lead-based paint hazard relative to reuse.

Asbestos - Asbestos must be removed in accordance with 40 CFR Part 61 Subpart M (National Emission Standard for Asbestos) and Part 61.145 (Standard for Demolition and Renovation).

4.12.3 Calverton Enterprise Park/Raceway Alternative

The Calverton Enterprise Park/Raceway Alternative (Chapter 2.3) would have hazardous waste generation related to the operation and maintenance of industrial business park components similar to that of the Calverton Enterprise Park alternative. Operation of a raceway would generate petroleum substances during routine maintenance and operation. Associated raceway uses in the industrial business park would also use such materials as solvents and degreasers and would generate petroleum-based waste products.

Property transfer of contaminated areas would not occur prior to the construction, installation, and successful operation of an approved remedial design. Property transfer may also occur if contaminants not regulated under CERCLA are identified or if chemicals are found but it has been determined that they pose no risk to human health or the environment; in such cases, only disclosure of those chemicals or deed restrictions are required for property transfer. Therefore, no adverse effects related to hazardous waste are anticipated.

4.12.4 Peconic Village Alternative

Under this alternative (Chapter 2.4), the majority of NWIRP Calverton would be converted into residential housing for senior citizens. There would also be a mixed use/industrial business park, hotel/conference center, and two 18-hole golf courses. The hazardous waste generated under this alternative would be limited to operation and maintenance of the facilities and from herbicides/pesticides for maintenance of the grounds and golf courses.

Property transfer of contaminated areas would not occur prior to the construction, installation, and successful operation of an approved remedial design; therefore, no adverse effects related to hazardous waste are anticipated.

4.13 Cumulative Impacts

This discussion addresses the cumulative impacts related to the disposal and reuse of the former NWIRP Calverton. Cumulative effects are defined by the Council on Environmental Quality (CEQ) in 40 CFR 1508.7 as:

> "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

The CEQ regulations state that the cumulative impacts addressed should not be limited to those from actual proposals, but must include impacts from actions being contemplated or that are reasonably foreseeable. The NEPA environmental analyses must also evaluate connected, cumulative, and similar actions in the same document (40 CFR 1508.25). This requirement prohibits segmentation of a project into smaller components to avoid required environmental analysis. The analyses contained in this EIS address the entire project under consideration, as well as connected, cumulative, and similar existing and potential actions in the Riverhead/Brookhaven area, where applicable.

Cumulative impacts have been taken into consideration throughout this EIS, as appropriate, on a discipline-by-discipline basis. Specifically taken into consideration in this EIS were the following actions:

- General growth trends in the Riverhead/Brookhaven area; and
- Other land use development projects in the town of Riverhead and in the town of Brookhaven within approximately two miles (3.2 km) of the site.

The results of the cumulative impact analysis for each alternative are reviewed below.

4.13.1 Calverton Enterprise Park Reuse Plan

Land Use and Zoning, Socioeconomics, Community Facilities and Services

Cumulative effects of implementing the Reuse Plan on land use, socioeconomics, and community facilities and services have been considered in terms of proposed and contemplated land use changes in the Riverhead/Brookhaven area and forecasted population changes. The Reuse Plan could be considered to have a cumulatively positive effect, since the plan responds to and supports the Town's objectives for NWIRP Calverton, creates land uses generally compatible with the surrounding community, and serves local and regional needs. Long-term changes in population are not anticipated

and there would be no cumulative adverse effects on utilities and services. With respect to parks and recreation, the proposed Reuse Plan would add significantly to publicly accessible park land and open space and, thus, have a potentially positive cumulative effect.

Transportation, Air Quality, and Noise

Analyses of traffic, air quality, and noise associated with the Reuse Plan have been quantitatively compared with anticipated future changes without the proposed Reuse Plan (future baseline conditions), including future development in Riverhead and Brookhaven. Implementation of the Reuse Plan would add substantially to the projected future baseline traffic conditions. Emissions from automobiles in the study area would increase with the Reuse Plan; however, the air quality analysis does not predict any violation of the NAAQS one-hour standard of 35 ppm and eight-hour standard of 9 ppm for CO. Likewise, the Reuse Plan would increase noise levels due to the travel of additional vehicles on local roads. Increases of 10 dBA and greater were predicted for both the weekday and weekend for the peak hour of 11pm to 12 am. Smaller increases, though still perceptible, are predicted during the day-time peak hours, particularly at locations 4 and 5 (Table 4.6-2).

Infrastructure

Impacts of the Reuse Plan on infrastructure, specifically utilities, would have no cumulative adverse effects. This is based on the assumption that a new sewage treatment plant (STP) to handle the anticipated wastewater would be constructed as proposed in the Reuse Plan. Adequate electrical and gas supplies would be available to the site.

Cultural Resources

Three buildings on site (Plant 6, Plant 7, and the Anechoic Chamber) have been determined to be eligible for nomination to the National Register of Historic Places. No cumulative adverse effects are predicted on these resources if renovations are carried out according to the Secretary of the Interior's *Standards and Guideline for Rehabilitating Historic Structures.* With a Phase 1B archaeological survey on areas of high archaeological sensitivity before any development occurs, no cumulative adverse effects would occur to these resources.

Topography, Geology, and Soils

No cumulative effects adverse are predicted these physical resources with implementation of the Reuse Plan.

Water Quality and Hydrology

No adverse cumulative effects on water resources would occur with implementation of the Reuse Plan given these actions:

- Construction of a new STP above the groundwater divide with a discharge away from the Central Pine Barrens and the Peconic River watershed in the future;
- Development of an overall drainage plan to accommodate additional stormwater from the industrial business park and other uses.

In fact, there would likely be a cumulatively positive effect on the water quality of the Peconic River with the construction and operation of a new STP.

Although not directly associated with the Reuse Plan or any of the alternatives, the long-term plans for the Riverhead STP as described in Subchapter 3.10.1 would be expected to improve water quality conditions in the Peconic River, particularly with respect to nitrogen loadings.

Terrestrial and Aquatic Environment

The Reuse Plan would not affect wetlands, floodplains, or critical habitats if built in compliance with applicable state and federal law; moreover, given the conceptual nature of the Reuse Plan with respect to building locations and configurations, as well as the timeframe for development (20 years), development could be planned to eliminate the potential for cumulative adverse effects. Although development would reduce the amount and/or quality of habitat available for certain species, the Reuse Plan would cumulatively add to the local and regional natural resource base by providing for 884 acres (358 hectares) of dedicated open space and park land. Associated with this action would be the disposal of the buffer areas (3,138 acres or 1,241 hectares) to the NYSDEC for use as conservation and recreation lands in perpetuity.

Petroleum and Hazardous Substances

With respect to the use, storage, and disposal of hazardous substances, the proposed reuse of the site would have no anticipated cumulative impacts. Environmental remediation of approximately 30 acres (12 hectares) would have been completed and/or would be in process, resulting in the cleanup of formerly contaminated portions of the facility. Thirty acres (12 hectares) is an estimate of the aerial extent of soil contamination; the Navy plans on retaining an estimated 238 acres (96 hectares) in order to continue its remedial investigations. Any industrial facilities that would store, manufacture, or generate petroleum and/or hazardous substances would be subject to applicable federal, state, and local regulation as were prior industrial uses at NWIRP Calverton.

Maintenance of the golf course will require the use of fertilizers, herbicides, and pesticides. No cumulative adverse effects would be anticipated from their use as part of the Reuse Plan if they are applied in accordance to manufacturer recommended guidelines and government regulations.

4.13.2 Calverton Enterprise Park/Raceway Alternative

The potential cumulative impacts of implementing the Calverton Enterprise Park/Raceway Alternative would be generally similar to those described for the Reuse Plan. Only with respect to noise would predicted cumulative impacts differ.

Noise

The automobile raceway would introduce temporary but significant noise increases to the site. Noise modeling also indicates that during race events noise levels would exceed the FHWA Noise Abatement Criteria and the town of Riverhead's noise ordinance. It is estimated that these noise effects would occur a total of 108 hours or 1.2 percent of the year based on the proposed racing schedule.

4.11.3 Peconic Village Alternative

Similarly, only those resources that would be affected in ways resulting in different cumulative impacts are described for this alternative.

Land Use and Zoning, Socioeconomics, and Community Facilities and Services

This alternative would result in substantially more designated open space - 544 acres (220 hectares)- than the Reuse Plan; however, it would not provide the private recreational facilities of the theme park and commercial recreational uses. Residential uses would predominate the site in contrast to the Reuse Plan and the Enterprise Park/Raceway Alternative where no residential use would exist. An estimated new population of 2,889 persons would eventually reside in Riverhead with implementation of this alternative.

Transportation, Air Quality, and Noise

The Peconic Village Alternative would also add substantially to the project future baseline traffic condition. The increase is less than that predicted for the other two build alternatives. Air quality standards are not predicted to be contravened. Noise levels along local roadways would also increase; however, the only perceptible increase would generally be at Locations 4 and 5 (Table 4.6-14 and 15).

Cultural Resources

The Anechoic Chamber would be demolished under this alternative and would therefore not exist as a structure potentially eligible for the National Register of Historic Places.

Terrestrial and Aquatic Environment

This alternative would affect less existing vegetation and would retain more designated open space than either the Reuse Plan and the Enterprise Park/Raceway Alternative. Unless modified, the conceptual site plan would impact one location where the tiger salamander was reported.

5 MITIGATION MEASURES

This chapter identifies mitigation measures that would minimize or eliminate impacts (Chapters 4.1-4.12) of the alternatives on the existing natural and man-made resources of the site and surrounding area (Chapters 3.1 - 3.12). All resources are discussed for the Reuse Plan even if mitigation measures have not been identified. For the other two alternatives mitigation is discussed only for those resources where applicable.

5.1 Calverton Enterprise Park Reuse Plan

5.1.1 Land Use and Zoning

No significant environmental impacts have been identified and therefore no mitigation measures are required. New development within the Core Preservation Area would be implemented in a fashion consistent with the Pine Barrens Plan.

5.1.2 Socioeconomics

The amount and type of development proposed in the Reuse Plan is not expected to result in adverse socioeconomic effects, such as induced population. Therefore, no mitigation measures are required.

5.1.3 Community Facilities and Services

No significant adverse effects are predicted on community facilities and services from implementation of the Reuse Plan. No mitigation measures are required.

5.1.4 Transportation

Implementation of the Reuse Plan would cause significant traffic impacts at the signalized study area intersections. Potential mitigation measures investigated include changing of signal timing, geometric improvements, and regulatory measures. Table 5.1-1 provides a comparison of the traffic analyses for unmitigated and mitigated conditions. Although traffic operation remains at unacceptable levels despite these measures, the results indicate levels comparable to future baseline conditions. That is, traffic conditions have been mitigated to a point where effects of the Reuse Plan are comparable to projected future conditions without the project. Those locations for which mitigative measures have been developed include the following:

Table 5.1-1

Summary of LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	AM Peak Hour - Unmitigated				Intersection	AM Peak Hour - Mitigated			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS		Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Edwards Avenue (Location 2)									
GEB LTR	1505	2.102	*	F	EB L	22	0.271	5.9	B
WB LTR	919	2.025	*	F	EB TR	1483	1.770	*	F
NB LTR	316	1.507	*	F	WB L	102	1.323	*	F
SB LTR	297	0.862	24.5	C	WB TR	817	0.955	23.1	C
					NB L	162	1.196	160.9	F
					NB TR	154	0.304	11.2	B
					SB LTR	297	0.703	16.4	C
Overall:			*	F				*	F
Middle Country Road and North Country Road (Location 3)									
EB LT	792	0.864	12.5	B	EB L	45	0.408	7.4	B
WB T	586	0.596	5.8	B	EB T	747	0.897	17.2	C
WB R	330	0.216	0.0	A	WB T	586	0.696	9.0	B
SB L	689	1.431	*	F	WB R	330	0.216	0.0	A
SB R	177	0.363	10.4	B	SB L	689	1.133	87.3	F
					SB R	177	0.287	7.9	B
Overall:			*	F				31.9	D
Middle Country Road and Manorville Road (Location 4)									
EB L	71	0.692	17.0	C	EB L	71	0.691	15.9	C
EB TR	1038	1.267	*	F	EB TR	1038	1.158	92.9	F
WB L	79	0.747	20.8	C	WB L	79	0.748	19.9	C
WB TR	814	1.008	33.1	D	WB TR	814	0.921	16.5	C
NB LT	448	1.264	*	F	NB LT	448	0.867	21.3	C
NB R	327	0.691	12.9	B	NB R	327	0.800	18.5	C
SB LTR	431	4.937	*	F	SB L	257	2.466	*	F
					SB TR	174	0.303	10.1	B
Overall:			*	F				*	F

Table 5.1-1 (continued)

Summary of LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	PM Peak Hour - Unmitigated				Intersection	PM Peak Hour - Mitigated			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS		Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Edwards Avenue (Location 2)									
EB LTR	1447	2.051	*	F	EB L	54	0.441	3.4	A
WB LTR	1740	3.041	*	F	EB TR	1393	1.077	47.8	E
NB LTR	699	2.962	*	F	WB L	112	1.323	*	F
SB LTR	284	0.762	16.2	C	WB TR	1628	1.252	*	F
					NB L	429	5.153	*	F
					NB TR	270	1.215	*	F
					SB LTR	284	5.484	*	F
Overall:			*	F				*	F
Middle Country Road and North Country Road (Location 3)									
EB LT	1013	>2.0	*	F	EB L	179	1.613	*	F
WB T	1072	1.126	75.4	F	EB T	834	0.771	7.0	B
WB R	858	0.580	0.4	A	WB T	1072	1.011	29.2	D
SB L	369	0.822	18.9	C	WB R	858	0.580	0.4	A
SB R	200	0.440	10.9	B	SB L	369	1.042	59.7	E
					SB R	200	0.557	13.8	B
Overall:			*	F				*	F
Middle Country Road and Manorville Road (Location 4)									
EB L	142	1.300	*	F	EB L	142	1.202	*	F
EB TR	1325	1.522	*	F	EB TR	1325	1.082	49.8	E
WB L	270	2.388	*	F	WB L	270	2.394	*	F
WB TR	1839	2.139	*	F	WB TR	1839	1.521	*	F
NB LT	505	2.195	*	F	NB LT	505	3.507	*	F
NB R	313	0.647	12.0	B	NB R	313	1.581	*	F
SB LTR	392	4.593	*	F	SB L	225	2.167	*	F
					SB TR	167	0.623	18.2	C
Overall:			*	F				*	F

Table 5.1-1 (continued)

Summary of LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	Sat. Peak Hour - Unmitigated				Intersection	Sat. Peak Hour - Mitigated			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS		Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Edwards Avenue (Location 2)									
EB LTR	1600	2.166	*	F	EB L	30	0.364	2.8	A
WB LTR	1484	3.089	*	F	EB TR	1570	1.323	*	F
NB LTR	404	1.573	*	F	WB L	122	1.098	103.0	F
SB LTR	279	0.957	40.6	F	WB TR	1362	1.158	87.3	F
					NB L	149	1.833	*	F
					NB TR	255	1.233	*	F
					SB LTR	279	5.143	*	F
Overall:			*	F				*	F
Middle Country Road and North Country Road (Location 3)									
EB LT	1217	>2.0	*	F	EB L	285	2.480	*	F
WB T	862	0.878	12.9	B	EB T	932	0.797	8.5	B
WB R	518	0.339	0.0	A	WB T	862	0.853	11.0	B
SB L	471	0.978	37.3	D	WB R	518	0.339	0.0	A
SB R	211	0.433	10.8	B	SB L	471	1.032	52.5	E
					SB R	211	0.457	11.5	B
Overall:			*	F				*	F
Middle Country Road and Manorville Road (Location 4)									
EB L	114	1.108	116.9	F	EB L	114	1.026	74.2	F
EB TR	1783	2.183	*	F	EB TR	1783	1.553	*	F
WB L	400	3.781	*	F	WB L	400	3.503	*	F
WB TR	2348	2.923	*	F	WB TR	2348	2.080	*	F
NB LT	191	0.836	24.8	C	NB LT	191	1.728	*	F
NB R	316	0.668	12.4	B	NB R	316	1.633	*	F
SB LTR	417	1.341	*	F	SB L	236	2.190	*	F
					SB TR	181	0.722	21.5	C
Overall:			*	F				*	F

Notes: NB - - Northbound; SB - Southbound; EB - Eastbound; WB - Westbound. L - Left turn; R - Right turn. T - Through.
*Indicates an approach expected to operate at a v/c ratio greater than 1/ peak hour factor. In such cases, the stop delay is not calculated but LOS is "F".

Middle Country Road and Edwards Avenue (Location 2)

The existing configuration of this intersection provides one lane for each approach. The suggested mitigative measure includes widening the east, west and north approaches to provide left turn lanes. Although this mitigation improves traffic conditions, poor operation remains since this intersection is heavily surcharged by project-generated traffic. These measures however result in operation at similar levels to future baseline conditions.

Middle Country Road and North Country Road (Location 3)

An additional lane for an exclusive left turn lane for the eastbound approach would improve operation for both through and left turning vehicles. This measure improves the intersection operation to LOS " D" during the am peak. The pm and weekend peaks continue to operate at LOS "F", however there is significant improvement in the v/c ratio, with operation comparable to future baseline conditions.

Middle Country Road and Manorville Road (Location 4)

To improve operations at this location an additional lane for left turning movements was analyzed. Signal timing changes to favor east and westbound movements would also improve operations. Despite these improvements, operation remains unacceptable. However, the mitigated conditions result in operation at levels similar to future baseline conditions.

In addition to these roadway improvement mitigations, projected future traffic could be improved through a set of transportation system management measures. Dunn Engineering identified some of these measures that would serve to lessen impacts to the surrounding street network, particularly for the weekends when race events would be scheduled or when other site activities have events that would generate traffic at the same time of day. However, no such measures have been proposed as part of the Reuse Plan or any of the alternatives at this time because of their presently conceptual nature.

One key to alleviating impacts would be to schedule events at the Theme Park and Stadium such that no other special events occur within the same time frame. Further, advanced ticket sales for such an event could have specified areas to park, where parking would be prepaid within the price of the ticket. Prepaid parking serves to reduce congestion at the approaches to the site. Portable variable message signs (VMS) could also be placed to direct motorists approaching the site towards the least congested approach. The presence of traffic directors at key locations would also assist in smoothing peak traffic flows. The enactment of these measures, among others, would ease the burden placed on the road network.

5.1.5 Air Quality

Short term construction and demolition-related effects on air quality would occur, but could be alleviated by the implementation of common construction management practices such as dust suppression and phasing of construction. No other mitigation is proposed as no adverse effects were predicted.

5.1.6 Noise

Demolition and construction activities would temporarily increase noise levels near construction areas. To mitigate for these temporary noise effects, construction-related activities would be scheduled to occur during regular working hours. No mitigation is proposed for the GA/cargo airport.

5.1.7 Infrastructure

The amount of proposed development and the number of visitors to the various components of the Reuse Plan (e.g., theme park, stadium, family entertainment center) would create demands on the existing water supply within the existing permit limits; however, sanitary wastewater flows would exceed existing treatment system capacities. As discussed in Chapter 4.7, a new potable water supply service would ultimately be extended to the site to serve these needs. The construction and operation of a new sewage treatment plant would be necessary to meet the sanitary wastewater needs of the redeveloped site and its uses.

5.1.8 Cultural Resources

Application of the Secretary of the Interior's *Standards and Guideline for Rehabilitating Historic Structures* would mitigate any potential adverse effects on Plant 6 and Plant 7. Building recordation would constitute proper mitigation if the Anechoic Chamber were to be demolished. A Phase 1B archaeological survey would need to be done before any development occurs in high sensitivity areas before potential effect could fully be determined.

5.1.9 Topography, Geology, and Soils

The implementation of appropriate soil erosion and sediment control measures and Best Management Practices (BMPs) during construction as required by local regulatory agencies would mitigate the potential for soil erosion and loss; it would likewise reduce the potential for adding sediment to on-site surface waters including those associated with wetlands.

5.1.10 Water Quality and Hydrology

Limited surface waters exist on NWIRP Calverton. Most of the on-site ponds are associated with wetlands and would not be adversely affected through compliance with state and federal laws protecting wetlands. Several ponds lie outside areas that are proposed for development and would not be affected. Application of appropriate sediment erosion control plans and BMPs would be stipulated in the construction design plans to mitigate the potential for adverse effects on surface waters. All activities of the Reuse Plan that would store, use, or dispose of materials that could impair groundwater would be subject to federal and state law for the preparation of a spill contingency plan.

5.1.11 Terrestrial and Aquatic Environment

Complete buildout of the Reuse Plan would reduce the amount habitat for certain species on-site, including the population of white-tailed deer. As described in Subchapter 3.11, the deer population has exceeded the carrying capacity of the site. With the amount of proposed activity on the site as well as the operation of the GA/cargo airport, a deer management plan a population control program, would be necessary. As coordination with NYSDEC had been done in the past with respect to natural resource management when the property was owned by the US Navy, so too could a plan be developed to mitigate potential conflicts as well as to preserve and enhance the existing population. Opportunities for deer relocation to the buffer lands that would be under the control of the NYSDEC may be possible.

Mitigation of potential construction and operational effects of the Reuse Plan would entail coordination with NYSDEC. Early agency coordination is generally recommended in situations where threatened, endangered, and/or rare species may be present. As discussed in Subchapter 3.11, four NYS threatened and endangered species sites are situated in the Pine Barrens Core area of the site and would not be directly affected by redevelopment. The location for the tiger salamander would be contained within lands defined as a natural area. Appropriate management of this area for such matters as public accessibility, hours of operation, and permitted activities would require definition and consultation with NYSDEC. The location of several NYS-listed species (spotted salamander, tiger salamander, and nuttall's lobelia) are in an area where commercial and recreational uses are proposed. Consultation and implementation of recommended mitigation, as applicable, would serve to protect these species in accordance with state requirements.

5.1.12 Petroleum and Hazardous Substances

Implementation and completion of the ongoing remediation plan of contaminated land within the fence would mitigate that existing condition. As of December 1996, it is estimated that approximately 238 acres (96 hectares) would not be transfered. The transfer of federal lands by the US Navy that have not been remediated is prohibited.

Those activities of the Reuse Plan that would store, use, or generate hazardous materials (e.g., uses in the industrial business park) compliance with applicable federal, state, and local regulation would act as mitigation to prevent the accidental spill or release of such substances into the environment.

5.2 Calverton Enterprise Park/Raceway Alternative

Implementation of this alternative would also result in many of the same types of impacts in these areas as were previously described for the proposed Calverton Enterprise Park Reuse Plan:

- land use and zoning;
- socioeconomics;
- community facilities and services;
- traffic;
- air quality;
- infrastructure;
- cultural resources;
- topography, geology, and soils;
- water quality and hydrology; and
- petroleum and hazardous substances

Executing similar mitigation measures to the Reuse Plan for the Enterprise Park/Raceway Alternative would reduce or eliminate the potential impacts to these resources.

5.2.1 Noise

Noise impacts resulting from the automobile raceway are expected to be significant during actual race events - areas adjacent to the raceway would experience a 20 dB or greater noise increase during race peak hours (Subchapter 4.6). Noise abatement could be achieved using noise barriers around portions of the race track. The following assumptions were used to simplify the estimation procedures to determine the potential noise abatement through the use of barriers:

- barrier heights evaluated would be 15 and 30 feet, respectively;
- no side diffraction around a barrier was considered;
- distance from a barrier to the race track would be 100 ft; and
- abatement noise levels were calculated based only on groups of cars spread evenly on the race track, i.e., weighting factors for packed cars were not applied.

The comparison of noise impact levels during a race event on those identified land use receivers before and after using noise barrier are presented in Table 5.2-1. A noise barrier of 15 to 30 ft in height would reduce the noise impact on the proposed community park near race track (Figure 2-2)

Table 5.2-1

Comparison of Noise Barrier (15 ft and 30 ft) Effectiveness
At Automobile Race Event Peak Hour Noise Levels

Land Use Receptor	Hourly L_{eq} (dB) without Noise Barrier	Hourly L_{eq} (dB) with 15-foot Noise Barrier	Hourly L_{eq} (dB) with 30-foot Noise Barrier
Industrial Business Park	>98	93	88
Theme Park			
Attractions	92	82	79
Hotel/Conference Center	98	88	84
Commercial Recreation			
Stadium	98	88	84
Family Entertainment Center	94	85	81
Golf Course	95	85	81
Open Space			
Pine Barrens Core	86	78	75
McKay Lake (west)	96	85	81
Community Park	>98	90	85
National Cemetery Buffer	90	82	79
Natural Area	93	81	78

between 5 to 15 dB, respectively. However, this reduced race peak hour noise level would still be in exceedance of the FHWA and Riverhead noise ordinance criteria.

5.2.2 Terrestrial and Aquatic Environment

Because of the presence of the automobile raceway and its six major race events each year, consultation with NYSDEC could assist in the determining if any species' breeding or migration activities might be noise intolerant, requiring consideration when planning a major race event.

5.3 Peconic Village Alternative

This discussion addresses those resource areas that would be affected in such a way that would either require mitigation where none was identified for the Reuse Plan or where a different type of mitigation would be necessary. Areas that would be similar to that described for the Reuse Plan with respect to mitigation include:

- socioeconomics;
- community facilities and services;
- air quality
- infrastructure;
- topography, geology, and soils;
- water quality and hydrology; and
- petroleum and hazardous substances.

Executing similar mitigation measures to the Reuse Plan for the Enterprise Park/Raceway Alternative would reduce or eliminate the potential impacts to these resources.

5.3.1 Land Use and Zoning

Central Pine Barrens Plan

The Central Pine Barrens Plan has defined a set of clearance standards for residential uses that would act as mitigation measures to reduce the amount of vegetation clearing on the site. As discussed in Subchapter 4.1.2, the Town of Riverhead would implement redevelopment of NWIRP Calverton via a new zoning ordinance in the form of a PUD District. Like other new developments, PUDs usually have site clearance standards and/or maximum building coverage standards; however, these requirements are based on development across an entire site (including uses other than residential) rather than on lot sizes or zoning category acreages. The conceptual layout of the Peconic Village indicates a clustering concept only. Because of its preliminary nature, no design data such as lot sizes

and zoning category acreages have been developed; moreover, these standards may not be defined in the PUD ordinance. Nevertheless, in the interest of presenting a range of standards that could be applicable or serve as the basis of similar standards in the PUD District, Table 5.3-1 displays the clearance standards of the Pine Barrens Plan for residential uses. The proposed maximum recommended site clearance standards would be a topic of discussion between the Town of Riverhead and the CPBJP&PC.

Table 5.3-1

Central Pine Barrens Residential Clearance Standards

Residential Lot Size (sq ft)	Zoning Category Acreage	Proposed Recommended Maximum Site Clearance
10,000	0.25	90 percent
20,000	0.5	60 percent
40,000	1	57 percent
80,000	2	35 percent
160,000 -200,000	4-5	25 percent
Note: Total site clearance including lots, roads, drainage, and other improvements. Source: Central Pine Barrens Comprehensive Land Use Plan, 1996.		

Within the Pine Barrens the use of clustering would be required when large open space tracts , like NWIRP Calverton, can be preserved. The following guidelines have been developed by the CPBP&PC with regard to residential development on a site such as NWIRP Calverton:

- Wooded Parcel - with slopes less than 10 percent. The development on a parcel, if adjacent to other parcels to be reviewed or adjacent to existing dedicated open space, should be clustered to take advantage of increasing natural open space.

- Wooded Parcel - more than 50 percent of parcel has slopes less than 10 percent; lots should be clustered on slopes less than 10 percent.

- Parcel Partly Wooded and Partly Old Field/Agricultural - Clustering shall occur on the open field portion of the site first with the intent of preserving as much of the natural Pine Barrens as possible.

5.3.2 Traffic

Although the projected traffic associated with the Peconic Village Alternative does not create as much impact to the surrounding street system impact as the Reuse Plan or the Enterprise Park/Raceway Alternative, the mitigation measures would apply as well. As with the Reuse Plan, while the mitigative measures will improve operation over unmitigated conditions, traffic operation will remain poor. The suggested improvements do, however, result in traffic operation comparable to the future baseline condition.

5.3.3 Noise

No mitigation measures are proposed as no significant adverse effects were identified in the impact analysis. This alternative does not incorporate either a GA/cargo airport or an automobile raceway, two of the major generators of noise in the other alternatives.

5.3.4 Cultural Resources

Implementation of this alternative would have an adverse impact on the Anechoic Chamber (Building 284), assuming its demolition. This finding of adverse effect would require consultation with the Advisory Council on Historic Preservation and the State of New York SHPO in accordance with Section 106 of the NHPA. This process could result in the preparation of a Memorandum of Agreement (MOA) that would provide for appropriate mitigation of project-related impacts.

The primary method of mitigation that could be required is documentation of the demolished structure and its setting. The purpose of documentation is to record significant characteristics of a property before its alteration or destruction. Depending on the nature of these characteristics, documentation may include preparation of a written description and history, large format photographs printed to archival specifications, or measured or sketched drawings. These items are generally prepared in accordance with Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER) or State of New York guidelines. Should documentation be selected as a mitigative measure, the SHPO may require that the National Park Service (NPS) be consulted to determine the appropriate type and extent of documentation.

5.3.5 Terrestrial and Aquatic Environment

One potential location of the tiger salamander could be affected by this alternative based on the layout of the conceptual site plan. As with the other alternatives, early consultation with the NYSDEC and implementation of recommended mitigation, as applicable, would serve to protect these species in accordance with state requirements.

6 RELATIONSHIP OF THE PROPOSED ACTION TO FEDERAL, STATE, AND LOCAL PLANS, POLICIES, AND CONTROLS

Disposal and reuse of NWIRP Calverton would comply with existing federal regulations and with state, regional, and local policies and programs. The federal acts and executive orders with which the proposed action must demonstrate compliance include:

- NEPA;
- RCRA, CERCLA, and SARA;
- Clean Water Act;
- Clean Air Act;
- Endangered Species Act;
- National Historic Preservation Act;
- Coastal Zone Management Act;
- Toxic Substances Control Act;
- Executive Order 11990, Protection of Wetlands;
- Executive Order 11988, Floodplain Management; and
- Executive Order 12898, Environmental Justice.

For preparation of this EIS, communication was undertaken with relevant state, regional, and local authorities to determine which existing policies and programs apply to the proposed disposal and reuse.

6.1 Federal Plans and Policies

6.1.1 National Environmental Policy Act (NEPA)

This EIS has been prepared in accordance with the Council on Environmental Quality regulations implementing NEPA (40 CFR Part 1500-1508) and Navy NEPA procedures (OPNAVINST 5090.1B). Executive Order 11991 of May 24, 1977 directed the Council on Environmental Quality to issue regulations for procedural provisions of NEPA; these are binding for all federal agencies. The Navy has invited comments on this Draft EIS. Following the DEIS public comment period, these comments will be addressed and responded to by the Navy in the Final EIS.

6.1.2 RCRA, CERCLA, SARA, and CERFA

The Resource Conservation and Recovery Act (RCRA) was passed in 1976 and continued earlier provisions relating to solid waste and resource recovery, including hazardous waste. It sets standards for hazardous waste treatment, storage, and disposal facilities.

In 1980, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was passed to provide a superfund for cleanup of sites with uncontrolled releases of hazardous substances. This program was continued in the Superfund Amendments and Reauthorization Act (SARA) of 1986. Section 211 of SARA provides continued authorization for the DoD Environmental Restoration Program and the Defense Environmental Restoration Account. Major responsibilities for monitoring compliance with these acts rests with the USEPA. The Navy is conducting all remedial activities in accordance with CERCLA and the National Contingency Plan.

The Navy recognizes its responsibilities for control and management of hazardous substances and wastes in compliance with federal, state, and local requirements. These responsibilities are defined in Chapter 3 of the Navy's Environmental and Natural Resources Protection Manual (US Navy, 1994). Studies and some remedial actions have already been undertaken by the Navy at NWIRP Calverton to identify problem areas related to petroleum and hazardous substances. The Navy will make further assessments regarding cleanup and disposal as required by DoD guidelines.

The Community Environmental Response Facilitation Act (CERFA), Public Law 102-425, requires the identification of all uncontaminated real property, or parcels thereof, at installations undergoing closure or realignment. In accordance with CERFA, the Navy conducted an Environmental Baseline Survey (EBS) that included visual inspections, interviews, and review of plans, logs, maps, aerial photographs, records, and reports. The findings of the EBS were included in a CERFA report (US Navy, 1994) and summarized in Subchapter 3.10 of this EIS. The report also addressed CERCLA requirements to identify parcels on which hazardous substances in quantities greater than or equal to their reportable quantity were stored for more than one year, known to be released, or disposed of on the property.

6.1.3 Clean Water Act

The Clean Water Act of 1977, which amends the Federal Water Pollution Act of 1972, and subsequent amendments were designed to assist in restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. This covers discharge of pollutants into navigable waters, wastewater treatment management, and protection of relevant fish, shellfish, and wildlife. Section 402 of this act requires a National Pollutant Discharge Elimination System (NPDES) permit for discharges into navigable waters. Congress also passed the Water Quality Act of 1987 to address excessive levels of toxic pollutants still found in some waters.

Depending on the ultimate site development plan, implementation of project components could result in the loss of jurisdictional wetlands under Section 404 of the Clean Water Act (the amount of wetlands filled would be dependent upon the specific reuse that was selected). The alternative analysis for any proposed project under the Reuse Plan that could potentially affect wetlands must first consider avoiding impacts to wetlands. Only after wetland impacts have been avoided to the greatest extent practicable, should other mitigative measures be considered. Other mitigation measures could involve both consideration of area and wetland function. Should wetlands be impacted, authorization from the US Army Corps of Engineers and the NYSDEC would be required prior to construction.

Under the Reuse Plan, there would be no proposed discharges to navigable waters.

As discussed in Subchapter 4.10, compliance with storm water management regulations would be required, including acquisition of SPDES permits.

6.1.4 Clean Air Act

The Clean Air Act (CAA) of 1955 and subsequent amendments specify regulations for control of the nation's air quality. Federal and state ambient air standards have been established for each criteria pollutant. The 1990 amendments to the act require federal facility compliance with all applicable substantive and administrative requirements for air pollution control.

Any demolition of buildings or materials associated with reuse activities must comply with established emission and ambient air standards, especially for removal of asbestos materials. This removal would meet the National Emissions Standards for Hazardous Air Pollutants. The asbestos removal contractor would use a landfill approved for asbestos disposal after removing the asbestos-containing materials.

The USEPA has published final rules on general conformity (40 CFR Part 51 in Federal Register, November 30, 1993) that apply to federal actions in areas designated nonattainment for any of the criteria pollutants under the CAA. The rules do not apply to implementation of the Reuse Plan, as the Navy will not retain control of the property once disposal occurs.

6.1.5 Endangered Species Act

The Endangered Species Act of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants, and the habitats in which they are found. Based on available documentation, there are no known federally endangered species of animals or plants on NWIRP Calverton.

6.1.6 National Historic Preservation Act

This act was passed in 1966 to provide for the protection, enhancement, and preservation of any property that possesses significant architectural, archaeological, historical, or cultural characteristics. Executive Order 11593 of 1974 further defined the obligations of federal agencies concerning this act. Under the regulatory program implementing the National Historic Preservation Act, a federal agency must determine if the subject property is eligible for listing in the National Register of Historic Places (NRHP).

In preparing this EIS, state and local agencies were contacted about cultural resources at the site. Through the Cultural Resource Survey (CRS), it has been determined that three structures are individually eligible as historic structures - Plant 06, Plant 07, and the Anechoic Chamber (Subchapter 3.8)

6.1.7 Coastal Zone Management Act

The Coastal Zone Management Act of 1972 provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs for the coastal zone. This includes the protection of natural resources and management of coastal development. Policy is implemented by the respective state coastal zone management program. NWIRP Calverton is situated outside of the designated coastal zone.

6.1.8 Toxic Substances Control Act

The Toxic Substances Control Act of 1976 (TSCA) was enacted to "regulate commerce and protect human health and the environment by requiring testing and necessary use restrictions on certain chemical substances." Unlike many of the existing environmental laws, TSCA regulates not only the end products of manufacturing or processing activities, but also provides for regulating the manufacture of substances not yet developed, the permitted use of these chemicals, and allowable manufacturing quantities. The act also requires manufacturers to test substance(s), to submit reports and maintain records on their health and environmental effects. TSCA, therefore, regulates chemicals or substances during their entire lifetime.

Under the authority of Section 6 of TSCA, the USEPA developed regulations for the management of polychlorinated biphenyls (PCBs). PCBs were historically used as an insulating fluid in transformers. There are no longer any PCB-containing transformers, capacitors, or PCB-contaminated equipment or articles at NWIRP Calverton.

6.1.9 Executive Order 11990, Protection of Wetlands

This order of May 24, 1977 directs federal agencies to take action to protect wetlands on their property and mandates review of proposed actions on wetlands through procedures established by NEPA. Depending on the ultimate site development plan, implementation of project components could result in the loss of jurisdictional wetlands under Section 404 of the Clean Water Act (the amount of wetlands filled would be dependent upon the specific reuse that was selected). As mentioned in Subchapter 6.3, the alternative analysis for any proposed project under the Reuse Plan that could potentially affect wetlands must first consider avoiding impacts to wetlands. Only after wetland impacts have been avoided to the greatest extent practicable, should other mitigative measures be considered.

6.1.10 Executive Order 11988, Floodplain Management

This order sets forth federal agency responsibilities for reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and beneficial functions of floodplains. This order was issued in furtherance of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. Plans or proposals for actions of the Navy in floodplain areas would be submitted for public review. Because redevelopment areas on NWIRP Calverton do not lie within the 100-year floodplain, there would have no impact on floodplains.

6.1.11 Executive Order 12898, Environmental Justice

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," was signed on February 11, 1994. It directs all federal departments and agencies to incorporate environmental justice in achieving their mission. Each federal department and agency is to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, or subject communities to discrimination under such actions, because of their race, color, or national origin.

As evaluated in accordance with Executive Order 12898, the direct and indirect effects of the proposed disposal and reuse are not expected to cause adverse environmental or economic impacts specific to any groups or individuals from minority or low-income populations residing in the study area. Neither would any persons be displaced as a result of proposed disposal and reuse of the former NWIRP Calverton.

In addition, the wide mailing and the publication of the newspaper notice announcing availability of the original DEIS and (the upcoming) FEIS would allow the general public, including minority and low-income individuals and populations, the opportunity to comment on the proposed Reuse Plan.

6.2 State and Local Plans and Policies

The Navy pursues close and harmonious planning relations with local and regional agencies and planning commissions of adjacent cities, counties, and states for cooperation and resolution of mutual land use and environment-related problems. In addition, coordination may be made with state and regional planning clearing houses as established by Executive Order 12372 of 1982.

In preparing this EIS, relevant state, regional, and local agencies were contacted for information on the impact of the proposed disposal and reuse of NWIRP Calverton. Execution of the proposed Reuse Plan would require financial incentives, additional public investment, and an appropriate governance structure to control and implement the proposed development.

6.2.1 State Environmental Quality Review Act

In addition to meeting the federal requirement for NEPA, this EIS was also written to comply with The New York State Environmental Quality Review (SEQR) Act. When a NEPA EIS is prepared the SEQR lead agency will review the document to ensure that all applicable subject areas cited in the SEQR regulations are incorporated; SEQR findings based on the Final EIS will also need to be made.

6.2.2 New York State Wild, Scenic and Recreational River System Act

The stated policy of the New York State Wild, Scenic and Recreational Rivers System Act (Title 27 of Article 15 of the Environmental Conservation Law [ECL]) is that designated rivers of the state and their immediate environs possessing outstanding values (natural, scenic, ecological, recreational, aesthetic, botanical, geological, hydrological, fish and wildlife, historical, cultural, archaeological and scientific) be preserved in a free-flowing condition and be protected. As described in Subchapter 3.10, segments of the Peconic River and three of its tributaries are designated "scenic" near NWIRP Calverton. The "scenic" designation is one of thee classes of rivers defined in the Act:

> "Scenic rivers are generally free of diversions or impoundments with limited road access. Their river areas are essentially primitive and undeveloped or are used for agriculture, forest management and other dispersed human activities which do not in themselves substantially constrain public use and enjoyment of these rivers and their environs. Management of scenic river areas will be directed to preserving and restoring their natural scenic qualities."(Part 666.4 of Act)

The location of the scenic river corridor regulatory boundary is displayed in Figure 3-10-1. It is estimated that approximately 526 acres of the site are contained within the existing scenic river corridor. Within that area much of the development proposed within the Reuse Plan would not be

able to be developed. Additional discussion about this issue is provided in Subchapter 6.2.4, the Central Pine Barrens Comprehensive Land use Plan.

6.2.3 New York State Freshwater Wetlands Act

Freshwater wetlands of New York State are protected under Article 24 of the ECL, commonly known as the Freshwater Wetlands Act. Wetlands protected under Article 24 are known as New York State regulated wetlands. The regulated area includes the wetlands themselves and a protective buffer or adjacent area that extends 100 ft (30 m) landward of the wetland boundary. All freshwater wetlands with an area 12.4 acres (5 hectares) or greater are depicted on a set of maps published by NYSDEC. Wetlands less than 12.4 acres (5 hectares) may also be mapped if they have unusual local importance (or are located in the Adirondack Park). Four classes of wetlands (Class I, the most valuable through Class IV, the least valuable) have been established and are ranked according to their ability to perform wetland functions and provide wetland benefits. Vegetative cover, ecological associations, special features, hydrological and pollution control features, distribution and location are factors considered in the determination of wetland benefit. Within the fenced-in area of NWIRP Calverton where redevelopment would occur, there are ten state regulated wetlands - seven Class I, two Class II, and one Class IV.

For work to be conducted in the wetland or its buffer area, a permit must be first be obtained from NYSDEC. However, such permits are granted only when it can be proven that no feasible alternatives exist to the proposed activity.

6.2.4 Central Pine Barrens Comprehensive Land Use Plan

The Central Pine Barrens Comprehensive Land Use Plan was prepared pursuant to the Long Island Pine Barrens Protection Act of 1993 and established a set of policies, programs, and standards to protect, preserve, and enhance the functional integrity of the "Central Pine Barrens" ecosystem of Long Island.

As shown in Figure 3.1-3, most of the fenced-in area of NWIRP Calverton is designated as Compatible Growth Area (CGA). Approximately 438 acres (177 hectares) in the western portion of the fenced area were designated Core Preservation Area (CPA) in the Pine Barrens Plan. The southeast and southwest buffer zones are part of the CPA; the northern buffer is part of the CGA. The Reuse Plan has designated the site's western lands as Pine Barrens Core Preservation Area, consistent with the Pine Barrens Plan. The remainder of the site in the Compatible Growth Areas would also be considered consistent with the Pine Barrens Plan , assuming that the activities are consistent with Pine Barrens Plan development standards and that zoning is considered consistent with the Plan by the CPBJP&PC.

That portion of the Peconic River Scenic Corridor on NWIRP Calverton was specifically addressed in the Findings Statement for the Central Pine Barrens Plan. Essentially, it is stated that the Pine Barrens Commission (CPBJP&PC) would support and recommend that the northerly boundary of the scenic river area (Figure 3.10-1) within the Compatible Growth Area of NWIRP Calverton be moved to a point coterminous with the Core Preservation Area boundary line, under the following conditions:

- adherence to the Pine Barrens standards and guidelines through adoption of a planned development district (PDD) or, in other words, a Planned Unit Development (PUD) that is consistent with the Pine Barrens Plan; and

- incorporation of plans for wastewater treatment plant infrastructure improvements for the Calverton STP.

If these conditions were met, the scenic corridor could be relocated outside the fenced-in area, south of Swan Pond/Grumman Boulevard where development would occur and would therefore pose no restriction to Reuse Plan implementation. The Reuse Plan complies with the pine barrens standards in general; however, it does not specifically address improvements to the Calverton STP but rather proposes a new STP in the future. If the scenic corridor boundary did not change, redevelopment of the site as proposed in the Reuse Plan would be severely restricted on those lands within the corridor.

6.2.5 Peconic Estuary Program

In 1987 the Clean Water Act (CWA) was amended to provide for creation of a National Estuary Program (NEP) to promote long-term planning and management in nationally significant estuaries that are threatened by pollution, development, or overuse (LIRPB, 1993). The Peconic Estuary was designated in September, 1991. The Peconic Estuary contains a large variety of natural communities, from upland pine barrens along the Peconic River to soft-bottom benthos in the bays. There is a larger percentage of undisturbed habitats and a greater diversity of natural communities within this watershed than anywhere else in the coastal zone of New York State (Suffolk County Department of Health Services Office of Ecology [SCDHS], 1995).

A Comprehensive and Management Plan (CCMP) for the Peconics is to be prepared; at the time of preparing this EIS a preliminary plan, or working draft, was available (SCDHS). The PEP CCMP identified three overall goals:

- to protect and improve the Peconic Estuary system water quality to ensure a healthy and diverse marine community;

- to ensure an effective technical, regulatory and administrative framework for the continued monitoring and management of the Peconic Estuary study area; and

- to broaden and generalize the recommended water quality policy, administrative and regulatory framework so that lessons learned from the Peconic Estuary system will serve as a model for other estuaries that may experience similar problems.

More specific objectives include:

- to preserve and enhance the integrity of the ecosystems and natural resources present in the study area;
- to optimize opportunities for water-dependent recreation;
- to promote, to the maximum extent practicable, the social and economic benefits associated with the Peconic Estuary;
- to minimize health risks from human consumption of shellfish and finfish; and
- to promote, to the maximum extent practicable, public awareness and involvement in estuarine management issues.

As discussed in Subchapter 3.10, the CCMP identified the Calverton STP as one of concern because of its direct discharge into the environmentally sensitive Peconic River with respect to nitrogen loadings. However, a prior study published in 1988 by SCDHS known as the Brown Tide Comprehensive Assessment and Management Program (BTCAMP) identified that the most significant of all controllable nitrogen loadings in terms of impact on the estuarine system is the Riverhead Sewage Treatment Plant (STP); this impact is due to the concentrated nature of the discharge near the mouth of the Peconic where tidal flushing is poor. The CCMP identified as two action items the modification of the SPDES permit for Calverton with a defined nitrogen limit and subsequent monitoring requirements of the discharge. These action items were identified prior to the development and publication of the Reuse Plan evaluated in this EIS.

BTCAMP also recommended more stringent land use controls for the Peconic River, such as two-acre zoning for the groundwater-contributing area of which the fenced-in portion of NWIRP Calverton is a considered a part.

The CCMP also recommended the continuation of setbacks of 250 ft (76 m) for new building in the scenic portion of the Peconic River and limiting development within 100 ft (30 m) of freshwater wetlands.

6.2.6 Special Groundwater Protection Area

In 1992, the Long Island Comprehensive Special Groundwater Protection Area (SGPA) Plan (Long Island Regional Planning Board [LIRPB], 1992) was prepared to assist in the further protection of

groundwater resources in Suffolk/Nassau region. Approved in 1993 by NYSDEC, the plan requires that new land uses produce no net increase in the levels of polluting constituents in the groundwater supply.

For Suffolk County, the LIRPB established nine Special Groundwater Protection Areas (SGPAs) with specific requirements for land use activities and groundwater. NWIRP Calverton lies completely within the Central Suffolk SGPA. The fenced-in area and northern buffer are in the northern part of the SGPA; the southern buffer zones are in the southern part of SGPA. SGPAs are considered critical environmental areas (CEAs) pursuant to the SEQR. A CEA is "a specific geographic area designated by a state or local agency, having exceptional or unique characteristics that make the area environmentally important (Section 617.2 (I) of Title 6 New York Codes of Rules and Regulations [NYCRR].

Selected recommendations from the SGPA Plan for the town of Riverhead (unless otherwise noted) for the area near NWIRP Calverton include the following:

- Along with Suffolk County, expand the existing agricultural preserve;
- Amend the town zoning ordinance requiring five-acre (two-hectare) minimum lot size for all farmland in the SGPA;
- Require clustering of new development in the town where transfer of development (TDR) is infeasible;
- Place excess lands at the National Cemetery and in the NWIRP Calverton buffer zones in a protected category and retain them as open space;
- Reduce the amount of industrially-zoned land and concentrate these uses at the end of the Long Island Expressway,
- Review and amend the town zoning ordinance to preclude expansion of commercial activities beyond the existing limits in the SGPA.

6.2.7 Endangered and Threatened Species of Fish and Wildlife; Species of Special Concern

The New York State endangered species legislation, enacted in 1970, was designed to complement the Federal Endangered Species Act by authorizing NYSDEC to adopt the federal endangered species list so that prohibitions of possession or sale of federally listed species and products could be enforced by state enforcement agents. The state list can therefore include species that while plentiful elsewhere, are endangered in New York. The law was amended in 1981 to authorize the adoption

of a list of threatened species that would receive protection similar to endangered species. In addition to the threatened species list, NYSDEC also adopted a list of species of special concern, species for which a risk of endangerment has been documented by NYSDEC. As described in Subchapter 3.11.3, there are six NYS-listed threatened and endangered species (three animal, three plant) in the fenced-in area of NWIRP Calverton.

6.2.8 Suffolk County Sanitary Code

Suffolk County Department of Health Services is the lead agency in the area of potable well pumping and wastewater discharges and is responsible for inspection of plant operations, treatment facilities and discharges, potable water supply distribution systems and water quality monitoring. Article 6 of the code regulates overall allowable densities for residential and nonresidential projects, and it establishes maximum sewage flow requirements. In Article 7 specific limitations are defined on the maximum volume of chemicals that may be stored in deep groundwater recharge areas. Specific restrictions on the construction of storage facilities for toxic and hazardous materials are defined in Article 12 of the county code.

6.2.9 Riverhead Noise Ordinance

The Riverhead town code includes a noise ordinance that regulates noise levels and identifies maximum permissible noise levels by the land use class of the receiving property (Subchapter 3.6).

The sound source is based on various categories of property such as residential, commercial, or industrial property. Similar categories are used to define different sound receiving properties. The ordinance does not allow or permit the operation of any source of sound on a particular category of property or public land or right-of-way in a manner as to create a sound level that exceeds the maximum permissible sound pressure levels measured within the receiving property (Table 3.6-3). However, a variance to the town noise code could be applied on case-by-case basis, and the Town Board could grant or deny the application through certain procedures, including public hearing.

7 UNAVOIDABLE ADVERSE EFFECTS

The disposal and reuse of NWIRP Calverton in accordance with the Calverton Enterprise Park Reuse Plan, the preferred, locally developed alternative, would result in the following unavoidable adverse effects based on the assumptions made concerning development as described in Chapter 2 and potential impacts discussed in Chapter 4.

7.1 Transportation

Implementation of the Reuse Plan would result in substantial impacts at several study area intersections. However, as noted in Chapter 5, mitigative measures can be applied which will provide operation similar to future baseline conditions, without the project. To mitigate the project impacts at Rocky Point Road and North Country Road (Location 1) substantial land acquisition due to the adjacent development would likely be required. Heavy background traffic growth would also likely necessitate intersection improvements, regardless of the project, based on a review of future operations. Therefore, it is anticipated that future intersection improvements required to accommodate the projected future vehicular traffic without the project would likely negate the need for the project-specific mitigation defined in Chapter 5.

7.2 Noise

Increased noise levels from operation of the GA/cargo airport as part of the Reuse Plan would be unavoidable and adverse, but are not considered significant due to their relatively small increases and the small land areas affected outside of the existing buffer zones.

7.3 Terrestrial and Aquatic Environment

Implementation of the proposed Reuse Plan would reduce potential habitat for certain species on the site like the white-tailed deer; however, the deer population has already exceeded the carrying capacity of the site since the deer have no natural predators and they are unable to move out of the fenced-in area on their own. A mitigative measure to reduce potential conflicts with the Reuse Plan, a population control plan, is described in Chapter 5.

8 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND THE ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Implementation of the Calverton Enterprise Park Reuse Plan at NWIRP Calverton would result in the redevelopment of the site from its existing condition into a new development. Construction and operation of this proposed development would generate new jobs and tax revenues for the town of Riverhead and surrounding communities; access to open space "within the fence" would be increased; existing open space opportunities would be enhanced given local control of the buffer zones. Consequently, the project would be expected to enhance long-term productivity in Riverhead and the local communities.

During the construction phase of Reuse Plan implementation, as discussed in Chapter 4, there would be some short-term adverse impacts. These would include some vehicular traffic disruptions, increased noise levels associated with construction activities including noise from construction equipment, and diminution of air quality due to fugitive dust and vehicular emissions.

The longer term significant negative impact would be increased traffic volumes on roads not able to accommodate the projected trips. The Reuse Plan would also increase sewage, water usage, and energy consumption. None of these issues would be expected to adversely affect long-term productivity.

Positive consequences of implementing the Calverton Enterprise Park would include the provision for productive use of land that would otherwise be occupied by vacant buildings that could have a potentially blighting influence on nearby properties including some residential neighborhoods. Completion of the Reuse Plan would produce new employment opportunities and increase tax revenues. Disposal of the buffer zones to NYSDEC would allow for the long term control and conservation of these managed lands to the benefit of the general public.

9 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

While implementing the Calverton Enterprise Park Reuse Plan would bring important benefits to the Town of Riverhead and the surrounding area, nonrenewable resources would be consumed during the design, construction, and operation of the proposed project. Since the reuse of these resources is impossible, they must be considered irreversibly and irretrievably committed to the development of the proposed project. The finite resources that would be irretrievably committed by implementation of the Reuse Plan are expendable materials, such as steel, concrete and glass, lumber, and fuel and energy used during construction of the proposed development, as well as supplies and energy resources (in the form of gas and electricity for heating and cooling) necessary to operate and maintain it after construction.

The land use changes associated with the development of the preferred Reuse Plan on the former NWIRP Calverton site may also be considered an irreversible and irretrievable commitment of the site as a land resource. Further, private funds committed to the design, construction, and operation of the proposed redevelopment would not be available for other projects. The disposal of construction debris would also result in an irreversible and irretrievable commitment of landfill or other solid waste disposal capacity.

The public services to be provided in connection with the proposed development of NWIRP Calverton (e.g., police and fire protection services) would also constitute resource commitments. These public services might otherwise be available for use by other programs or projects although the Reuse Plan components would also be expected to generate sufficient tax revenues to provide public funding of other activities in the future. The human labor expended for development and operation of the Reuse Plan would also be considered irrevocable commitment.

10 PUBLIC REVIEW PROCESS AND RESPONSE TO COMMENTS

Public involvement in the review of Draft Environmental Impact Statements (DEISs) is stipulated in 40 CFR Part 1503 of the Council on Environmental Quality's (CEQ) regulations implementing the National Environmental Policy Act (NEPA), and in OPNAVINST 5090.1B. These regulations and guidance provide for active solicitation of public comment via scoping meetings, public comment periods, and public hearings. This chapter is prepared to respond to the specific questions and comments raised by individual commentors during the public comment period on the *Draft Environmental Impact Statement - Disposal and Reuse of Naval Weapons Industrial Reserve Plant, Calverton, New York.*

10.1 Public Review Process

10.1.1 Filing and Distribution of the Draft Environmental Impact Statement

The formal Notice of Intent to Prepare an EIS for disposal and reuse of NWIRP Calverton was published in the *Federal Register* on March 26, 1996. The public scoping meeting was held on April 10, 1996 at the Ramada Inn - East End, on Route 25 in Riverhead, NY.

Upon publication of a formal Notice of Availability by USEPA in the *Federal Register*, the 45-day public review period for the DEIS will commence. The DEIS will be distributed to officials of federal, state, and local governments, citizen groups and associations, and other interested parties.

10.1.2 Public Review Period and Public Hearings

The remainder of this portion of the DEIS will be finalized after completion of the public review period.

ACRONYMS

ACM	Asbestos-Containing Material
ADSB	Aircraft Development Support Building
AOC	Area of Concern
AST	Above Ground Storage Tank
ASV	Annual Service Volumes
ATP	Aircraft Technical Publishers
ATR	Automatic Traffic Recorder
AV	Assessed Value
AVO	Average Vehicle Occupancy
AWSACS	Air Warning Support and Control Systems
BEA	Bureau of Economic Analysis
Bldg(s)	Building(s)
BLS	Bureau of Labor Statistics
BMP	Best Management Practices
BP	Before Present
BRAC	Base Closure and Realignment Act
BTCAMP	Brown Tide Comprehensive Assessment and Management Program
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CART	Championship Auto Racing Teams
CCMP	Comprehensive Conservation and Management Plan
CDA	Community Development Agency
CEAs	Critical Environmental Areas
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CGA	Compatible Growth Area
CFR	Code of Federal Regulations
CLEAN	Comprehensive Long-Term Environmental Action Navy
CO	Carbon Monoxide
COE	Corps of Engineers (US Army)
CPA	Core Preservation Area
CPBJP&PC	Comprehensive Pine Barrens Joint Planning and Policy Commission
CWA	Clean Water Act
dB	Decibel
dBA	Decibel (A Scale)
DEIS	Draft Environmental Impact Statement
DNL	Day-night Average Sound Level
DoD	Department of Defense

EB	Eastbound
EBS	Environmental Baseline Survey
ECE	Environmental Compliance Evaluation
ECL	Environmental Conservation Law
EDA	Economic Development Administration
EIS	Environmental Impact Statement
EMS	Emergency Medical Services
EO	Executive Order
EPNL	Effective Perceived Noise Level
EW	Electronic Warfare
FAA	Federal Aviation Administration
FBO	Fixed Base Operators
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIC	Federal Interagency Committee
FOSL	Finding of Suitability to Lease
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
FTZ	Foreign Trade Zones
FY	Fiscal Year
GA	General Aviation
GIS	Geographic Information System
GOCO	Government Owned Contractor Operated
gpm	Gallons Per Minute
HCM	Highway Capacity Manual
HS	High School
HR&A	Hamilton, Rabinovitz & Alschuler, Inc.
HWSA	Hazardous and Solid Waste Amendment
HUD	Department of Housing and Urban Development
IAS	Initial Assessment Study
ICSP	Industrial Communities Site Program
ILS/MLS	Instrument Landing System/Microwave Landing System
IMSA	International Motorsports Association
INM	Integrated Noise Model
IR	Installation Restoration
ITE	Institute of Transportation Engineers
IWTF	Industrial Waste Treatment Facility
kv	Kilovolts
kw	Kilowatts

L_{dn}	Day-Night Sound Level
L_{eq}	Equivalent Sound Level
LBP	Lead-based Paint
LIE	Long Island Expressway
LILCO	Long Island Lighting Company
LIRPB	Long Island Regional Planning Board
LIRR	Long Island Railroad
LOS	Level of Service
MOA	Memorandum of Agreement
mph	Miles Per Hour
NAAQS	National Ambient Air Quality Standards
NAMU	Naval Aircraft Modification Unit
NAVFAC	Northern Division Naval Facilities
NAVFACINST	Naval Facilities Instruction
NB	Northbound
NEESA	Naval Energy and Environmental Support Activity
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NOI	Notice of Intent
NORTHNAVFACENGCOM	Northern Division Naval Facilities Engineering Command
NPDES	National Pollutant Discharge Elimination System
NUS	NUS Corporation
NWI	National Wetlands Inventory
NWIRP	Naval Weapons Industrial Reserve Plant
NYNHP	New York Natural Heritage Program
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSPDES	New York State Pollutant Discharge Elimination System
O_3	Ozone
O&M	Operations and Maintenance
OPRHP	Office of Parks Recreation and Historic Preservation
OU	Operable Unit

PA	Preliminary Assessment
PASNY	Power Authority, State of New York
Pb	Lead
PBRC	Pine Barrens Review Commission
PCB	Polychlorinated Biphenyl
PDD	Planned Development District
PEM	Palustrine Emergent Wetlands
PEP	Peconic Estuary Program
PL	Public Law
PM	Particulate Matter
ppm	Parts per Million
PUD	Planned Unit Development
RA	Remedial Action
RASP	Regional Aviation System Plans
RFA	RCRA Facilities Assessment
RFI	RCRA Facility Investigation
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RIMS	Regional Input/Output Model System
RONA	Record of Non-applicability
ROD	Record of Decision
RDT&E	Research, Development, Test, and Evaluation
RV	Recreational Vehicle
RWD	Riverhead Water District
SB	Southbound
SCCA	Sports Car Club of America
SCDHS	Suffolk County Department of Health Services
SCWA	Suffolk County Water Authority
SDWA	Safe Drinking Water Act
SEL	Sound Exposure Level
SEQRA	State Environmental Quality Review Act
SGPA	Special Groundwater Protection Area
SHPO	State Historic Preservation Office
SI	Site Investigation
SIP	State Implementation Program
SO_2	Sulfur Dioxide
STP	Sewage Treatment Plant
sq ft	Square Feet
sq m	Square Meters
SVOC	Semi-volatile Organics
SWMU	Solid Waste Management Unit

TAMS	TAMS Consultants, Inc.
TDR	Transfer of Development
TSCA	Toxic Substances Control Act
TIF	Tax Increment Financing Districts
tpy	Tons Per Year
TSD	Treatment, Storage, and Disposal
TSP	Total Suspended Particulates
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USHUD	United States Department of Housing and Urban Development
UST	Underground Storage Tank
VMS	Variable Message Signs
VOC	Volatile Organic Chemicals
VORTAC	Visual Omnodirection Range Tactical Air Control
vph	Vehicles Per Hour
WB	Westbound

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APPENDIX B

FEASIBILITY OF CIVIL AVIATION REUSE OF NWIRP CALVERTON

B.1 Introduction

As part of the Environmental Impact Statement (EIS) being prepared by the Department of the Navy for the transfer of the Naval Weapons Industrial Reserve Plant (NWIRP) at Calverton to a public entity, it is necessary to evaluate the reasonableness of continued aviation use of the facility in the alternatives analysis. A multi-step process was used to assess the alternative and is described below.

B.2 Analysis of Existing and Future Aviation Demand and Capacity of the Region

An evaluation of the feasibility of converting the NWIRP Calverton facility to a civilian use airport was conducted. This evaluation considered the site as a potential addition to New York's Long Island regional airport/airspace system. The analysis considered several issues, including:

- Future airport sponsorship;
- Existing and projected demand at regional airports;
- Potential role in the regional aviation system for Calverton;
- Interest in air cargo/freight operations;
- Interest in general aviation operations; and
- Airspace considerations and instrument approach operations capability;

An inventory of air cargo/freight activity and general aviation demand was conducted to establish baseline conditions for evaluating the feasibility of reusing the NWIRP Calverton site as a future civilian airport. Air carrier/commercial passenger activity was not considered due to a lack of interest and demand. Federal, State and local governments and regional aviation planners were contacted to obtain current information on the regional perspective and on an individual airport basis. The most recent study obtained for the Long Island region's airports was the *New York State Aviation Activity Forecasts Study*, published in May 1992 by the New York State Department of Transportation (NYSDOT). This document provided the most comprehensive information regarding the demand and capacity of the region's existing aviation facilities. This document gathered data for 60 of the state's 62 counties based on a review of seven regional aviation system plans (RASPs). Potential users (cargo forwarders and cargo carriers) of these facilities and fixed base operators (FBOs) were also contacted. All of the above were interviewed between May 17 and May 22, 1996 and were asked a series of questions to verify or supplement the database with demand/capacity information. Copies of these questions are included at the end of this report.

B.2.1 Potential Sponsorship for Calverton

A key consideration in the vitality of a system of airports is the local, municipal or State sponsorship of these airports, or their designation as reliever airports, both of which allow their eligibility for FAA funding. In order for Calverton to function effectively as part of the regional system, it must have a public sponsor. The Town of Riverhead officials have recently indicated interest in becoming the public sponsor of Calverton as a mixed-use facility which includes the preservation of one of the facility's two runways, Runway 14/32.

B.2.2 Existing Aviation Demand/Capacity

Table B-1 summarizes the existing aviation demand/capacity of local airports in the vicinity of the NWIRP Calverton site as presented in existing reports. The airports selected represent those facilities that could potentially be affected either geographically or in terms of their aviation role, if a public-use airport were constructed at Calverton.

Based on data in Table B-1, general aviation airports in the vicinity show a healthy demand for additional facilities for based aircraft in the Long Island area. Interviews with fixed base operators and airport managers revealed that a number of pilots are on waiting lists to either hangar or tie-down their planes. Two regional general aviation facilities, East Hampton and Republic Airports, are currently operating at 77 percent and 73 percent of their annual service volumes (ASV), respectively. These two are followed closely by Long Island MacArthur Airport at 65 percent, the region's commercial service airport. In general, the capacity of these selected Long Island region airports combined was at 56.4 percent in 1989. Airports that have reached or exceeded 80 percent of their ASV typically experience significant operating delays and congestion. Therefore, planning for capacity enhancements/improvements should be taken to the implementation stage prior to an airport reaching 80 percent of the facility's ASV.

B.2.3 Projected Aviation Demand/Capacity

Table B-2 summarizes the projected aviation demand/capacity of airports in the vicinity of Calverton as forecast by existing studies. Once again, the airports identified are those that could potentially be affected either geographically or in terms of its aviation role in the Long Island region.

As shown in Table B-2, the two general aviation airports of Brookhaven and Republic are expected to reach over 80 percent of their annual service volume in terms of operating capacity by 2017. In fact, Brookhaven shows a 71-percent increase in the percentage of total operating ASV being utilized between 1989 and 2017. Long Island MacArthur Airport is projected to reach 90 percent of its ASV by 2017 and perhaps sooner, unless improvements are made to alleviate the situation

Table B-1

Existing Aviation Demand/Capacity
Individual/Regional Airports Perspective, 1989

Airport	Demand* (operations - take offs and landings)		Capacity		Based Aircraft*
	Passenger	G.A.	ASV**	Ops % of ASV	
Brookhaven	–	156,300	270,000	57.9%	207
East Hampton	43,200	40,550	108,300	77.3%	128
Long Island MacArthur	34,040	164,195	303,000	65.4%	383
Mattituck Airbase	400	12,000	91,200	13.6%	42
Republic	–	196,705	270,000	72.9%	501
Suffolk County	655	92,822	230,000	40.6%	49
TOTAL	78,295	662,572	1,312,500	56.4%	1,310

* Source: *New York State Aviation Activity Forecasts* Study, Appendix II.A, NYSDOT, May 1992. Airline activity is reflected here to provide operations data includes cargo activity since only cargo carried in the bellies of air carrier/air taxi aircraft was reported by NYSDOT.

** Source: Ibid.,Exhibit II.11, pgs. II-30 and II-31.

Table B-2

Projected Aviation Demand/Capacity
Individual/Regional Airports Perspective, 2017

Airport	Demand* (operations - take off and landings)		Capacity		Based Aircraft***
	Passenger	G.A.	ASV**	Ops % of ASV	
Brookhaven	–	219,400	270,000	81.3%	257
East Hampton	4,120	67,900	108,300	66.5%	159
Long Island MacArthur	64,200	207,700	303,000	89.7%	393
Mattituck Airbase	–	17,100	91,200	18.8%	52
Republic	–	219,800	270,000	81.4%	560
Suffolk County	–	135,100	230,000	58.7%	61
TOTAL	68,320	867,000	1,312,500	71.3%	1,482

* Source: *New York State Aviation Activity Forecasts* Study, Exhibits IV.5 and V.4, NYSDOT, May 1992. Airline activity is reflected here to provide order-of-magnitude data for cargo activity since only cargo carried in the bellies of air carrier/air taxi aircraft was reported by NYSDOT.

** Source: Ibid., Exhibit VI.1, pgs. VI-3 and VI-4.

*** Source: Ibid.,Exhibit V.2, pg. V-8.

Overall, the annual service volumes of these selected facilities combined is anticipated to equal 71.3 percent which indicates that little excess operating capacity exists among these six airports. Only Mattituck Airbase and Suffolk County Airport have excess operating capacity of 81 percent and 41 percent, respectively.

Aircraft storage capacity is a significant issue at several airports on Long Island and it will continue to be an issue unless major improvements or additional facilities are developed in the near future. These six airports are projected to experience a 13 percent increase in the number of their based aircraft by the Year 2017. Four of these six (Brookhaven, East Hampton, Mattituck Airbase and Suffolk County) are projected to experience the greatest growth in based aircraft in the region, with increases of approximately 24 percent each while Republic Airport will be limited to 12 percent and Long Island MacArthur to 3 percent growth by 2017. Republic Airport is a first-ring reliever facility to the New York Metropolitan Airport System and is anticipated to experience difficulty in accommodating any further demand. Long Island MacArthur Airport is anticipated to experience similar capacity problems by 2017 and likely sooner, unless improvements are made. Therefore, the ability of these selected airports to accommodate this growth will fall short of meeting the demand for storage space.

Table B-3 summarizes existing and projected operations per based aircraft based on figures presented in Tables B-1 and B-2 for each of the selected airports that could be affected by an aviation facility at the NWIRP Calverton site. Data for Year 2017 are derived from Tables V.2 and V.4 of the *New York State Aviation Activity Forecasts Study*.

B.2.4 Potential Aviation Role of Calverton

Every airport has a unique and dynamic relationship with every other airport in its *service area*. Depending upon the service level and type of aviation activity of a facility, the definition of service area can be local or global. For example, regional airports providing air cargo and general aviation service have distinct interrelationships with other airports providing similar services. Given the type of operational activity, whether it is air cargo or general aviation, the interrelationships among airports change.

Air Cargo/Freight Operations

Air cargo/freight tonnage forecasts may depend on an array of factors that include: tariffs; frequency of service; security, type and value per unit weight; reliability and quality of service; and, most importantly, cost of operation at the airport. The Calverton air cargo forecasts assume a small share of the New York City market due to the current investment in infrastructure already in place at the City's airports which could limit replication of similar scale facilities at the NWIRP Calverton site.

Table B-3

Existing & Projected Number of Operations
Per Based Aircraft at Area Airports

Airport	1989	2007	2017
Brookhaven	755	800	854
East Hampton	317	366	427
Long Island MacArthur	429	474	528
Mattituck Airbase	286	304	329
Republic	393	393	393
Suffolk County	1,894	2,040	2,215
Note: Units represent number of operations (take offs and landings).			

Forecasts of cargo activity in to and out of the Long Island region and, in particular, the NWIRP Calverton site was determined on the basis of several studies prepared by the Long Island Regional Planning Board (LIRPB) in 1993, as well as statements made by cargo forwarders in the region. The LIRPB studies stated that one-third of the Long Island's manufacturing establishments produced products that accounted for the preponderance of air exports from the New York region in 1990. The same reports stated that the manufacturing base of Calverton's potential service area generates the type of goods currently shipped by air from New York metropolitan airports. These studies prepared in 1993 using 1990 baseline data suggest that a modest demand for 750 cargo flights growing to possible 3,000 cargo flights annually by cargo aircraft flying domestically and internationally existed between the U.S. and Europe. Another study by SH&E, Inc. and its lead partner, HR&A, suggests that forecast operational levels for such a cargo facility at the NWIRP Calverton site would be limited to approximately 300 annual flights for the first 10-15 years of operation.

The possibility of using an airport at Calverton to ship cargo or freight is limited however, by several constraints according to published reports and verified in conversations with potential users of such a facility. One of these constraints is the distance separating a Calverton aviation facility and the cargo forwarders' and carriers' infrastructure investments at the existing New York City airports. Also, the cargo forwarders' operations typically are closely linked to those of the commercial passenger airlines. This latter activity is not forecast to take place at a Calverton facility, therefore making it unlikely such firms would relocate in large numbers to Calverton.

A second perceived constraint is the existing 10,000-foot runway and its pavement strength of 50,000 pounds per wheel. Existing reports state that the largest of the cargo-carrying aircraft in service today (the B-747s) would not be able to operate fully-loaded to transatlantic destinations in Europe. While this is true under these assumptions (would require at least 11,000 ft), rarely do such aircraft operate at such a high load factor. Aircraft capable of using the existing facility for freight operations under lesser conditions and from the perspective of required takeoff runway length include B-727s, DC-8s, DC-9s, MD-11s, and B-757s. These are typical large aircraft used for cargo operations. Based on various payload capacities, these aircraft will have varying ranges of safe operation from the NWIRP Calverton site's Runway 14/32. Table B-4 depicts the various distances these aircraft can fly based on assumptions of operations at sea level on a standard day from a 10,000-foot runway.

The same individuals interviewed to obtain their opinions on the issues surrounding these constraints, however, also stated that these constraints are not insurmountable ones. With proper planning and coordination, the facility could become a reality.

The integrated and all-cargo carriers both indicated some interest in such a facility, but incentives and revenues would need to be projected to be quite high to lure them to a Calverton cargo facility. Also, the commitment on the part of clients in the Long Island region would need to be sufficient to warrant start-up operations and major investment.

Table B-4

Range of Caro Aircraft Under Various Pay Load Conditions*

Aircraft Type	Percent Pay Load Capacity	Maximum Range (NM)
B-757-200PF	60%	4,000
	80%	3,600
	100%	2,400
MD-11	60%	6,000
	80%	4,700
	100%	3,800
DC-8-63F	60%	3,400
	80%	2,500
	100%	2,300
DC-9-33F	60%	1,900
	80%	1.500
	100%	1,000
B-727-200	60%	2,200
	80%	2,100
	100%	1,700
Note: *Assumes a 10,000 ft. runway during standard day conditions		

Table B-5

Projected Range of Air Cargo Operations in 2007 and 2017
At a NWIRP Calverton Airport Site

Aircraft Type (1)	2007			2017		
	High	Mid	Low	High	Mid	Low
Turboprop	500	350	200	2,000	650	200
Turbojet	250	200	100	1,000	350	100
TOTALS	750	550	300	3,000	1,000	300
Note: (1) Typical aircraft in these categories include: Turboprop (Cessna Carava) and Turbojet (B-727s, DC-9s and MD-11s). Units represent number of operations (take offs and landings).						

This demand/capacity analysis presents high, mid, and low ranges of air cargo operations forecasts. The high and low scenarios are adopted as prepared by the LIRPB and the SH&E, Inc. Team, respectively, as referenced earlier. It is assumed that a major cargo operation will commit to a base operation at the NWIRP-site in this analysis. The mid-range scenario considers a hybrid of these two figures of approximately 550 cargo operations. This figure is increased annually for 10 years (to 2017) by a factor of 6 percent, which is based on a blend of average growth rates in domestic and international cargo activity prepared on a national basis. It is assumed that smaller turboprop aircraft such as Cessna Caravans will feed turbojet aircraft such as the B-727 for domestic operations and larger turbojet cargo aircraft such as the MD-11 for international operations. It is assumed that all of these air cargo operations will occur during the nighttime hours of 10:00 p.m. to 7:00 a.m. Table B-5 assumes a split of two-thirds domestic operations by turboprop aircraft and one-third international operations by turbojet aircraft.

In order to accommodate the anticipated operations by these larger and heavier aircraft, upgrades in runway, taxiway and apron pavements would be required.

General Aviation Operations

A forecast of general aviation activity was prepared for the Calverton site, employing 2007 as the short-term projection and 2017 as the planning horizon. The methodology used to derive the ranges of projected based aircraft and the resultant operational forecasts presented in the following tables is described in the following paragraphs.

A conceptual analyses was conducted using the following assumptions and guidelines:

- A 20-mile radius from the center of the Calverton site was identified as a potential service area for the facility. This is the standard used in the NYSDOT forecasts document which approximates to a 30-minute average drive time. The 30-minute drive time is an industry accepted standard used for planning purposes. The number of aircraft registered to owners within this 20-mile radius of the site was identified by zip code using the US aircraft registry database published by Aircraft Technical Publishers (ATP). It was assumed that 85 percent of these registered G.A. aircraft owners could choose to base their aircraft at an aviation facility at Calverton, if competitive service was provided by the fixed base operator (FBO).

- Studies of Long Island regional airports and interviews with local sponsors resulted in identifying several local airports that may close in the next several years. One of these facilities, Mattituck Airbase, is located approximately 15 miles east of the Calverton site. It was assumed that as many as one-half of the registered owners of aircraft located within the service area of this facility would relocate to an aviation facility at the NWIRP Calverton site.

- Half of the aircraft owners waiting to base at nearby Long Island MacArthur Airport may decide to relocate their aircraft to Calverton because of proximity to homes or

businesses or due to potentially lower hangar/service costs. Currently there are no waiting lists at Brookhaven or Suffolk County Airports and no aircraft are anticipated to relocate from either of these facilities to an airport at Calverton.

- The prospective market area for the NWIRP Calverton site overlaps each of the four closest existing facilities' market areas. Approximately 45 percent of all registered aircraft owners located in zip codes of nearby airports actually base their aircraft at airports located nearest to them, it was assumed, for planning purposes, that a similar percentage could be applied to Calverton. For planning purposes, a factor of 45 percent of all registered aircraft based at an airport is a reasonable expectation based on TAMS' experience of ratios at similar-sized airports in other parts of the United States.

Table B-6 identifies the number of aircraft that could potentially operate out of the NWIRP Calverton site. Although this table represents the total number of aircraft estimated to be located in the general vicinity of the site, not all aircraft would be candidates for basing at Calverton, such as owners of recreational aircraft that prefer to operate their aircraft in uncongested areas.

Table B-7 presents a range of forecast based aircraft for the Year 2007 and the Year 2017. Forecast based aircraft for 2017 are adjusted upward based on an approximated annual growth rate of 0.6 percent for the anticipated total based aircraft increase as projected in existing reports and presented earlier in Tables B-1 and B-2. These forecasts were prepared to reflect a wide range of probable activity from the worst case (low) to the most likely case (mid) to the best, or most optimum scenario (high). Assumptions for forecast ranges are as follows:

- High: Equal to 85 percent of all registered aircraft owners in zip codes within a 30-minute average travel time. This figure includes aircraft registered to owners hangaring their aircraft at an aviation facility, those hangaring their aircraft on their own property, those who have yet to build the aircraft or those storing a non-operative aircraft.

- Mid: Equal to 45 percent of the registered aircraft. This is the average percentage of the registered aircraft within the market areas of the nearby airports of Brookhaven and Long Island MacArthur that are actually based at these airports.

- Low: Equal to 20 percent of the registered aircraft. This is similar to the average percentage of the registered aircraft within the market areas of Mattituck Airbase and Suffolk County Airport actually based there.

For modeling purposes, the mid-range forecasts are recommended. It should be noted that an important assumption also has been made about the typical operation at the facility which affects the forecasts. This assumes that no training or recreational flying would be permitted since this type of activity will better be handled at nearby facilities such as Brookhaven Airport (with the presence of

Table B-6

Baseline Inventory For Potentially Based Aircraft
a NWIRP Calverton Airport

Aircraft Type (1)	No. of Aircraft Within 20 Miles	No. of Aircraft from Airports Projected to Close (2)	No. of Aircraft from Nearby Airports (3)	Total Potential Based AC
Single Engine Piston	293	99	4	396
Multi-Engine Piston	27	9	1	37
Turboprop	6	3	0	9
Turbojet	2	0	0	2
Other	42	9	0	51
TOTAL	370	120	5	495

Notes: (1) The typical aircraft in these categories are: Single-Engine Piston, Cessna 177; Multi-Engine Piston, Beech Baron 58P; Turboprop, Cessna Conquest 441; Turbojet, Lear 35; and Other, a mixture of light powered and unpowered airplanes such as ultralights, gliders, helicopters, etc.

(2) This figure is based on 50 percent of the potential based aircraft within the market area of Mattituck Airbase.

(3) This figure is based on 50 percent of based aircraft on the waiting list at Long Island MacArthur Airport. It is also assumed that those aircraft on the waiting list would be approximately the same fleet mixture of aircraft types that are currently based at the airport.

Table B-7

Range of Forecast Based Aircraft in 2007 and 2017
At a NWIRP Calverton Airport

Aircraft Type	2007			2017		
	High	Mid	Low	High	Mid	Low
Single Engine	396	178	79	421	189	84
Multi-Engine	37	16	7	39	18	8
Turboprop	9	4	2	9	4	2
Turbojet	2	1	0	2	1	0
TOTALS	444*	199	88	471	212	94

* This figure is the 495 total potential based aircraft figure from Table B-6 less the other category of aircraft.

training activity associated with Dowling College). This means that no aircraft from the "other" category are anticipated to base at a NWIRP Calverton aviation facility.

Table B-8 summarizes forecast activity ranges of general aviation operations for the Year 2007 and Table B-9 provides the same forecasts for the Year 2017. These operations forecasts are derived by multiplying the forecast number of aircraft by ranges of operations per based aircraft assumed to be 700, 400, and 275 operations. These latter figures are held constant for both forecast periods and are typical of Long Island regional airports with a high level of business activity, those with a medium level of business activity and those with an occasional use by other operators of aircraft, respectively. These are based upon an analysis of Table B-3 using the approximate figures for Brookhaven Airport, Mattituck Airbase and Republic Airport.

Based on TAMS' experience, an assumption was made that general aviation operations at night (those operations occurring between 10:00 p.m. and 7:00 a.m.) would be limited assuming the following percentages of total activity occurring at night: single-engine piston, 1 percent; multi-engine piston, 1.5 percent; turboprop 10 percent; and, turbojet, 10 percent also.

B.3 Airspace Considerations and Instrument Operations Capability

The NWIRP Calverton site is situated well beyond the New York metropolitan area airports' 30-nautical mile Mode C operations ring. The site is also outside Long Island MacArthur Airport's controlled airspace and its ended Class C airspace which requires Mode C capabilities. Interviews with airport managers did reveal that the personnel at the New York TRACON facility could possibly experience a slight increase in their workload due to operations at a Calverton aviation facility, but this would not likely affect overall efficiency.

Interactions with nearby Brookhaven and Suffolk County Airports in the past have been such that the phrase "compatible operations" could be used to characterize these three facilities' coexistence. Operations at Calverton were characterized as having no adverse effect on GA operations at Brookhaven and Suffolk County Airports. The same could be concluded of future operations at a Calverton general aviation/air cargo facility if coordination activities continued between the three facilities as they had occurred while the NWIRP Calverton site was fully operational. Currently aircraft operating at Long Island MacArthur Airport utilize the VORTAC facility at Calverton to circle while waiting for poor weather conditions to dissipate or delay conditions to subside. Coordination with the FAA would need to be initiated if Calverton were to become operational again.

Based on interviews and the review of existing reports, there is little likelihood for airspace conflict between any nearby facilities and the NWIRP Calverton site if Calverton were to upgraded to precision instrument approaches. Currently, the site has two non-precision instrument approaches (VORTAC/GPS) from the southeast and from the northeast. While Calverton was an operating facility, it had an ILS approach as late as 1982. An ILS/MLS or its equivalent would need to be installed to accommodate instrument approaches by the anticipated aircraft types. Land currently

owned as well as land in aviation easement control is adequate for a precision instrument approach for use during all-weather conditions. The FAA stated that the airspace surrounding the NWIRP Calverton site has not been relinquished and therefore neither have the established approaches to the site.

B.4 Potential Aircraft Noise

This section describes the purpose for modeling the potential aircraft noise that could occur if the NWIRP Calverton site were developed as a general aviation and air cargo aviation facility. Increased noise levels can be anticipated during the nighttime hours of 10:00 p.m. to 7:00 a.m. if a cargo operation is established. Requirements of the NEPA process, as applied to the Base Realignment and Closure Act, necessitate the preparation of airport noise contours for an aviation alternative. This is done to provide a comparative basis for evaluating the environmental impacts of other reasonable and feasible alternative reuses of the facility.

Possible flight tracks modeled to and out of the Calverton site were modeled. These arrival and departure tracks were derived based upon analysis of current interactions among existing aviation facilities. Based on discussions with airport managers and a review of existing reports for airports in the general vicinity of the Calverton site, it is assumed that total operations are equally divided between arrival and departure operations. No touch-and-go operations were modeled because this type of activity will be assumed to occur at other nearby airports such as Brookhaven (Dowling College training activities). Table B-10 indicates the percent utilization of each arrival and Realignment and Closure Act, necessitate the preparation of airport noise contours for an aviation alternative. This is done to provide a comparative basis for evaluating the environmental impacts of other reasonable and feasible alternative reuses of the facility.

Possible flight tracks to and out of the Calverton site were modeled. Arrival and departure tracks were derived based upon analysis of current interactions among existing aviation facilities. Based on discussions with airport managers and a review of existing reports for airports in the general vicinity of the Calverton site, it is assumed that total operations are equally divided between arrival and departure operations. No touch-and-go operations were modeled because this type of activity will be assumed to occur at other nearby airports such as Brookhaven (Dowling College training activities). Table B-10 indicates the percent utilization of each arrival and departure track by aircraft type modeled to operate at the NWIRP Calverton facility for both forecast periods. It is assumed that all tracks will have a mixture of both day and night operations. Additional information needed to run the FAA's Integrated Noise Model (INM) specific to the Calverton site is included at the end of Appendix D.

Table B-8

Year 2007 Forecast Annual General Aviation/Corporate Operations
At a NWIRP Calverton Airport

AC Type	High Business Use			Medium Business Use			Occasional Use		
	Total	Day	Night	Total	Day	Night	Total	Day	Night
SEP	277,800	275,000	2,800	70,950	70,250	700	21,650	21,450	200
MEP	25,750	25,350	400	6,750	6,650	100	2,050	2,000	50
TP	5,950	5,350	600	1,500	1,350	150	500	450	50
TJ	1,300	1,150	150	400	350	50	0	0	0
TOTAL	310,800	306,850	3,950	79,600	78,600	1,000	24,200	23,900	300
Note : All figures rounded to nearest 50 for noise estimation purposes. Units represent the number of operations (take offs and landings).									

Table B-9

Year 2017 Forecast Annual General Aviation/Corporate Operations
At a NWIRP Calverton Airport

AC Type	High Business Use			Medium Business Use			Occasional Use		
	Total	Day	Night	Total	Day	Night	Total	Day	Night
SEP	294,700	291,750	2,950	75,600	74,850	750	23,100	22,850	250
MEP	27,300	26,900	400	7,200	7,100	100	2,200	2,150	50
TP	6,300	5,650	650	1,600	1,450	150	550	500	50
TJ	1,400	1,250	150	400	350	50	0	0	0
TOTAL	329,700	325,550	4,150	84,800	83,750	1,050	25,850	25,500	350
Note: All figures rounded to nearest 50 for noise estimation purposes. Units represent the number of operations (take offs and landings).									

Table B-10

Assignment of Aircraft Operations By Type
To Arrival & Departure Flight Tracks

Track No.	Track % Usage	Aircraft % Usage
A1	25%	MEPiston = 30%
		Turboprop= 70%
		Turbojet = 40%
A2	25%	MEPiston = 20%
		Turboprop= 20%
		Turbojet = 60%
A3	20%	SEPiston = 20%
		MEPiston = 30%
		Turboprop= 10%
A4	15%	SEPiston = 40%
		MEPiston = 10%
A5	15%	SEPiston = 40%
		MEPiston = 10%
Totals	100%	SEPiston = 100%
		MEPiston = 100%
		Turboprop= 100%
		Turbojet = 100%
D1	30%	MEPiston = 25%
		Turboprop= 40%
		Turbojet = 40%
D2	40%	MEPiston = 25%
		Turboprop= 20%
		Turbojet = 60%
D3	20%	SEPiston = 50%
		MEPiston = 25%
		Turboprop= 20%

Track No.	Track % Usage	Aircraft % Usage
D4	10%	SEPiston = 50%
		MEPiston = 25%
		Turboprop= 20%
Totals	100%	SEPiston = 100%
		MEPiston = 100%
		Turboprop= 100%
		Turbojet = 100%

B.5 Findings

TAMS' analysis identified a potential aviation demand and capacity shortfall in the vicinity of the NWIRP Calverton site. Based upon a review of all pertinent data sources regarding the demand for and capacity of aviation facilities in the general vicinity of the site, as well as interviews held with various firms and agencies familiar with these same issues, it was determined that an FAA air carrier classification airport capable of accommodating design group D-IV aircraft is justified based on aviation demand. Such an airport would be able to accommodate IFR operations to serve business-class general aviation aircraft, as well as cargo aircraft activities by integrated and all-cargo carriers. No commercial passenger service is considered feasible. The aviation forecasts presented herein are the best case for potential aviation activity and the worst case for noise modeling.

This class airport can accommodate all aircraft weighing over 300,000 pounds (136,080 kg). These include B-727s, B-757, DC-9s, DC-8s and MD-11s. For planning purposes, the typical aircraft served by such an airport ranges from the small single-engine piston Cessna 182 to the large, multi-engine MD-11. The latter aircraft is the largest aircraft anticipated to use the airport on a frequent basis, however. This aircraft falls within the FAA's Airplane Design Group D-IV, which is this facility's critical aircraft. An airport's critical aircraft is used as the planning parameter for establishing airport design. Runway criteria associated with this type of aircraft is 10,000 ft (3,048 m) in length and 200 ft (61 m) in width, therefore the current runway length is adequate through the planning period of 2017, but the pavement strength (currently at 50,000 pounds [22,680 kg] per wheel) would need to be upgraded to accommodate operations by the larger and heavier MD-11.

While an aviation demand forecast can be justified, several drawbacks were identified. These include the distance between the site and cargo forwarders (who are usually closely tied to commercial passenger airlines of which none are anticipated to operate at the NWIRP Calverton site) as well as the runway length being too short at 10,000 ft (3,048 m) for transatlantic air cargo flights by B-747 aircraft under certain payload conditions. Neither of these were identified as being insurmountable based on interviews with airport managers and potential users of the facility. However, the first would not likely occur with the absence of commercial passenger airlines at the Calverton site. An extension was considered at the end of the planning horizon, but environmental constraints may prohibit this.

It is a conclusion of this research effort that strong local sponsorship is a mandatory prerequisite for a facility at the Calverton site. This is present in the identified support on the part of the Town of Riverhead. Therefore, in the presence of a local interest for sponsorship along with the existence of a potential demand for aviation at the site, it is concluded that the NWIRP Calverton site is a justifiable site for general/corporate aviation and air cargo/freight operations in the Long Island region.

Interview Forms

Interview Form for Cargo Users/Forwarders

1. Name of firm _____

2. Firm's function _____

3. Contact person _____
   Title _____

4. Telephone number _____ Fax number _____

5. Address _____
   _____
   _____

6. Based upon your understanding, is the *air cargo demand* being met adequately in the Long Island region today? Y N Explain

   _____
   _____

   Will it be adequately met in the Year 2017? Y N In the Year 2020? Y N
   Why or why not?

   _____

7. Based upon your understanding, is the *general aviation demand* being met adequately in the Long Island region today? Y N Explain

   _____
   _____

   Will it be adequately met in the Year 2017? Y N In the Year 2020? Y N
   Why or why not?

   _____

8. If the demand was such that a cargo/general aviation facility was warranted at the NWIRP Calverton site, what would this mean for the capacity of the region from your perspective?

   _____

9. In your opinion, would the introduction of a cargo/general aviation facility at the NWIRP Calverton site complicate existing airspace interactions, thereby reducing overall system efficiency and safety? Y N Explain

10. How would you rate the instrument capabilities/radar coverage in the general vicinity of the NWIRP Calverton facility:

Excellent? ———
Very Good? ———
Good? ———
Fair? ———
Poor? ———

Explain

11. A feasibility study prepared by the Long Island Regional Planning Board several years ago stated that the NWIRP Calverton site has the potential for development as an all-cargo facility between New York and Europe. What is your opinion? Explain.

12. This same study concludes that there is sufficient air cargo potential for at least a modest air cargo operation at the NWIRP Calverton site. What's your opinion?

13. A study by HR&A stated that three barriers exist, however, to this possibility. They are inadequate runway length (10,000 ft currently), difficulty in the site being recognized as a New York City airport, and the distance between established forwarder operations and the site. Are these insurmountable in your opinion? Why?

If insurmountable, what other type of cargo service could potentially be introduced at the site?

14 A study by the HR&A Team stated that to operate at the NWIRP Calverton site would mean separate cargo facilities at JFK and Calverton. What's your opinion?

15. Could you explain why the HR&A study concludes that the NWIRP Calverton site's cargo potential would be limited to approximately 5 flights per week (domestic) and 1 flight per week (international) for the first 10-15 years?

16. If the demand were sufficient to transfer cargo operations to the NWIRP Calverton site, what would be required on the part of a firm like yours?

17. Cost/revenue factors would obviously come into play for any user of a cargo/general aviation facility at NWIRP Calverton. From your perspective, which factors would you say are the most defining of them?

18. In your opinion, what will be crucial test(s) for a cargo/general aviation facility to become established at the NWIRP Calverton site?

Interview Form for Governmental Agencies

1. Name of agency _____

2. Agency's function _____

3. Contact person _____
   Title _____

4. Telephone number _____ Fax number _____

5. Address _____
   _____
   _____

6. Based upon your understanding, is the *air cargo demand* being met adequately in the region today? Y N Explain

   _____

   Will it be adequately met in the Year 2017? Y N In the Year 2020? Y N
   Why or why not?

   _____

7. Based upon your understanding, is the *general aviation demand* being met adequately in the region today? Y N Explain

   _____

   Will it be adequately met in the Year 2017? Y N In the Year 2020? Y N
   Why or why not?

   _____

8. If the demand was such that a cargo/general aviation facility was warranted at the NWIRP Calverton site, what would this mean for the capacity of the region from your perspective? (Would it be a welcome addition? Would it serve to limit capacity? Would it serve only a few at the expense of many?) Why?

   _____

9. In your opinion, would the introduction of a cargo/general aviation facility at the NWIRP Calverton site complicate existing airspace interactions, thereby reducing overall system efficiency and safety? Y N Explain

_____

10. How would you rate the instrument capabilities/radar coverage in the general vicinity of the NWIRP Calverton facility:
Excellent? _____
Very Good? _____
Good? _____
Fair? _____
Poor? _____

Explain

_____

11. If a cargo/general aviation facility were located at the NWIRP Calverton site and IFR airspace was reserved for this type of activity, to what extent would low-level arrivals and departures at surrounding airports be affected? Explain

_____

12. A recent study by the NYSDOT stated that "there is a real danger of losing GA facilities..." and that these "...closures will continue to influence GA and airline airports in NYS." To your knowledge, are any Long Island area airports expected to close in the next 5-10 years? Y N If yes, which one(s)? _____

Would an aviation facility at NWIRP Calverton help alleviate these anticipated losses in your opinion? Y N Explain

_____

13. This same study stated that by the Year 2007, the FAA forecasts a total of 500 new aircraft for the Eastern Region.
Is this number too low?_____
Is this number too high?_____
Is this number correct? _____

Explain _____

14. A statement was made in the NYSDOT report that "lack of growth in general aviation activity precludes any general aviation only airport in New York State from exceeding its capacity by the Year 2017." Are you of the same opinion? Explain

15. The NYSDOT document goes on further to say that Brookhaven and Republic Airports (GA) will approach their airfield capacity by the Year 2017 (within 79% or greater of it) as well as L.I. MacArthur (AC). What are your thoughts about this? Explain

16. If the runway, navaids and other support network at a cargo/general aviation facility at NWIRP Calverton were found to be sufficient to accommodate sufficient all-weather capacity in the region, would this be a good option? Y N Explain

17. The feasibility study done recently for the NWIRP Calverton site stated several barriers to its development as an international cargo hub (too short of a runway, difficulty in saying its a NYC airport and too far from cargo forwarders). Are these insurmountable in your opinion? Explain

18. Cost/revenue factors would obviously come into play for any user of a cargo/general aviation facility at NWIRP Calverton. From your perspective, which would you say are the most defining of them?

Interview Form for Airport Managers/FBOs

1. Name of agency _____

2. Agency's function _____

3. Contact person _____
   Title _____

4. Telephone number _____ Fax number _____

5. Address _____
   _____
   _____

6. Based upon your understanding, is the *air cargo demand* being met adequately in the region today? Y N Explain

   _____

   Will it be adequately met in the Year 2017? Y N In the Year 2020? Y N
   Why or why not?

   _____

7. Based upon your understanding, is the *general aviation demand* being met adequately in the region today? Y N Explain

   _____

   Will it be adequately met in the Year 2017? Y N In the Year 2020? Y N
   Why or why not?

   _____

8. If the demand was such that a cargo/general aviation facility was warranted at the NWIRP Calverton site, what would this mean for the capacity of the region from your perspective? (Would it be a welcome addition? Would it serve to limit capacity? Would it serve only a few at the expense of many?) Why?

   _____

9. In your opinion, would the introduction of a cargo/general aviation facility at the NWIRP Calverton site complicate existing airspace interactions, thereby reducing overall system efficiency and safety? Y N Explain

10. How would you rate the instrument capabilities/radar coverage in the general vicinity of the NWIRP CALVERTON facility:
Excellent? ———
Very Good? ———
Good? ———
Fair? ———
Poor? ———

Explain

11. If a cargo/general aviation facility were located at the NWIRP Calverton site and IFR airspace was reserved for this type of activity, to what extent would low-level arrivals and departures at surrounding airports be affected? Explain

12. A recent study by the NYSDOT stated that "there is a real danger of losing GA facilities..." and that these "...closures will continue to influence GA and airline airports in NYS." To your knowledge, are any Long Island area airports expected to close in the next 5-10 years? Y N If yes, which one(s)? ———

Would an aviation facility at NWIRP Calverton help alleviate these anticipated losses in your opinion? Y N Explain

13. This same study stated that by the Year 2007, the FAA forecasts a total of 500 new aircraft for the Eastern Region.
Is this number too low? ———
Is this number too high? ———
Is this number correct? ———

Explain ———

14. A statement was made in the NYSDOT report that "lack of growth in general aviation activity precludes any general aviation only airport in New York State from exceeding its capacity by the Year 2017." Are you of the same opinion? Explain

15. The NYSDOT document goes on further to say that Brookhaven and Republic Airports (GA) will approach their airfield capacity by the Year 2017 (within 79% or greater of it) as well as L.I. MacArthur (AC). What are your thoughts about this? Explain

16. If the runway, navaids and other support network at a cargo/general aviation facility at NWIRP Calverton were found to be sufficient to accommodate sufficient all-weather capacity in the region, would this be a good option? Y N Explain

17. The feasibility study done recently for the NWIRP Calverton site stated several barriers to its development as an international cargo hub (too short of a runway, difficulty in saying its a NYC airport and too far from cargo forwarders). Are these insurmountable in your opinion? Explain

18. Cost/revenue factors would obviously come into play for any user of a cargo/general aviation facility at NWIRP Calverton. From your perspective, which would you say are the most defining of them?

APPENDIX C

TRAFFIC ANALYSES

Table C-1

Summary of LOS Analysis - Future Baseline Conditions

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Rocky Point Road (Location 1)												
EB L	71	0.553	19.5	C	149	1.059	100.3	F	177	1.368	*	F
EB TR	1343	1.204	*	F	1761	1.645	*	F	1855	1.616	*	F
WB L	380	1.798	*	F	232	1.079	*	F	236	1.118	*	F
WB TR	991	0.727	21.6	C	1648	1.372	*	F	1652	1.218	*	F
NB L	358	1.495	*	F	564	2.003	*	F	618	2.582	*	F
NB TR	532	1.089	86.7	F	1178	1.761	*	F	668	1.380	*	F
SB L	117	0.824	45.0	E	223	1.529	*	F	256	1.797	*	F
SB TR	789	1.759	*	F	534	0.965	51.7	E	445	1.024	72.1	F
Overall:			*	F			*	F			*	F
Middle Country Road and Edwards Avenue (Location 2)												
EB LTR	1483	2.076	*	F	1342	1.930	*	F	1430	1.971	*	F
WB LTR	819	1.882	*	F	1625	2.892	*	F	1359	2.891	*	F
NB LTR	316	1.507	*	F	699	2.926	*	F	404	1.573	*	F
SB LTR	297	0.862	24.5	C	284	0.762	16.2	C	279	0.957	40.6	E
Overall:			*	F			*	F			*	F
Middle Country Road and North Country Road (Location 3)												
EB LT	750	0.662	6.4	B	849	1.233	*	F	944	0.951	20.0	C
WB T	586	0.596	5.8	B	1072	1.126	75.4	F	862	0.878	12.9	B
WB R	330	0.216	0.0	A	858	0.580	0.4	A	518	0.339	0.0	A
SB L	689	1.431	*	F	369	0.822	18.9	C	471	0.978	37.3	D
SB R	17	0.035	9.2	B	15	0.033	9.1	B	11	0.023	9.1	B
Overall:			*	F			*	F			17.1	C

Table C-1(continued)

Summary of LOS Analysis - Future Baseline Conditions

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Manorville Road (Location 4)												
EB L	71	0.692	17.0	C	142	1.300	*	F	114	1.108	116.9	F
EB TR	337	0.414	5.6	B	517	0.596	6.9	B	909	1.118	73.5	F
WB L	26	0.095	4.4	A	65	0.458	7.0	B	59	0.560	10.0	B
WB TR	591	0.728	8.8	B	976	1.127	77.8	F	915	1.126	77.4	F
NB LT	448	0.919	26.0	D	505	1.285	*	F	191	0.495	10.2	B
NB R	127	0.269	8.7	B	82	0.169	8.3	B	66	0.139	8.2	B
SB LTR	291	2.430	*	F	231	1.247	*	F	242	0.523	10.4	B
Overall:			*	F			*	F			62.9	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)												
EB LR	197		5.7	B	529		8.4	B	292		6.6	B
NB TR	621		5.7	B	279		8.4	B	392		9.0	B
SB L	20		4.7	A	19		3.0	A	30		3.5	A
SB T	139			A	247			A	161			A
Overall:			1.3	A			4.1	A			2.3	A
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)												
WB LR	49		14.6	C	136		12.3	C	104		11.6	C
NB L	412		3.9	A	188		3.1	A	224		3.1	A
NB T	125			A	205			A	195			A
SB TR	175			A	182			A	170			A
Overall:			2.9	A			3.0	A			2.6	A

Table C-1(continued)

Summary of LOS Analysis - Future Baseline Conditions

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Edwards Avenue and River Road (Location 7)												
EB LT	28		9.6	B	22		13.5	C	23		8.0	B
EB R	69		9.6	B	37		13.5	C	32		8.0	B
WB LTR	48		13.9	C	51		29.9	D	76		11.8	C
NB LT	441		3.9	A	707		4.2	A	416		3.3	A
NB R	39			A	36			A	39			A
SB LTR	553		3.4	A	568		4.3	A	405		3.3	A
Overall:			1.4	A			2	A			1.5	A

Notes: NB - Northbound; SB - Southbound; EB - Eastbound; WB - Westbound. L - Left turn; R - Right turn; T - Through. *Indicates an approach expected to operate at a v/c ratio greater than 1/peak hour factor. In such cases, the stop delay is not calculated, but LOS is "F".

Table C-2

Summary of LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Rocky Point Road (Location 1)												
EB L	71	0.553	19.9	C	149	1.059	100.3	F	177	1.368	*	F
EB TR	1543	1.373	*	F	1992	1.853	*	F	2105	1.827	*	F
WB L	380	1.798	*	F	232	1.079	*	F	236	1.118	*	F
WB TR	1044	0.766	22.5	C	1853	1.540	*	F	1993	1.465	*	F
NB L	358	1.495	*	F	564	2.003	*	F	618	2.582		F
NB TR	532	1.089	86.7	F	1178	1.761	*	F	667	1.376	*	F
SB L	117	0.824	45.0	E	223	1.529	*	F	256	1.797	*	F
SB TR	789	1.759	*	F	534	0.965	51.7	E	445	1.024	72.1	F
Overall:			*	F			*	F			*	F
Middle Country Road and Edwards Avenue (Location 2)												
EB LTR	1505	2.102	*	F	1447	2.051	*	F	1600	2.166	*	F
WB LTR	919	2.025	*	F	1740	3.041	*	F	1484	3.089	*	F
NB LTR	316	1.507	*	F	699	2.926	*	F	404	1.573	*	F
SB LTR	297	0.862	24.5	C	284	0.762	16.2	C	279	0.957	40.6	F
Overall:			*	F			*	F			*	F
Middle Country Road and North Country Road (Location 3)												
EB LT	792	0.864	12.5	B	1013	>2.0	*	F	1217	>2.0	*	F
WB T	586	0.596	5.8	B	1072	1.126	75.4	F	862	0.878	12.9	B
WB R	330	0.216	0.0	A	858	0.580	0.4	A	518	0.339	0.0	A
SB L	689	1.431	*	F	369	0.822	18.9	C	471	0.978	37.3	D
SB R	177	0.363	10.4	B	200	0.440	10.9	B	211	0.433	10.8	B
Overall:			*	F			*	F			*	F

Table C-2 (continued)

Summary of LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Manorville Road (Location 4)												
EB L	71	0.692	17.0	C	142	1.300	*	F	114	1.108	116.9	F
EB TR	1038	1.267	*	F	1325	1.522	*	F	1783	2.183	*	F
WB L	79	0.747	20.8	C	270	2.388	*	F	400	3.781	*	F
WB TR	814	1.008	33.1	D	1839	2.139	*	F	2348	2.923	*	F
NB LT	448	1.264	*	F	505	2.195	*	F	191	0.836	24.8	C
NB R	327	0.691	12.9	B	313	0.647	12.0	B	316	0.668	12.4	B
SB LTR	431	4.937	*	F	392	4.593	*	F	417	1.341	*	F
Overall:			*	F			*	F			*	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)												
EB LR	697		*	F	1106		*	F	791		*	F
NB TR	721			A	394			A	517			A
SB L	20		5.3	B	19		3.5	A	30		4.1	A
SB T	139			A	247			A	161			A
Overall:			680.0	F			1137.6	F			699.7	F
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)												
WB LR	49		53.1	F	136		579.7	F	104		*	F
NB L	412		5.2	B	188		8.6	B	224		23.8	D
NB T	625			A	782			A	780			A
SB TR	334			A	798			A	1193			A
Overall:			3.3	A			41.6	E			82.7	F

Table C- 2 (continued)

Summary of LOS Analysis - Calverton Enterprise Park Reuse Plan

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Edwards Avenue and River Road (Location 7)												
EB LT	28		22.2	D	22		863.4	F	23		14.6	C
EB R	96		22.2	D	140		863.4	F	202		14.6	C
WB LTR	48		53.1	F	51		*	F	1876		146.2	F
NB LT	741		6.0	B	1053		7.7	B	791		5.2	B
NB R	39			A	36			A	39			A
SB LTR	553		3.4	A	568		4.3	A	405		3.3	A
Overall:			4.8	A			585	F			10.8	C

Notes: NB - Northbound; SB - Southbound; EB - Eastbound; WB - Westbound. L - Left turn; R - Right turn; T - Through. *Indicates an approach expected to operate at a v/c ratio greater than 1/peak hour factor. In such cases, the stop delay is not calculated, but LOS is "F".

Table C-3

Summary of LOS Analysis - Enterprise Park and Raceway

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Rocky Point Road (Location 1)												
EB L	71	0.553	19.7	C	149	1.059	100.3	F	177	1.368	*	F
EB TR	1490	1.328	*	F	1966	1.830	*	F	2336	2.021	*	F
WB L	380	1.798	*	F	232	1.079	*	F	236	1.118	*	F
WB TR	1017	0.747	22.0	C	1815	1.508	*	F	2017	1.483	*	F
NB L	358	1.495	*	F	564	2.003	*	F	618	2.582	*	F
NB TR	532	1.089	86.7	F	1178	1.761	*	F	668	1.380	*	F
SB L	117	0.824	45.0	E	223	1.529	*	F	256	1.797	*	F
SB TR	789	1.759	*	F	534	0.965	51.7	E	445	1.024	72.1	F
Overall:			*	F			*	F			*	F
Middle Country Road and Edwards Avenue (Location 2)												
EB LTR	1496	2.092	*	F	1426	2.026	*	F	1613	2.170	*	F
WB LTR	893	1.989	*	F	1728	3.026	*	F	1600	3.242	*	F
NB LTR	316	1.507	*	F	699	2.926	*	F	404	1.573	*	F
SB LTR	297	0.862	24.5	C	284	0.762	16.2	C	279	0.957	40.6	E
Overall:			*	F							*	F
Middle Country Road and North Country Road (Location 3)												
EB LT	771	0.749	8.0	B	983	1.427	*	F	1236	>2.000	*	F
WB T	586	0.596	5.8	B	1072	1.126	75.4	F	862	0.878	12.9	B
WB R	330	0.216	0.0	A	858	0.580	0.4	A	518	0.339	0.0	A
SB L	689	1.431	*	F	369	0.822	18.9	C	471	0.978	37.3	D
SB R	135	0.276	10.0	B	179	0.394	10.6	B	396	0.811	18.2	C
Overall:			*	F			*	F			*	F

Table C-3 (continued)

Summary of LOS Analysis - Enterprise Park and Raceway

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Manorville Road (Location 4)												
EB L	71	0.692	17.0	C	142	1.300	*	F	114	1.108	116.9	F
EB TR	852	1.041	42.7	E	1235	1.420	*	F	2592	3.170	*	F
WB L	52	0.490	8.1	B	232	2.054	*	F	424	4.007	*	F
WB TR	700	0.866	13.7	B	1678	1.951	*	F	2449	3.051	*	F
NB LT	448	1.157	107.6	F	505	2.052	*	F	191	1.326	*	F
NB R	174	0.367	9.2	B	287	0.593	11.2	B	547	1.156	103.7	F
SB LTR	394	4.620	*	F	375	4.450	*	F	579	2.000	*	F
Overall:			*	F			*	F			*	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)												
EB LR	565		730.0	F	1041		*	F	1494		*	F
NB TR	695			A	382			A	633			A
SB L	20		5.1	B	19		3.4	A	30		4.8	A
SB T	139			A	247			A	161			A
Overall:			285.7	F			918.1	F			3754.0	F
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)												
WB LR	49		33.2	E	136		197.1	F	104		*	F
NB L	412		4.5	A	188		5.9	B	224		30.3	E
NB T	493			A	717			A	1483			A
SB TR	252			A	583			A	1265			A
Overall:			2.8	A			16.9	C			348.1	F

Table C-3 (continued)

Summary of LOS Analysis - Enterprise Park and Raceway

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Edwards Avenue and River Road (Location 7)												
EB LT	28		12.5	C	22		27.4	D	23		7.7	B
EB R	69		12.5	C	121		27.4	D	215		7.7	B
WB LTR	48		20.7	D	51		355.1	F	76		18.4	C
NB LT	563		4.5	A	915		5.8	B	416		3.3	A
NB R	39			A	36			A	39			A
SB LTR	553		3.4	A	568		4.3	A	405		3.3	A
Overall:			2.2	A			13.9	C			2.9	A

Notes: NB - Northbound; SB - Southbound; EB - Eastbound; WB - Westbound. L - Left turn; R - Right turn; T - Through. *Indicates an approach expected to operate at a v/c ratio greater than 1/peak hour factor. In such cases, the stop delay is not calculated, but LOS is "F".

Table C-4

Summary of LOS Analysis - Peconic Village

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Rocky Point Road (Location 1)												
EB L	71	0.553	19.8	C	149	1.059	100.3	F	177	1.368	*	F
EB TR	1458	1.302	*	F	1833	1.711	*	F	1921	1.672	*	F
WB L	380	1.798	*	F	232	1.079	*	F	236	1.118	*	F
WB TR	1036	0.761	22.4	C	1753	1.458	*	F	1714	1.264	*	F
NB L	358	1.495	*	F	564	2.003	*	F	618	2.582	*	F
NB TR	532	1.089	86.7	F	1178	1.761	*	F	668	1.380	*	F
SB L	117	0.824	45.0	E	223	1.529	*	F	256	1.797	*	F
SB TR	789	1.759	*	F	534	0.965	51.7	E	445	1.024	72.1	F
Overall:			*	F			*	F			*	F
Middle Country Road and Edwards Avenue (Location 2)												
EB LTR	1506	2.104	*	F	1394	1.990	*	F	1461	2.004	*	F
WB LTR	877	1.967	*	F	1661	2.941	*	F	1392	2.940	*	F
NB LTR	316	1.507	*	F	699	2.926	*	F	404	1.573	*	F
SB LTR	297	0.862	24.5	C	284	0.762	16.2	C	279	0.957	40.6	E
Overall:			*	F			*	F			*	F
Middle Country Road and North Country Road (Location 3)												
EB LT	786	0.827	10.5	B	933	>2.000	*	F	994	>2.000	*	F
WB T	586	0.596	5.8	B	1072	1.126	75.4	F	862	0.878	12.9	B
WB R	330	0.216	0.0	A	858	0.580	0.4	A	518	0.339	0.0	A
SB L	689	1.431	*	F	369	0.822	18.9	C	471	0.978	37.3	D
SB R	109	0.224	9.8	B	72	0.158	9.5	B	64	0.132	9.5	B
Overall:			*	F			*	F			*	F

Table C-4 (continued)

Summary of LOS Analysis - Peconic Village

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Middle Country Road and Manorville Road (Location 4)												
EB L	71	0.692	17.0	C	142	1.300	*	F	114	1.108	116.9	F
EB TR	740	0.904	16.6	C	768	0.884	15.0	B	1140	1.400	*	F
WB L	71	0.669	14.9	B	170	1.502	*	F	121	1.144	132.9	F
WB TR	782	0.969	24.7	C	1416	1.643	*	F	1177	1.454	*	F
NB LT	448	1.093	74.9	F	505	1.492	*	F	191	0.562	11.1	B
NB R	242	0.511	10.2	B	154	0.319	8.9	B	132	0.280	8.7	B
SB LTR	372	4.438	*	F	281	3.099	*	F	288	0.729	14.6	B
Overall:			*	F			*	F			*	F
RT 495 East (Long Island Expressway) and Schultz Road (Location 5)												
EB LR	485		284.7	F	708		68.5	F	457		22.4	D
NB TR	679			A	315			A	425			A
SB L	20		5.0	B	19		3.2	A	30		3.7	A
SB T	139			A	247			A	161			A
Overall:			102.5	F			37.0	E			9.5	B
RT 495 West (Long Island Expressway) and Schultz Road (Location 6)												
WB LR	49		37.3	E	136		60.8	F	104		34.2	E
NB L	412		5.0	A	188		5.1	B	224		4.2	A
NB T	413			A	384			A	446			A
SB TR	311			A	497			A	356			A
Overall:			3.2	A			7.5	A			3.9	A

Table C-4 (continued)

Summary of LOS Analysis - Peconic Village

Intersection	AM Peak Hour				PM Peak Hour				Weekend Peak Hour			
	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS	Appr. Volume	V/C Ratio	Stopped Delay	LOS
Edwards Avenue and River Road (Location 7)												
EB LT	28		13.8	C	22		16.0	C	23		8.4	B
EB R	92		13.8	C	89		16.0	C	63		8.4	B
WB LTR	48		26.8	D	51		72.9	F	76		17.0	C
NB LT	614		4.9	A	815		4.9	A	515		3.6	A
NB R	39			A	36			A	39			A
SB LTR	553		3.4	A	568		4.3	A	405		3.3	A
Overall:			2.8	A			4.1	A			2.2	A

Notes: NB - Northbound; SB - Southbound; EB - Eastbound; WB - Westbound. L - Left turn; R - Right turn; T - Through. *Indicates an approach expected to operate at a v/c ratio greater than 1/peak hour factor. In such cases, the stop delay is not calculated, but LOS is "F".

APPENDIX D

NOISE

D.1 AIRCRAFT NOISE ANALYSIS MODEL PARAMETERS

Aircraft Noise Analysis Assumptions

An assumption was made that operations at night (occurring between 10:00 pm and 7:00 am) would be limited to the following percentages of total activity:

- Single-Engine Piston (SEP), one percent;
- Multi-Engine Piston (MEP), 1.5 percent;
- Turboprop (TR), ten percent; and
- Turbojet (TJ), ten percent.

The FAA-preferred computer model, Integrated Noise Model (INM, version 5.0), was utilized to predict the noise impact from the forecasted high-, mid-, and low-range aircraft operations. INM was developed by the FAA as a planning tool for determining approximate aircraft noise levels at and around airports. The model incorporates a database of known sound levels from various aircraft and uses mathematical processes which consider the degradation of sound energy over distance.

The model requires inputs such as:

- Annual average daily operational characteristics at the airport, including the type of aircraft and the number of aircraft operations;
- Runway layout and its utilization rates; and
- Flight track configuration and its usage.

The model output comes in the form of noise contour plots, graphs, and tabular data on the noise levels at specific receptor locations.

Flight track usage (Table D.1-1) and airport site specific parameters (Table D.1-2) were incorporated in the modeling.

Table D.1-1

Assignment of Aircraft Operations By Type To Arrival & Departure Flight Tracks

Track No.	Aircraft percent Usage
A1	MEP = 30% TP = 70% TJ = 40%
A2	MEP = 20% TP = 20% TJ = 60%
A3	SEP = 20% MEP = 30% TP = 10%
A4	SEP = 40% MEP = 10%
A5	SEP = 40% MEP = 10%
D1	MEP = 25% TP = 40% TJ = 40%
D2	MEP = 25% TF = 20% TJ = 60%
D3	SEP = 50% MEP = 25% TP = 20%
D4	SEP = 50% MEP = 25% TP = 20%

Table D.1-2

NWIRP Calverton Site Information

Data Classification	Data Value
Temperature	58.97 Fahrenheit
Latitude	40-55-27.080 N
Longitude	72-47-40.810 W
Elevation	75 MSL
Average Headwinds	8.0 knots
Change in Average Headwinds	none
Displaced Thresholds	none
Glide Slope	5 degrees
Threshold Crossing Height	50 feet
Atmospheric Pressure	29.9 Hg

D.2 RESULTS OF NOISE MONITORING SURVEY

Table D.2 -1
Site 1: Route 25 (southside) - Weekday

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	66	57	65	69	76
Midday	65	57	64	68	77
PM Peak	68	57	67	70	78
Pre Mid	60	48	58	63	70

Table D.2 -2
Site 2: Wading River Motel - Weekday

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	68	57	65	71	79
Midday	65	55	63	68	77
PM Peak	66	55	62	69	78
Pre Mid	61	52	58	64	73

Table D.2 -3
Site 3: Wading River Manor Road - Weekday

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	63	52	61	66	71
Midday	61	50	59	64	70
PM Peak	64	52	61	67	73
Pre Mid	59	48	58	62	68

Table D.2 -4
Site 4: Swan Lake Golf Club - Weekday

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	62	53	61	66	72
Midday	60	52	58	64	70
PM Peak	61	53	60	63	68
Pre Mid	57	47	55	60	67

Table D.2 -5
Site 5: River Road - Weekday

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	63	54	61	66	75
Midday	59	50	58	63	71
PM Peak	61	51	60	65	74
Pre Mid	56	44	53	59	68

Table D.2 -6
Site 6: Edwards Avenue - Weekday

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	67	58	65	70	79
Midday	65	56	63	69	80
PM Peak	68	59	66	72	81
Pre Mid	61	51	58	64	72

Table D.2 -7
Site 1: Route 25 (southside) - Weekend

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	64	55	62	67	74
Midday	61	52	59	64	72
PM Peak	65	55	62	68	75
Pre Mid	60	51	57	63	70

Table D.2 -8
Site 2: Wading River Motel - Weekend

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	64	54	61	67	74
Midday	64	54	60	67	75
PM Peak	66	56	63	70	77
Pre Mid	60	51	57	63	71

Table D.2 -9
Site 3: Wading River Manor Road - Weekend

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	62	53	60	65	71
Midday	59	50	58	63	70
PM Peak	61	50	59	64	70
Pre Mid	58	46	57	61	68

Table D.2 -10
Site 4: Swan Lake Golf Club - Weekend

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	61	52	60	64	70
Midday	60	51	58	63	71
PM Peak	59	51	59	63	71
Pre Mid	56	46	54	59	67

Table D.2 -11
Site 5: River Road - Weekend

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	61	53	59	64	74
Midday	60	51	58	63	72
PM Peak	62	51	60	66	75
Pre Mid	57	44	54	60	68

Table D.2 -12
Site 6: Edwards Avenue - Weekend

	L_{eq}	L_{90}	L_{50}	L_{10}	L_1
AM Peak	66	57	64	69	78
Midday	65	56	63	68	76
PM Peak	65	56	64	69	78
Pre Mid	60	49	58	63	71

D.3 PREDICTED NOISE LEVELS

TABLE 1

PREDICTED NOISE LEVELS
SITE 1
Weekday
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	91	137	143	53.4	55.2	1.8	55.4	0.2
1 AM - 2 AM	59	88	89	51.5	53.3	1.8	53.3	0.0
2 AM - 3 AM	35	52	53	49.3	51.0	1.7	51.1	0.1
3 AM - 4 AM	46	68	69	50.5	52.2	1.7	52.2	0.0
4 AM - 5 AM	61	201	211	51.7	56.9	5.2	57.1	0.2
5 AM - 6 AM	191	666	697	56.6	62.1	5.5	62.3	0.2
6 AM - 7 AM	590	1405	1477	63.7	67.5	3.8	67.7	0.2
7 AM - 8 AM	995	2033	2160	66.0	69.1	3.1	69.3	0.2
8 AM - 9 AM	1002	1993	2089	66.0	69.0	3.0	69.2	0.2
9 AM - 10 AM	781	1671	1751	64.9	68.2	3.3	68.4	0.2
10 AM - 11 AM	900	1790	1891	65.5	68.5	3.0	68.8	0.3
11 AM - 12 PM	1106	2209	2339	64.7	67.7	3.0	67.9	0.2
12 PM - 1 PM	1193	2339	2458	65.0	67.9	2.9	68.1	0.2
1 PM - 2 PM	1052	2068	2183	64.5	67.4	2.9	67.6	0.2
2 PM - 3 PM	1055	2084	2161	64.5	67.4	2.9	67.6	0.2
3 PM - 4 PM	974	2061	2134	64.1	67.4	3.3	67.5	0.1
4 PM - 5 PM	1193	2389	2507	68.3	71.3	3.0	71.5	0.2
5 PM - 6 PM	1115	2272	2415	68.0	71.1	3.1	71.4	0.3
6 PM - 7 PM	805	1747	1932	66.6	70.0	3.4	70.4	0.4
7 PM - 8 PM	581	1372	1538	65.2	68.9	3.7	69.4	0.5
8 PM - 9 PM	473	1209	1299	60.6	64.7	4.1	65.0	0.3
9 PM - 10 PM	414	801	879	60.0	62.9	2.9	63.3	0.4
10 PM - 11 PM	269	403	549	58.1	59.9	1.8	61.2	1.3
11 PM - 12 AM	180	270	462	56.4	58.1	1.7	60.5	2.4
Leq(24)				63.7	66.9	3.2	67.2	0.3
Ldn				66.1	69.4	3.3	69.8	0.4

TABLE 2

PREDICTED NOISE LEVELS
SITE 2
Weekday
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	40	59	122	54.5	56.2	1.7	59.3	3.1
1 AM - 2 AM	25	38	49	52.4	54.2	1.8	55.3	1.1
2 AM - 3 AM	15	23	30	50.2	52.1	1.9	53.2	1.1
3 AM - 4 AM	20	30	37	51.5	53.2	1.7	54.1	0.9
4 AM - 5 AM	26	140	244	52.6	59.9	7.3	62.3	2.4
5 AM - 6 AM	83	464	782	57.6	65.1	7.5	67.4	2.3
6 AM - 7 AM	256	845	1599	65.7	70.9	5.2	73.6	2.7
7 AM - 8 AM	433	1129	2447	68.0	72.1	4.1	75.5	3.4
8 AM - 9 AM	436	1093	2088	68.0	72.0	4.0	74.8	2.8
9 AM - 10 AM	339	969	1795	66.9	71.5	4.6	74.1	2.6
10 AM - 11 AM	391	987	2036	67.5	71.5	4.0	74.7	3.2
11 AM - 12 PM	481	1221	2569	64.7	68.7	4.0	71.9	3.2
12 PM - 1 PM	519	1278	2516	65.0	68.9	3.9	71.9	3.0
1 PM - 2 PM	457	1126	2326	64.4	68.4	4.0	71.5	3.1
2 PM - 3 PM	459	1129	1931	64.5	68.4	3.9	70.7	2.3
3 PM - 4 PM	423	1175	1942	64.1	68.5	4.4	70.7	2.2
4 PM - 5 PM	519	1318	2547	66.3	70.3	4.0	73.2	2.9
5 PM - 6 PM	485	1257	2756	66.0	70.1	4.1	73.5	3.4
6 PM - 7 PM	350	1005	2925	64.6	69.2	4.6	73.8	4.6
7 PM - 8 PM	253	819	2547	63.2	68.3	5.1	73.2	4.9
8 PM - 9 PM	206	748	1677	61.6	67.2	5.6	70.7	3.5
9 PM - 10 PM	180	430	1241	61.0	64.8	3.8	69.4	4.6
10 PM - 11 PM	117	175	1688	59.1	60.9	1.8	70.7	9.8
11 PM - 12 AM	78	117	2117	57.4	59.1	1.7	71.7	12.6
Leq(24)				64.0	68.3	4.3	71.7	3.4
Ldn				66.9	71.5	4.6	75.7	4.2

TABLE 3

PREDICTED NOISE LEVELS
SITE 3
Weekday
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	36	55	67	52.4	54.2	1.8	55.1	0.9
1 AM - 2 AM	23	35	37	50.4	52.3	1.9	52.5	0.2
2 AM - 3 AM	14	21	22	48.3	50.0	1.7	50.2	0.2
3 AM - 4 AM	18	27	29	49.4	51.1	1.7	51.4	0.3
4 AM - 5 AM	24	76	96	50.6	55.6	5.0	56.6	1.0
5 AM - 6 AM	76	194	255	55.6	59.7	4.1	60.9	1.2
6 AM - 7 AM	235	473	618	60.7	63.7	3.0	64.9	1.2
7 AM - 8 AM	397	716	969	63.0	65.5	2.5	66.8	1.3
8 AM - 9 AM	400	700	891	63.0	65.4	2.4	66.5	1.1
9 AM - 10 AM	312	567	726	61.9	64.5	2.6	65.6	1.1
10 AM - 11 AM	359	639	840	62.5	65.0	2.5	66.2	1.2
11 AM - 12 PM	441	782	1041	60.7	63.2	2.5	64.4	1.2
12 PM - 1 PM	476	854	1092	61.0	63.5	2.5	64.6	1.1
1 PM - 2 PM	420	750	981	60.5	63.0	2.5	64.1	1.1
2 PM - 3 PM	421	752	906	60.5	63.0	2.5	63.8	0.8
3 PM - 4 PM	389	723	870	60.1	62.8	2.7	63.6	0.8
4 PM - 5 PM	476	854	1090	64.3	66.8	2.5	67.9	1.1
5 PM - 6 PM	445	807	1094	64.0	66.6	2.6	67.9	1.3
6 PM - 7 PM	321	582	951	62.6	65.2	2.6	67.3	2.1
7 PM - 8 PM	232	426	760	61.2	63.8	2.6	66.3	2.5
8 PM - 9 PM	189	323	502	59.6	61.9	2.3	63.8	1.9
9 PM - 10 PM	165	248	404	59.0	60.8	1.8	62.9	2.1
10 PM - 11 PM	107	161	452	57.1	58.9	1.8	63.4	4.5
11 PM - 12 AM	72	108	492	55.4	57.2	1.8	63.7	6.5
Leq(24)				60.3	62.9	2.6	64.4	1.5
Ldn				63.4	66.1	2.7	68.2	2.1

TABLE 4

PREDICTED NOISE LEVELS
SITE 4
Weekday
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	5	8	32	50.0	52.1	2.1	58.1	6.0
1 AM - 2 AM	3	5	9	47.8	50.0	2.2	52.6	2.6
2 AM - 3 AM	2	3	6	46.0	47.8	1.8	50.8	3.0
3 AM - 4 AM	3	4	7	47.8	49.0	1.2	51.5	2.5
4 AM - 5 AM	4	5	45	49.0	50.0	1.0	59.6	9.6
5 AM - 6 AM	11	17	139	53.4	55.3	1.9	64.5	9.2
6 AM - 7 AM	35	53	343	59.7	61.5	1.8	69.6	8.1
7 AM - 8 AM	59	89	596	61.9	63.7	1.8	72.0	8.3
8 AM - 9 AM	60	90	472	62.0	63.8	1.8	71.0	7.2
9 AM - 10 AM	47	70	368	60.9	62.7	1.8	69.9	7.2
10 AM - 11 AM	54	80	484	61.5	63.2	1.7	71.1	7.9
11 AM - 12 PM	65	99	617	59.6	61.4	1.8	69.4	8.0
12 PM - 1 PM	71	107	583	60.0	61.8	1.8	69.1	7.3
1 PM - 2 PM	63	94	555	59.5	61.2	1.7	68.9	7.7
2 PM - 3 PM	63	94	403	59.5	61.2	1.7	67.5	6.3
3 PM - 4 PM	58	87	382	59.1	60.9	1.8	67.3	6.4
4 PM - 5 PM	71	107	579	61.3	63.1	1.8	70.4	7.3
5 PM - 6 PM	66	100	672	61.0	62.8	1.8	71.1	8.3
6 PM - 7 PM	48	72	810	59.6	61.4	1.8	71.9	10.5
7 PM - 8 PM	35	52	717	58.2	60.0	1.8	71.4	11.4
8 PM - 9 PM	26	42	399	57.2	59.3	2.1	69.0	9.7
9 PM - 10 PM	25	37	349	57.0	58.7	1.7	68.4	9.7
10 PM - 11 PM	16	24	606	55.1	56.8	1.7	70.8	14.0
11 PM - 12 AM	11	16	785	53.4	55.1	1.7	72.0	16.9
Leq(24)				58.6	60.4	1.8	69.1	8.7
Ldn				61.7	63.5	1.8	73.8	10.3

TABLE 5

PREDICTED NOISE LEVELS
SITE 5
Weekday
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	6	8	26	49.8	51.1	1.3	56.2	5.1
1 AM - 2 AM	3	5	8	46.8	49.0	2.2	51.1	2.1
2 AM - 3 AM	2	3	5	45.0	46.8	1.8	49.0	2.2
3 AM - 4 AM	3	4	6	46.8	48.0	1.2	49.8	1.8
4 AM - 5 AM	4	5	36	48.0	49.0	1.0	57.6	8.6
5 AM - 6 AM	11	17	109	52.4	54.3	1.9	62.4	8.1
6 AM - 7 AM	35	53	270	60.7	62.5	1.8	69.5	7.0
7 AM - 8 AM	59	89	469	62.9	64.7	1.8	71.9	7.2
8 AM - 9 AM	60	90	376	63.0	64.8	1.8	71.0	6.2
9 AM - 10 AM	47	70	308	61.9	63.7	1.8	70.1	6.4
10 AM - 11 AM	54	80	383	62.5	64.2	1.7	71.1	6.9
11 AM - 12 PM	66	99	488	58.7	60.4	1.7	67.4	7.0
12 PM - 1 PM	71	107	464	59.0	60.8	1.8	67.2	6.4
1 PM - 2 PM	63	94	440	58.5	60.2	1.7	66.9	6.7
2 PM - 3 PM	63	94	326	58.5	60.2	1.7	65.6	5.4
3 PM - 4 PM	58	87	308	58.1	59.9	1.8	65.4	5.5
4 PM - 5 PM	71	107	461	61.3	63.1	1.8	69.4	6.3
5 PM - 6 PM	66	100	529	61.0	62.8	1.8	70.0	7.2
6 PM - 7 PM	48	72	626	59.6	61.4	1.8	70.8	9.4
7 PM - 8 PM	35	52	551	58.2	60.0	1.8	70.2	10.2
8 PM - 9 PM	28	42	310	56.5	58.3	1.8	66.9	8.6
9 PM - 10 PM	25	37	271	56.0	57.7	1.7	66.4	8.7
10 PM - 11 PM	16	24	460	54.1	55.8	1.7	68.6	12.8
11 PM - 12 AM	11	16	593	52.4	54.1	1.7	69.8	15.7
Leq(24)				58.8	60.5	1.7	68.0	7.5
Ldn				61.8	63.6	1.8	72.3	8.7

TABLE 6

PREDICTED NOISE LEVELS
SITE 6
Weekday
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	54	82	85	54.4	56.2	1.8	56.4	0.2
1 AM - 2 AM	35	52	53	52.5	54.2	1.7	54.3	0.1
2 AM - 3 AM	21	31	31	50.3	52.0	1.7	52.0	0.0
3 AM - 4 AM	27	41	41	51.4	53.2	1.8	53.2	0.0
4 AM - 5 AM	36	94	100	52.6	56.8	4.2	57.1	0.3
5 AM - 6 AM	114	251	269	57.6	61.1	3.5	61.4	0.3
6 AM - 7 AM	352	648	691	64.7	67.3	2.6	67.6	0.3
7 AM - 8 AM	594	1011	1087	67.0	69.3	2.3	69.6	0.3
8 AM - 9 AM	598	997	1054	67.0	69.2	2.2	69.5	0.3
9 AM - 10 AM	466	799	846	65.9	68.3	2.4	68.5	0.2
10 AM - 11 AM	537	905	966	66.5	68.8	2.3	69.1	0.3
11 AM - 12 PM	660	1110	1187	64.7	66.9	2.2	67.2	0.3
12 PM - 1 PM	712	1207	1279	65.0	67.3	2.3	67.5	0.2
1 PM - 2 PM	527	1061	1130	63.7	66.7	3.0	67.0	0.3
2 PM - 3 PM	639	1065	1111	64.5	66.7	2.2	66.9	0.2
3 PM - 4 PM	581	1011	1056	64.1	66.5	2.4	66.7	0.2
4 PM - 5 PM	712	1207	1278	68.3	70.6	2.3	70.8	0.2
5 PM - 6 PM	665	1137	1223	68.0	70.3	2.3	70.6	0.3
6 PM - 7 PM	480	820	931	66.6	68.9	2.3	69.5	0.6
7 PM - 8 PM	347	600	700	65.2	67.6	2.4	68.2	0.6
8 PM - 9 PM	302	463	517	61.9	63.7	1.8	64.2	0.5
9 PM - 10 PM	247	371	417	61.0	62.8	1.8	63.3	0.5
10 PM - 11 PM	160	241	328	59.1	60.9	1.8	62.2	1.3
11 PM - 12 AM	107	151	276	57.4	58.9	1.5	61.5	2.6
Leq(24)				64.1	66.4	2.3	66.8	0.4
Ldn				66.8	69.2	2.4	69.6	0.4

TABLE 7

PREDICTED NOISE LEVELS
SITE 1
Weekend
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	135	202	214	56.6	58.4	1.8	58.6	0.2
1 AM - 2 AM	82	122	123	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	75	113	114	54.1	55.8	1.7	55.9	0.1
3 AM - 4 AM	50	75	76	52.3	54.1	1.8	54.1	0.0
4 AM - 5 AM	66	209	216	53.5	58.5	5.0	58.6	0.1
5 AM - 6 AM	160	620	634	57.3	63.2	5.9	63.3	0.1
6 AM - 7 AM	289	953	964	61.1	66.3	5.2	66.3	0.0
7 AM - 8 AM	470	1246	1296	63.2	67.4	4.2	67.6	0.2
8 AM - 9 AM	564	1337	1399	64.0	67.7	3.7	67.9	0.2
9 AM - 10 AM	750	1624	1708	65.2	68.6	3.4	68.8	0.2
10 AM - 11 AM	844	1705	1839	65.8	68.8	3.0	69.1	0.3
11 AM - 12 PM	825	1787	1955	61.1	64.4	3.3	64.8	0.4
12 PM - 1 PM	809	1764	1908	61.0	64.4	3.4	64.7	0.3
1 PM - 2 PM	856	1774	1913	61.2	64.4	3.2	64.7	0.3
2 PM - 3 PM	865	1798	1924	61.3	64.5	3.2	64.8	0.3
3 PM - 4 PM	750	1724	1837	60.7	64.3	3.6	64.6	0.3
4 PM - 5 PM	790	1785	1903	65.9	69.5	3.6	69.7	0.2
5 PM - 6 PM	640	1560	1685	65.0	68.9	3.9	69.2	0.3
6 PM - 7 PM	480	1250	1438	63.8	67.9	4.1	68.5	0.6
7 PM - 8 PM	436	1154	1326	63.3	67.6	4.3	68.2	0.6
8 PM - 9 PM	298	947	1043	60.0	65.1	5.1	65.5	0.4
9 PM - 10 PM	295	622	700	60.0	63.2	3.2	63.8	0.6
10 PM - 11 PM	260	390	542	59.5	61.2	1.7	62.6	1.4
11 PM - 12 AM	226	339	538	58.8	60.6	1.8	62.6	2.0
Leq(24)				61.8	65.5	3.7	65.9	0.4
Ldn				65.2	68.9	3.7	69.3	0.4

TABLE 8

PREDICTED NOISE LEVELS
SITE 2
Weekend
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	95	142	261	56.6	58.4	1.8	61.0	2.6
1 AM - 2 AM	57	86	96	54.4	56.2	1.8	56.7	0.5
2 AM - 3 AM	53	79	86	54.1	55.8	1.7	56.2	0.4
3 AM - 4 AM	35	53	63	52.3	54.1	1.8	54.8	0.7
4 AM - 5 AM	45	169	249	53.4	59.1	5.7	60.8	1.7
5 AM - 6 AM	112	508	654	57.3	63.9	6.6	65.0	1.1
6 AM - 7 AM	202	764	1083	61.1	66.9	5.8	68.4	1.5
7 AM - 8 AM	330	975	1518	63.2	67.9	4.7	69.8	1.9
8 AM - 9 AM	396	1034	1680	64.0	68.2	4.2	70.3	2.1
9 AM - 10 AM	526	1249	2114	65.2	69.0	3.8	71.3	2.3
10 AM - 11 AM	592	1288	2763	65.7	69.1	3.4	72.4	3.3
11 AM - 12 PM	578	1368	3115	64.1	67.8	3.7	71.4	3.6
12 PM - 1 PM	567	1351	2848	64.0	67.8	3.8	71.0	3.2
1 PM - 2 PM	600	1341	2780	64.2	67.7	3.5	70.9	3.2
2 PM - 3 PM	608	1351	2662	64.3	67.8	3.5	70.7	2.9
3 PM - 4 PM	526	1329	2496	63.7	67.7	4.0	70.4	2.7
4 PM - 5 PM	554	1371	2596	65.9	69.8	3.9	72.6	2.8
5 PM - 6 PM	449	1213	2516	65.0	69.3	4.3	72.5	3.2
6 PM - 7 PM	337	985	2841	63.8	68.4	4.6	73.0	4.6
7 PM - 8 PM	306	899	2686	63.3	68.0	4.7	72.8	4.8
8 PM - 9 PM	209	753	1750	60.0	65.6	5.6	69.3	3.7
9 PM - 10 PM	207	470	1283	60.0	63.6	3.6	67.9	4.3
10 PM - 11 PM	183	274	1851	59.5	61.2	1.7	69.5	8.3
11 PM - 12 AM	158	238	2309	58.8	60.6	1.8	70.5	9.9
Leq(24)				62.5	66.5	4.0	69.9	3.4
Ldn				65.6	69.6	4.0	73.5	3.9

TABLE 9

PREDICTED NOISE LEVELS
SITE 3
Weekend
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	33	50	73	54.6	56.4	1.8	58.0	1.6
1 AM - 2 AM	20	30	32	52.4	54.1	1.7	54.4	0.3
2 AM - 3 AM	19	28	29	52.2	53.8	1.6	54.0	0.2
3 AM - 4 AM	12	19	21	50.2	52.2	2.0	52.6	0.4
4 AM - 5 AM	16	64	80	51.4	57.4	6.0	58.4	1.0
5 AM - 6 AM	40	139	167	55.4	60.8	5.4	61.6	0.8
6 AM - 7 AM	71	227	289	59.1	64.1	5.0	65.1	1.0
7 AM - 8 AM	116	295	399	61.2	65.2	4.0	66.5	1.3
8 AM - 9 AM	140	310	434	62.0	65.5	3.5	66.9	1.4
9 AM - 10 AM	186	378	545	63.2	66.3	3.1	67.9	1.6
10 AM - 11 AM	209	413	680	63.7	66.7	3.0	68.9	2.2
11 AM - 12 PM	204	426	762	59.1	62.3	3.2	64.8	2.5
12 PM - 1 PM	200	440	728	59.0	62.4	3.4	64.6	2.2
1 PM - 2 PM	212	438	715	59.3	62.4	3.1	64.5	2.1
2 PM - 3 PM	214	441	694	59.3	62.4	3.1	64.4	2.0
3 PM - 4 PM	185	418	643	58.7	62.2	3.5	64.1	1.9
4 PM - 5 PM	196	433	669	61.9	65.4	3.5	67.3	1.9
5 PM - 6 PM	158	378	628	61.0	64.8	3.8	67.0	2.2
6 PM - 7 PM	119	278	635	59.8	63.5	3.7	67.0	3.5
7 PM - 8 PM	108	242	586	59.3	62.9	3.6	66.7	3.8
8 PM - 9 PM	74	151	342	58.1	61.2	3.1	64.7	3.5
9 PM - 10 PM	73	109	266	58.0	59.7	1.7	63.6	3.9
10 PM - 11 PM	64	97	400	57.4	59.2	1.8	65.4	6.2
11 PM - 12 AM	56	84	482	56.8	58.6	1.8	66.2	7.6
Leq(24)				59.3	62.7	3.4	65.1	2.4
Ldn				63.0	66.5	3.5	69.3	2.8

TABLE 10

PREDICTED NOISE LEVELS
SITE 4
Weekend
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	10	15	61	52.8	54.5	1.7	60.6	6.1
1 AM - 2 AM	6	9	13	50.6	52.3	1.7	53.9	1.6
2 AM - 3 AM	5	8	11	49.8	51.8	2.0	53.2	1.4
3 AM - 4 AM	4	5	9	48.8	49.8	1.0	52.3	2.5
4 AM - 5 AM	5	7	20	49.8	51.2	1.4	58.6	7.4
5 AM - 6 AM	12	17	73	53.6	55.1	1.5	61.4	6.3
6 AM - 7 AM	21	31	154	58.1	59.8	1.7	66.7	6.9
7 AM - 8 AM	34	51	250	60.2	61.9	1.7	68.9	7.0
8 AM - 9 AM	41	61	310	61.0	62.7	1.7	69.8	7.1
9 AM - 10 AM	54	81	414	62.2	64.0	1.8	71.0	7.0
10 AM - 11 AM	61	91	624	62.7	64.5	1.8	72.8	8.3
11 AM - 12 PM	59	89	761	60.1	61.9	1.8	71.2	9.3
12 PM - 1 PM	58	87	663	60.0	61.8	1.8	70.6	8.8
1 PM - 2 PM	62	93	646	60.3	62.1	1.8	70.5	8.4
2 PM - 3 PM	62	94	598	60.3	62.1	1.8	70.1	8.0
3 PM - 4 PM	54	81	530	59.7	61.5	1.8	69.6	8.1
4 PM - 5 PM	57	85	556	59.9	61.7	1.8	69.8	8.1
5 PM - 6 PM	46	69	570	59.0	60.8	1.8	69.9	9.1
6 PM - 7 PM	35	52	766	57.8	59.5	1.7	71.2	11.7
7 PM - 8 PM	31	47	735	57.3	59.1	1.8	71.0	11.9
8 PM - 9 PM	21	32	416	56.0	57.8	1.8	69.0	11.2
9 PM - 10 PM	21	32	345	56.0	57.8	1.8	68.2	10.4
10 PM - 11 PM	19	28	635	55.6	57.2	1.6	70.8	13.6
11 PM - 12 AM	16	24	821	54.8	56.6	1.8	71.9	15.3
Leq(24)				58.4	60.2	1.8	69.2	9.0
Ldn				61.7	63.4	1.7	73.4	10.0

TABLE 11

PREDICTED NOISE LEVELS
SITE 5
Weekend
Enterprise Park Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	10	15	49	53.8	55.5	1.7	60.7	5.2
1 AM - 2 AM	6	9	12	51.6	53.3	1.7	54.6	1.3
2 AM - 3 AM	5	8	10	50.8	52.8	2.0	53.8	1.0
3 AM - 4 AM	4	5	8	49.8	50.8	1.0	52.8	2.0
4 AM - 5 AM	5	7	30	50.8	52.2	1.4	58.5	6.3
5 AM - 6 AM	12	17	59	54.6	56.1	1.5	61.5	5.4
6 AM - 7 AM	21	31	123	58.1	59.8	1.7	65.8	6.0
7 AM - 8 AM	34	51	208	60.2	61.9	1.7	68.1	6.2
8 AM - 9 AM	41	61	247	61.0	62.7	1.7	68.8	6.1
9 AM - 10 AM	54	81	331	62.2	64.0	1.8	70.1	6.1
10 AM - 11 AM	61	91	491	62.7	64.5	1.8	71.8	7.3
11 AM - 12 PM	59	89	393	60.1	61.9	1.8	70.1	8.2
12 PM - 1 PM	58	87	519	60.0	61.8	1.8	69.5	7.7
1 PM - 2 PM	62	93	508	60.3	62.1	1.8	69.4	7.3
2 PM - 3 PM	62	94	472	60.3	62.1	1.8	69.1	7.0
3 PM - 4 PM	54	81	418	59.7	61.5	1.8	68.6	7.1
4 PM - 5 PM	57	85	439	62.9	64.7	1.8	71.8	7.1
5 PM - 6 PM	46	69	445	62.0	63.8	1.8	71.9	8.1
6 PM - 7 PM	35	52	587	60.8	62.5	1.7	73.1	10.6
7 PM - 8 PM	31	47	563	60.3	62.1	1.8	72.9	10.8
8 PM - 9 PM	21	32	320	57.0	58.8	1.8	68.8	10.0
9 PM - 10 PM	21	32	266	57.0	58.8	1.8	68.0	9.2
10 PM - 11 PM	19	28	483	56.6	58.2	1.6	70.6	12.4
11 PM - 12 AM	16	24	622	55.8	57.6	1.8	71.7	14.1
Leq(24)				59.3	61.0	1.7	69.2	8.2
Ldn				62.5	64.2	1.7	73.3	9.1

TABLE 12

PREDICTED NOISE LEVELS
SITE 6
Weekend
Enterprise Park Alternative

	Traffic Volumes			NOISE LEVELS (dBA)				
Hour	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	69	104	111	56.6	58.4	1.8	58.7	0.3
1 AM - 2 AM	42	63	63	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	39	58	58	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	26	39	39	52.4	54.1	1.7	54.1	0.0
4 AM - 5 AM	34	91	95	53.5	57.8	4.3	58.0	0.2
5 AM - 6 AM	82	203	212	57.3	61.3	4.0	61.5	0.2
6 AM - 7 AM	146	342	361	63.0	66.7	3.7	67.0	0.3
7 AM - 8 AM	241	482	514	65.2	68.2	3.0	68.5	0.3
8 AM - 9 AM	290	535	572	66.0	68.7	2.7	68.9	0.2
9 AM - 10 AM	385	677	727	67.2	69.7	2.5	70.0	0.3
10 AM - 11 AM	433	749	829	67.7	70.1	2.4	70.6	0.5
11 AM - 12 PM	423	755	856	65.1	67.6	2.5	68.1	0.5
12 PM - 1 PM	415	763	849	65.0	67.6	2.6	68.1	0.5
1 PM - 2 PM	439	779	862	65.2	67.7	2.5	68.2	0.5
2 PM - 3 PM	444	785	862	65.3	67.8	2.5	68.2	0.4
3 PM - 4 PM	365	717	784	64.4	67.4	3.0	67.8	0.4
4 PM - 5 PM	406	748	819	65.9	68.6	2.7	69.0	0.4
5 PM - 6 PM	328	633	708	65.0	67.9	2.9	68.3	0.4
6 PM - 7 PM	248	469	577	63.8	66.6	2.8	67.5	0.9
7 PM - 8 PM	224	416	519	63.3	66.0	2.7	67.0	1.0
8 PM - 9 PM	153	269	327	60.1	62.5	2.4	63.4	0.9
9 PM - 10 PM	151	227	274	60.0	61.8	1.8	62.6	0.8
10 PM - 11 PM	134	200	291	59.5	61.2	1.7	62.8	1.6
11 PM - 12 AM	116	174	293	58.9	60.6	1.7	62.9	2.3
Leq(24)				63.5	66.1	2.6	66.6	0.5
Ldn				66.4	69.1	2.7	69.7	0.6

TABLE 13

PREDICTED NOISE LEVELS
SITE 1
Weekday
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	91	137	147	53.4	55.2	1.8	55.5	0.3
1 AM - 2 AM	59	88	88	51.5	53.3	1.8	53.3	0.0
2 AM - 3 AM	35	52	52	49.3	51.0	1.7	51.0	0.0
3 AM - 4 AM	46	68	68	50.5	52.2	1.7	52.2	0.0
4 AM - 5 AM	61	201	209	51.7	56.9	5.2	57.0	0.1
5 AM - 6 AM	191	666	687	56.6	62.1	5.5	62.2	0.1
6 AM - 7 AM	590	1405	1457	63.7	67.5	3.8	67.6	0.1
7 AM - 8 AM	995	2033	2123	66.0	69.1	3.1	69.3	0.2
8 AM - 9 AM	1002	1993	2071	66.0	69.0	3.0	69.2	0.2
9 AM - 10 AM	781	1671	1752	64.9	68.2	3.3	68.4	0.2
10 AM - 11 AM	900	1790	1911	65.5	68.5	3.0	68.8	0.3
11 AM - 12 PM	1106	2209	2392	64.7	67.7	3.0	68.0	0.3
12 PM - 1 PM	1193	2339	2501	65.0	67.9	2.9	68.2	0.3
1 PM - 2 PM	1052	2068	2193	64.5	67.4	2.9	67.6	0.2
2 PM - 3 PM	1055	2084	2202	64.5	67.4	2.9	67.7	0.3
3 PM - 4 PM	974	2061	2178	64.1	67.4	3.3	67.6	0.2
4 PM - 5 PM	1193	2389	2524	68.3	71.3	3.0	71.5	0.2
5 PM - 6 PM	1115	2272	2433	68.0	71.1	3.1	71.4	0.3
6 PM - 7 PM	805	1747	1948	66.6	70.0	3.4	70.4	0.4
7 PM - 8 PM	581	1372	1553	65.2	68.9	3.7	69.4	0.5
8 PM - 9 PM	473	1209	1309	60.6	64.7	4.1	65.0	0.3
9 PM - 10 PM	414	801	873	60.0	62.9	2.9	63.2	0.3
10 PM - 11 PM	269	403	543	58.1	59.9	1.8	61.2	1.3
11 PM - 12 AM	180	270	463	56.4	58.1	1.7	60.5	2.4
Leq(24)				63.7	66.9	3.2	67.2	0.3
Ldn				66.1	69.4	3.3	69.8	0.4

TABLE 14

PREDICTED NOISE LEVELS
SITE 2
Weekday
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	40	59	163	54.5	56.2	1.7	60.6	4.4
1 AM - 2 AM	25	38	38	52.4	54.2	1.8	54.2	0.0
2 AM - 3 AM	15	23	23	50.2	52.1	1.9	52.1	0.0
3 AM - 4 AM	20	30	30	51.5	53.2	1.7	53.2	0.0
4 AM - 5 AM	26	140	220	52.6	59.9	7.3	61.9	2.0
5 AM - 6 AM	83	464	680	57.6	65.1	7.5	66.8	1.7
6 AM - 7 AM	256	845	1389	65.7	70.9	5.2	73.0	2.1
7 AM - 8 AM	433	1129	2063	68.0	72.1	4.1	74.8	2.7
8 AM - 9 AM	436	1093	1902	68.0	72.0	4.0	74.4	2.4
9 AM - 10 AM	339	969	1814	66.9	71.5	4.6	74.2	2.7
10 AM - 11 AM	391	987	2247	67.5	71.5	4.0	75.1	3.6
11 AM - 12 PM	481	1221	3124	64.7	68.7	4.0	72.8	4.1
12 PM - 1 PM	519	1278	2963	65.0	68.9	3.9	72.6	3.7
1 PM - 2 PM	457	1126	2425	64.4	68.4	4.0	71.7	3.3
2 PM - 3 PM	459	1129	2354	64.5	68.4	3.9	71.6	3.2
3 PM - 4 PM	423	1175	2395	64.1	68.5	4.4	71.6	3.1
4 PM - 5 PM	519	1318	2718	66.3	70.3	4.0	73.5	3.2
5 PM - 6 PM	485	1257	2935	66.0	70.1	4.1	73.8	3.7
6 PM - 7 PM	350	1005	3100	64.6	69.2	4.6	74.1	4.9
7 PM - 8 PM	253	819	2703	63.2	68.3	5.1	73.5	5.2
8 PM - 9 PM	206	748	1783	61.6	67.2	5.6	71.0	3.8
9 PM - 10 PM	180	430	1179	61.0	64.8	3.8	69.2	4.4
10 PM - 11 PM	117	175	1630	59.1	60.9	1.8	70.6	9.7
11 PM - 12 AM	78	117	2120	57.4	59.1	1.7	71.7	12.6
Leq(24)				64.0	68.3	4.3	71.8	3.5
Ldn				66.9	71.5	4.6	75.5	4.0

TABLE 15

PREDICTED NOISE LEVELS
SITE 3
Weekday
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	36	55	75	52.4	54.2	1.8	55.6	1.4
1 AM - 2 AM	23	35	35	50.4	52.3	1.9	52.3	0.0
2 AM - 3 AM	14	21	21	48.3	50.0	1.7	50.0	0.0
3 AM - 4 AM	18	27	27	49.4	51.1	1.7	51.1	0.0
4 AM - 5 AM	24	76	92	50.6	55.6	5.0	56.5	0.9
5 AM - 6 AM	76	194	236	55.6	59.7	4.1	60.6	0.9
6 AM - 7 AM	235	473	578	60.7	63.7	3.0	64.6	0.9
7 AM - 8 AM	397	716	895	63.0	65.5	2.5	66.5	1.0
8 AM - 9 AM	400	700	855	63.0	65.4	2.4	66.3	0.9
9 AM - 10 AM	312	567	730	61.9	64.5	2.6	65.6	1.1
10 AM - 11 AM	359	639	881	62.5	65.0	2.5	66.4	1.4
11 AM - 12 PM	441	782	1148	60.7	63.2	2.5	64.8	1.6
12 PM - 1 PM	476	854	1178	61.0	63.5	2.5	64.9	1.4
1 PM - 2 PM	420	750	1000	60.5	63.0	2.5	64.2	1.2
2 PM - 3 PM	421	752	988	60.5	63.0	2.5	64.2	1.2
3 PM - 4 PM	389	723	957	60.1	62.8	2.7	64.0	1.2
4 PM - 5 PM	476	854	1123	64.3	66.8	2.5	68.0	1.2
5 PM - 6 PM	445	807	1128	64.0	66.6	2.6	68.0	1.4
6 PM - 7 PM	321	582	984	62.6	65.2	2.6	67.4	2.2
7 PM - 8 PM	232	426	790	61.2	63.8	2.6	66.5	2.7
8 PM - 9 PM	189	323	522	59.6	61.9	2.3	64.0	2.1
9 PM - 10 PM	165	248	392	59.0	60.8	1.8	62.8	2.0
10 PM - 11 PM	107	161	441	57.1	58.9	1.8	63.3	4.4
11 PM - 12 AM	72	108	493	55.4	57.2	1.8	63.8	6.6
Leq(24)				60.3	62.9	2.6	64.5	1.6
Ldn				63.4	66.1	2.7	68.1	2.0

TABLE 16

PREDICTED NOISE LEVELS
SITE 4
Weekday
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	5	8	48	50.0	52.1	2.1	59.8	7.7
1 AM - 2 AM	3	5	5	47.8	50.0	2.2	50.0	0.0
2 AM - 3 AM	2	3	3	46.0	47.8	1.8	47.8	0.0
3 AM - 4 AM	3	4	4	47.8	49.0	1.2	49.0	0.0
4 AM - 5 AM	4	5	36	49.0	50.0	1.0	58.6	8.6
5 AM - 6 AM	11	17	100	53.4	55.3	1.9	63.0	7.7
6 AM - 7 AM	35	53	262	59.7	61.5	1.8	68.4	6.9
7 AM - 8 AM	59	89	448	61.9	63.7	1.8	70.7	7.0
8 AM - 9 AM	60	90	401	62.0	63.8	1.8	70.2	6.4
9 AM - 10 AM	47	70	395	60.9	62.7	1.8	70.2	7.5
10 AM - 11 AM	54	80	565	61.5	63.2	1.7	71.7	8.5
11 AM - 12 PM	65	99	831	59.6	61.4	1.8	70.7	9.3
12 PM - 1 PM	71	107	755	60.0	61.8	1.8	70.3	8.5
1 PM - 2 PM	63	94	594	59.5	61.2	1.7	69.2	8.0
2 PM - 3 PM	63	94	566	59.5	61.2	1.7	69.0	7.8
3 PM - 4 PM	58	87	556	59.1	60.9	1.8	68.9	8.0
4 PM - 5 PM	71	107	645	61.3	63.1	1.8	70.9	7.8
5 PM - 6 PM	66	100	741	61.0	62.8	1.8	71.5	8.7
6 PM - 7 PM	48	72	878	59.6	61.4	1.8	72.2	10.8
7 PM - 8 PM	35	52	777	58.2	60.0	1.8	71.7	11.7
8 PM - 9 PM	26	42	440	57.2	59.3	2.1	69.5	10.2
9 PM - 10 PM	25	37	325	57.0	58.7	1.7	68.1	9.4
10 PM - 11 PM	16	24	583	55.1	56.8	1.7	70.7	13.9
11 PM - 12 AM	11	16	786	53.4	55.1	1.7	72.0	16.9
Leq(24)				58.6	60.4	1.8	69.3	8.9
Ldn				61.7	63.5	1.8	73.6	10.1

TABLE 17

PREDICTED NOISE LEVELS
SITE 5
Weekday
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	6	8	38	49.8	51.1	1.3	57.8	6.7
1 AM - 2 AM	3	5	5	46.8	49.0	2.2	49.0	0.0
2 AM - 3 AM	2	3	3	45.0	46.8	1.8	46.8	0.0
3 AM - 4 AM	3	4	4	46.8	48.0	1.2	48.0	0.0
4 AM - 5 AM	4	5	29	48.0	49.0	1.0	56.6	7.6
5 AM - 6 AM	11	17	79	52.4	54.3	1.9	61.0	6.7
6 AM - 7 AM	35	53	210	60.7	62.5	1.8	68.4	5.9
7 AM - 8 AM	59	89	358	62.9	64.7	1.8	70.8	6.1
8 AM - 9 AM	60	90	323	63.0	64.8	1.8	70.3	5.5
9 AM - 10 AM	47	70	314	61.9	63.7	1.8	70.2	6.5
10 AM - 11 AM	54	80	444	62.5	64.2	1.7	71.7	7.5
11 AM - 12 PM	66	99	648	58.7	60.4	1.7	68.6	8.2
12 PM - 1 PM	71	107	593	59.0	60.8	1.8	68.2	7.4
1 PM - 2 PM	63	94	469	58.5	60.2	1.7	67.2	7.0
2 PM - 3 PM	63	94	448	58.5	60.2	1.7	67.0	6.8
3 PM - 4 PM	58	87	439	58.1	59.9	1.8	66.9	7.0
4 PM - 5 PM	71	107	510	61.3	63.1	1.8	69.9	6.8
5 PM - 6 PM	66	100	581	61.0	62.8	1.8	70.4	7.6
6 PM - 7 PM	48	72	676	59.6	61.4	1.8	71.1	9.7
7 PM - 8 PM	35	52	596	58.2	60.0	1.8	70.6	10.6
8 PM - 9 PM	28	42	341	56.5	58.3	1.8	67.3	9.0
9 PM - 10 PM	25	37	253	56.0	57.7	1.7	66.1	8.4
10 PM - 11 PM	16	24	444	54.1	55.8	1.7	68.5	12.7
11 PM - 12 AM	11	16	594	52.4	54.1	1.7	69.8	15.7
Leq(24)				58.8	60.5	1.7	68.2	7.7
Ldn				61.8	63.6	1.8	72.1	8.5

TABLE 18

PREDICTED NOISE LEVELS
SITE 6
Weekday
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	54	82	88	54.4	56.2	1.8	56.5	0.3
1 AM - 2 AM	35	52	52	52.5	54.2	1.7	54.2	0.0
2 AM - 3 AM	21	31	31	50.3	52.0	1.7	52.0	0.0
3 AM - 4 AM	27	41	41	51.4	53.2	1.8	53.2	0.0
4 AM - 5 AM	36	94	39	52.6	56.8	4.2	57.0	0.2
5 AM - 6 AM	114	251	263	57.6	61.1	3.5	61.3	0.2
6 AM - 7 AM	352	648	679	64.7	67.3	2.6	67.6	0.3
7 AM - 8 AM	594	1011	1065	67.0	69.3	2.3	69.5	0.2
8 AM - 9 AM	598	997	1043	67.0	69.2	2.2	69.4	0.2
9 AM - 10 AM	466	799	847	65.9	68.3	2.4	68.5	0.2
10 AM - 11 AM	537	905	978	66.5	68.8	2.3	69.1	0.3
11 AM - 12 PM	660	1110	1219	64.7	66.9	2.2	67.3	0.4
12 PM - 1 PM	712	1207	1305	65.0	67.3	2.3	67.6	0.3
1 PM - 2 PM	527	1061	1136	63.7	66.7	3.0	67.0	0.3
2 PM - 3 PM	639	1065	1136	64.5	66.7	2.2	67.0	0.3
3 PM - 4 PM	581	1011	1082	64.1	66.5	2.4	66.8	0.3
4 PM - 5 PM	712	1207	1288	68.3	70.6	2.3	70.9	0.3
5 PM - 6 PM	665	1137	1234	68.0	70.3	2.3	70.7	0.4
6 PM - 7 PM	480	820	941	66.6	68.9	2.3	69.5	0.6
7 PM - 8 PM	347	600	709	65.2	67.6	2.4	68.3	0.7
8 PM - 9 PM	302	463	523	61.9	63.7	1.8	64.3	0.6
9 PM - 10 PM	247	371	414	61.0	62.8	1.8	63.2	0.4
10 PM - 11 PM	160	241	325	59.1	60.9	1.8	62.2	1.3
11 PM - 12 AM	107	15[illegible]	277	57.4	58.9	1.5	61.5	2.6
Leq(24)				64.1	66.4	2.3	66.8	0.4
Ldn				66.8	69.2	2.4	69.6	0.4

TABLE 19

PREDICTED NOISE LEVELS
SITE 1
Weekend
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	135	202	212	56.6	58.4	1.8	58.6	0.2
1 AM - 2 AM	82	122	122	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	75	113	113	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	50	75	76	52.3	54.1	1.8	54.1	0.0
4 AM - 5 AM	66	209	213	53.5	58.5	5.0	58.6	0.1
5 AM - 6 AM	160	620	629	57.3	63.2	5.9	63.3	0.1
6 AM - 7 AM	289	953	979	61.1	66.3	5.2	66.4	0.1
7 AM - 8 AM	470	1246	1295	63.2	67.4	4.2	67.6	0.2
8 AM - 9 AM	564	1337	1401	64.0	67.7	3.7	68.0	0.3
9 AM - 10 AM	750	1624	1750	65.2	68.6	3.4	68.9	0.3
10 AM - 11 AM	844	1705	1938	65.8	68.8	3.0	69.4	0.6
11 AM - 12 PM	825	1787	2081	61.1	64.4	3.3	65.1	0.7
12 PM - 1 PM	809	1764	2029	61.0	64.4	3.4	65.0	0.6
1 PM - 2 PM	856	1774	1987	61.2	64.4	3.2	64.9	0.5
2 PM - 3 PM	865	1798	1936	61.3	64.5	3.2	64.8	0.3
3 PM - 4 PM	750	1724	1943	60.7	64.3	3.6	64.8	0.5
4 PM - 5 PM	790	1785	2073	65.9	69.5	3.6	70.1	0.6
5 PM - 6 PM	640	1560	1826	65.0	68.9	3.9	69.6	0.7
6 PM - 7 PM	480	1250	1392	63.8	67.9	4.1	68.4	0.5
7 PM - 8 PM	436	1154	1266	63.3	67.6	4.3	68.0	0.4
8 PM - 9 PM	298	947	1044	60.0	65.1	5.1	65.5	0.4
9 PM - 10 PM	295	622	691	60.0	63.2	3.2	63.7	0.5
10 PM - 11 PM	260	390	465	59.5	61.2	1.7	62.0	0.8
11 PM - 12 AM	226	339	464	58.8	60.6	1.8	62.0	1.4
Leq(24)				61.8	65.5	3.7	65.9	0.4
Ldn				65.2	68.9	3.7	69.3	0.4

TABLE 20

PREDICTED NOISE LEVELS
SITE 2
Weekend
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	95	142	246	56.6	58.4	1.8	60.7	2.3
1 AM - 2 AM	57	86	86	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	53	79	79	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	35	53	55	52.3	54.1	1.8	54.2	0.1
4 AM - 5 AM	45	169	215	53.4	59.1	5.7	60.2	1.1
5 AM - 6 AM	112	508	600	57.3	63.9	6.6	64.6	0.7
6 AM - 7 AM	202	764	1038	61.1	66.9	5.8	68.2	1.3
7 AM - 8 AM	330	975	1486	63.2	67.9	4.7	69.7	1.8
8 AM - 9 AM	396	1034	1704	64.0	68.2	4.2	70.3	2.1
9 AM - 10 AM	526	1249	2557	65.2	69.0	3.8	72.1	3.1
10 AM - 11 AM	592	1288	3701	65.7	69.1	3.4	73.7	4.6
11 AM - 12 PM	578	1368	4428	64.1	67.8	3.7	72.9	5.1
12 PM - 1 PM	567	1351	4107	64.0	67.8	3.8	72.6	4.8
1 PM - 2 PM	600	1341	3556	64.2	67.7	3.5	72.0	4.3
2 PM - 3 PM	608	1351	2779	64.3	67.8	3.5	70.9	3.1
3 PM - 4 PM	526	1329	3602	63.7	67.7	4.0	72.0	4.3
4 PM - 5 PM	554	1371	4364	65.9	69.8	3.9	74.9	5.1
5 PM - 6 PM	449	1213	3984	65.0	69.3	4.3	74.5	5.2
6 PM - 7 PM	337	985	2364	63.8	68.4	4.6	72.2	3.8
7 PM - 8 PM	306	899	2068	63.3	68.0	4.7	71.6	3.6
8 PM - 9 PM	209	753	1766	60.0	65.6	5.6	69.3	3.7
9 PM - 10 PM	207	470	1189	60.0	63.6	3.6	67.6	4.0
10 PM - 11 PM	183	274	1047	59.5	61.2	1.7	67.0	5.8
11 PM - 12 AM	158	238	1541	58.8	60.6	1.8	68.7	8.1
Leq(24)				62.5	66.5	4.0	70.5	4.0
Ldn				65.6	69.6	4.0	73.2	3.6

TABLE 21

PREDICTED NOISE LEVELS
SITE 3
Weekend
Enterprise Park & Race Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	33	50	70	54.6	56.4	1.8	57.8	1.4
1 AM - 2 AM	20	30	30	52.4	54.1	1.7	54.1	0.0
2 AM - 3 AM	19	28	28	52.2	53.8	1.6	53.8	0.0
3 AM - 4 AM	12	19	19	50.2	52.2	2.0	52.2	0.0
4 AM - 5 AM	16	64	73	51.4	57.4	6.0	58.0	0.6
5 AM - 6 AM	40	139	157	55.4	60.8	5.4	61.3	0.5
6 AM - 7 AM	71	227	280	59.1	64.1	5.0	65.0	0.9
7 AM - 8 AM	116	295	393	61.2	65.2	4.0	66.5	1.3
8 AM - 9 AM	140	310	438	62.0	65.5	3.5	67.0	1.5
9 AM - 10 AM	186	378	630	63.2	66.3	3.1	68.5	2.2
10 AM - 11 AM	209	413	877	63.7	66.7	3.0	70.0	3.3
11 AM - 12 PM	204	426	1015	59.1	62.3	3.2	66.1	3.8
12 PM - 1 PM	200	440	970	59.0	62.4	3.4	65.9	3.5
1 PM - 2 PM	212	438	864	59.3	62.4	3.1	65.4	3.0
2 PM - 3 PM	214	441	716	59.3	62.4	3.1	64.5	2.1
3 PM - 4 PM	185	418	855	58.7	62.2	3.5	65.3	3.1
4 PM - 5 PM	196	433	1009	61.9	65.4	3.5	69.1	3.7
5 PM - 6 PM	158	378	910	61.0	64.8	3.8	68.6	3.8
6 PM - 7 PM	119	278	543	59.8	63.5	3.7	66.4	2.9
7 PM - 8 PM	108	242	467	59.3	62.9	3.6	65.7	2.8
8 PM - 9 PM	74	151	345	58.1	61.2	3.1	64.7	3.5
9 PM - 10 PM	73	109	248	58.0	59.7	1.7	63.3	3.6
10 PM - 11 PM	64	97	245	57.4	59.2	1.8	63.3	4.1
11 PM - 12 AM	56	84	335	56.8	58.6	1.8	64.6	6.0
Leq(24)				59.3	62.7	3.4	65.4	2.7
Ldn				63.0	66.5	3.5	68.9	2.4

TABLE 22

PREDICTED NOISE LEVELS
SITE 4
Weekend
Enterprise Park & Raceway Alternative

	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
Hour	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	10	15	55	52.8	54.5	1.7	60.2	5.7
1 AM - 2 AM	6	9	9	50.6	52.3	1.7	52.3	0.0
2 AM - 3 AM	5	8	8	49.8	51.8	2.0	51.8	0.0
3 AM - 4 AM	4	5	6	48.8	49.8	1.0	50.6	0.8
4 AM - 5 AM	5	7	25	49.8	51.2	1.4	56.8	5.6
5 AM - 6 AM	12	17	52	53.6	55.1	1.5	59.9	4.8
6 AM - 7 AM	21	31	137	58.1	59.8	1.7	66.2	6.4
7 AM - 8 AM	34	51	247	60.2	61.9	1.7	68.8	6.9
8 AM - 9 AM	41	61	319	61.0	62.7	1.7	69.9	7.2
9 AM - 10 AM	54	81	584	62.2	64.0	1.8	72.5	8.5
10 AM - 11 AM	61	91	1020	62.7	64.5	1.8	75.0	10.5
11 AM - 12 PM	59	89	1266	60.1	61.9	1.8	73.4	11.5
12 PM - 1 PM	58	87	1147	60.0	61.8	1.8	73.0	11.2
1 PM - 2 PM	62	93	945	60.3	62.1	1.8	72.1	10.0
2 PM - 3 PM	62	94	643	60.3	62.1	1.8	70.4	8.3
3 PM - 4 PM	54	81	955	59.7	61.5	1.8	72.2	10.7
4 PM - 5 PM	57	85	1236	59.9	61.7	1.8	73.3	11.6
5 PM - 6 PM	46	69	1135	59.0	60.8	1.8	72.9	12.1
6 PM - 7 PM	35	52	582	57.8	59.5	1.7	70.0	10.5
7 PM - 8 PM	31	47	497	57.3	59.1	1.8	69.3	10.2
8 PM - 9 PM	21	32	422	56.0	57.8	1.8	69.0	11.2
9 PM - 10 PM	21	32	308	56.0	57.8	1.8	67.7	9.9
10 PM - 11 PM	19	28	326	55.6	57.2	1.6	67.9	10.7
11 PM - 12 AM	16	24	526	54.8	56.6	1.8	70.0	13.4
Leq(24)				58.4	60.2	1.8	70.2	10.0
Ldn				61.7	63.4	1.7	72.8	9.4

TABLE 23

PREDICTED NOISE LEVELS
SITE 5
Weekend
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	10	15	45	53.8	55.5	1.7	60.3	4.8
1 AM - 2 AM	6	9	9	51.6	53.3	1.7	53.3	0.0
2 AM - 3 AM	5	8	8	50.8	52.8	2.0	52.8	0.0
3 AM - 4 AM	4	5	6	49.8	50.8	1.0	51.6	0.8
4 AM - 5 AM	5	7	20	50.8	52.2	1.4	56.8	4.6
5 AM - 6 AM	12	17	44	54.6	56.1	1.5	60.2	4.1
6 AM - 7 AM	21	31	110	58.1	59.8	1.7	65.3	5.5
7 AM - 8 AM	34	51	196	60.2	61.9	1.7	67.8	5.9
8 AM - 9 AM	41	61	254	61.0	62.7	1.7	68.9	6.2
9 AM - 10 AM	54	81	458	62.2	64.0	1.8	71.5	7.5
10 AM - 11 AM	61	91	788	62.7	64.5	1.8	73.8	9.3
11 AM - 12 PM	59	89	972	60.1	61.9	1.8	72.2	10.3
12 PM - 1 PM	58	87	882	60.0	61.8	1.8	71.8	10.0
1 PM - 2 PM	62	93	732	60.3	62.1	1.8	71.0	8.9
2 PM - 3 PM	62	94	506	60.3	62.1	1.8	69.4	7.3
3 PM - 4 PM	54	81	737	59.7	61.5	1.8	71.0	9.5
4 PM - 5 PM	57	85	949	62.9	64.7	1.8	75.1	10.4
5 PM - 6 PM	46	69	868	62.0	63.8	1.8	74.8	11.0
6 PM - 7 PM	35	52	450	60.8	62.5	1.7	71.9	9.4
7 PM - 8 PM	31	47	384	60.3	62.1	1.8	71.2	9.1
8 PM - 9 PM	21	32	324	57.0	58.8	1.8	68.9	10.1
9 PM - 10 PM	21	32	239	57.0	58.8	1.8	67.6	8.8
10 PM - 11 PM	19	28	251	56.6	58.2	1.6	67.8	9.6
11 PM - 12 AM	16	24	400	55.8	57.6	1.8	69.8	12.2
Leq(24)				59.3	61.0	1.7	70.1	9.1
Ldn				62.5	64.2	1.7	72.7	8.5

TABLE 24

PREDICTED NOISE LEVELS
SITE 6
Weekend
Enterprise Park & Raceway Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	69	104	110	56.6	58.4	1.8	58.6	0.2
1 AM - 2 AM	42	63	63	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	39	58	58	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	26	39	39	52.4	54.1	1.7	54.1	0.0
4 AM - 5 AM	34	91	93	53.5	57.8	4.3	57.9	0.1
5 AM - 6 AM	82	203	208	57.3	61.3	4.0	61.4	0.1
6 AM - 7 AM	146	342	358	63.0	66.7	3.7	66.9	0.2
7 AM - 8 AM	241	482	512	65.2	68.2	3.0	68.5	0.3
8 AM - 9 AM	290	535	573	66.0	68.7	2.7	69.0	0.3
9 AM - 10 AM	385	677	753	67.2	69.7	2.5	70.1	0.4
10 AM - 11 AM	433	749	889	67.7	70.1	2.4	70.9	0.8
11 AM - 12 PM	423	755	932	65.1	67.6	2.5	68.5	0.9
12 PM - 1 PM	415	763	922	65.0	67.6	2.6	68.5	0.9
1 PM - 2 PM	439	779	907	65.2	67.7	2.5	68.4	0.7
2 PM - 3 PM	444	785	869	65.3	67.8	2.5	68.2	0.4
3 PM - 4 PM	365	717	848	64.4	67.4	3.0	68.1	0.7
4 PM - 5 PM	406	748	921	65.9	68.6	2.7	69.5	0.9
5 PM - 6 PM	328	633	792	65.0	67.9	2.9	68.8	0.9
6 PM - 7 PM	248	469	549	63.8	66.6	2.8	67.2	0.6
7 PM - 8 PM	224	416	483	63.3	66.0	2.7	66.7	0.7
8 PM - 9 PM	153	269	328	60.1	62.5	2.4	63.4	0.9
9 PM - 10 PM	151	227	268	60.0	61.8	1.8	62.5	0.7
10 PM - 11 PM	134	200	245	59.5	61.2	1.7	62.1	0.9
11 PM - 12 AM	116	174	249	58.9	60.6	1.7	62.2	1.6
Leq(24)				63.5	66.1	2.6	66.8	0.7
Ldn				66.4	69.1	2.7	69.7	0.6

TABLE 25

PREDICTED NOISE LEVELS
SITE 1
Weekday
Peconic Village Alternative

	Traffic Volumes			NOISE LEVELS (dBA)				
Hour	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	91	137	137	53.4	55.2	1.8	55.2	0.0
1 AM - 2 AM	59	88	88	51.5	53.3	1.8	53.3	0.0
2 AM - 3 AM	35	52	52	49.3	51.0	1.7	51.0	0.0
3 AM - 4 AM	46	68	68	50.5	52.2	1.7	52.2	0.0
4 AM - 5 AM	61	201	209	51.7	56.9	5.2	57.0	0.1
5 AM - 6 AM	191	666	690	56.6	62.1	5.5	62.2	0.1
6 AM - 7 AM	590	1405	1463	63.7	67.5	3.8	67.6	0.1
7 AM - 8 AM	995	2033	2117	66.0	69.1	3.1	69.2	0.1
8 AM - 9 AM	1002	1993	2053	66.0	69.0	3.0	69.1	0.1
9 AM - 10 AM	781	1671	1705	64.9	68.2	3.3	68.3	0.1
10 AM - 11 AM	900	1790	1821	65.5	68.5	3.0	68.6	0.1
11 AM - 12 PM	1106	2209	2273	64.7	67.7	3.0	67.8	0.1
12 PM - 1 PM	1193	2339	2404	65.0	67.9	2.9	68.0	0.1
1 PM - 2 PM	1052	2068	2099	64.5	67.4	2.9	67.5	0.1
2 PM - 3 PM	1055	2084	2120	64.5	67.4	2.9	67.5	0.1
3 PM - 4 PM	974	2061	2107	64.1	67.4	3.3	67.5	0.1
4 PM - 5 PM	1193	2389	2459	68.3	71.3	3.0	71.4	0.1
5 PM - 6 PM	1115	2272	2362	68.0	71.1	3.1	71.3	0.2
6 PM - 7 PM	805	1747	1817	66.6	70.0	3.4	70.1	0.1
7 PM - 8 PM	581	1372	1422	65.2	68.9	3.7	69.1	0.2
8 PM - 9 PM	473	1209	1241	60.6	64.7	4.1	64.8	0.1
9 PM - 10 PM	414	801	821	60.0	62.9	2.9	63.0	0.1
10 PM - 11 PM	269	403	416	58.1	59.9	1.8	60.0	0.1
11 PM - 12 AM	180	270	274	56.4	58.1	1.7	58.2	0.1
Leq(24)				63.7	66.9	3.2	67.0	0.1
Ldn				66.1	69.4	3.3	69.5	0.1

TABLE 26

PREDICTED NOISE LEVELS
SITE 2
Weekday
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	40	59	59	54.5	56.2	1.7	56.2	0.0
1 AM - 2 AM	25	38	38	52.4	54.2	1.8	54.2	0.0
2 AM - 3 AM	15	23	23	50.2	52.1	1.9	52.1	0.0
3 AM - 4 AM	20	30	30	51.5	53.2	1.7	53.2	0.0
4 AM - 5 AM	26	140	225	52.6	59.9	7.3	62.0	2.1
5 AM - 6 AM	83	464	714	57.6	65.1	7.5	67.0	1.9
6 AM - 7 AM	256	845	1450	65.7	70.9	5.2	73.2	2.3
7 AM - 8 AM	433	1129	1997	68.0	72.1	4.1	74.6	2.5
8 AM - 9 AM	436	1093	1717	68.0	72.0	4.0	74.0	2.0
9 AM - 10 AM	339	969	1316	66.9	71.5	4.6	72.8	1.3
10 AM - 11 AM	391	987	1304	67.5	71.5	4.0	72.8	1.3
11 AM - 12 PM	481	1221	1882	64.7	68.7	4.0	70.6	1.9
12 PM - 1 PM	519	1278	1948	65.0	68.9	3.9	70.7	1.8
1 PM - 2 PM	457	1126	1446	64.4	68.4	4.0	69.5	1.1
2 PM - 3 PM	459	1129	1500	64.5	68.4	3.9	69.6	1.2
3 PM - 4 PM	423	1175	1653	64.1	68.5	4.4	70.0	1.5
4 PM - 5 PM	519	1318	2041	66.3	70.3	4.0	72.2	1.9
5 PM - 6 PM	485	1257	2205	66.0	70.1	4.1	72.6	2.5
6 PM - 7 PM	350	1005	1731	64.6	69.2	4.6	71.5	2.3
7 PM - 8 PM	253	819	1339	63.2	68.3	5.1	70.4	2.1
8 PM - 9 PM	206	748	1075	61.6	67.2	5.6	68.8	1.6
9 PM - 10 PM	180	430	639	61.0	64.8	3.8	66.5	1.7
10 PM - 11 PM	117	175	305	59.1	60.9	1.8	63.3	2.4
11 PM - 12 AM	78	117	154	57.4	59.1	1.7	60.3	1.2
Leq(24)				64.0	68.3	4.3	70.1	1.8
Ldn				66.9	71.5	4.6	73.5	2.0

TABLE 27

PREDICTED NOISE LEVELS
SITE 3
Weekday
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	36	55	55	52.4	54.2	1.8	54.2	0.0
1 AM - 2 AM	23	35	35	50.4	52.3	1.9	52.3	0.0
2 AM - 3 AM	14	21	21	48.3	50.0	1.7	50.0	0.0
3 AM - 4 AM	18	27	27	49.4	51.1	1.7	51.1	0.0
4 AM - 5 AM	24	76	93	50.6	55.6	5.0	56.5	0.9
5 AM - 6 AM	76	194	242	55.6	59.7	4.1	60.7	1.0
6 AM - 7 AM	235	473	589	60.7	63.7	3.0	64.7	1.0
7 AM - 8 AM	397	716	883	63.0	65.5	2.5	66.4	0.9
8 AM - 9 AM	400	700	820	63.0	65.4	2.4	66.1	0.7
9 AM - 10 AM	312	567	634	61.9	64.5	2.6	65.0	0.5
10 AM - 11 AM	359	639	700	62.5	65.0	2.5	65.4	0.4
11 AM - 12 PM	441	782	909	60.7	63.2	2.5	63.8	0.6
12 PM - 1 PM	476	854	983	61.0	63.5	2.5	64.1	0.6
1 PM - 2 PM	420	750	811	60.5	63.0	2.5	63.3	0.3
2 PM - 3 PM	421	752	824	60.5	63.0	2.5	63.4	0.4
3 PM - 4 PM	389	723	815	60.1	62.8	2.7	63.3	0.5
4 PM - 5 PM	476	854	993	64.3	66.8	2.5	67.5	0.7
5 PM - 6 PM	445	807	988	64.0	66.6	2.6	67.5	0.9
6 PM - 7 PM	321	582	721	62.6	65.2	2.6	66.1	0.9
7 PM - 8 PM	232	426	528	61.2	63.8	2.6	64.7	0.9
8 PM - 9 PM	189	323	386	59.6	61.9	2.3	62.7	0.8
9 PM - 10 PM	165	248	288	59.0	60.8	1.8	61.4	0.6
10 PM - 11 PM	107	161	186	57.1	58.9	1.8	59.5	0.6
11 PM - 12 AM	72	108	115	55.4	57.2	1.8	57.4	0.2
Leq(24)				60.3	62.9	2.6	63.6	0.7
Ldn				63.4	66.1	2.7	66.8	0.7

TABLE 28

PREDICTED NOISE LEVELS
SITE 4
Weekday
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	5	8	8	50.0	52.1	2.1	52.1	0.0
1 AM - 2 AM	3	5	5	47.8	50.0	2.2	50.0	0.0
2 AM - 3 AM	2	3	3	46.0	47.8	1.8	47.8	0.0
3 AM - 4 AM	3	4	4	47.8	49.0	1.2	49.0	0.0
4 AM - 5 AM	4	5	38	49.0	50.0	1.0	58.8	8.8
5 AM - 6 AM	11	17	113	53.4	55.3	1.9	63.6	8.3
6 AM - 7 AM	35	53	286	59.7	61.5	1.8	68.8	7.3
7 AM - 8 AM	59	89	423	61.9	63.7	1.8	70.5	6.8
8 AM - 9 AM	60	90	329	62.0	63.8	1.8	69.4	5.6
9 AM - 10 AM	47	70	203	60.9	62.7	1.8	67.3	4.6
10 AM - 11 AM	54	80	202	61.5	63.2	1.7	67.3	4.1
11 AM - 12 PM	65	99	353	59.6	61.4	1.8	67.0	5.6
12 PM - 1 PM	71	107	364	60.0	61.8	1.8	67.1	5.3
1 PM - 2 PM	63	94	217	59.5	61.2	1.7	64.9	3.7
2 PM - 3 PM	63	94	237	59.5	61.2	1.7	65.2	4.0
3 PM - 4 PM	58	87	271	59.1	60.9	1.8	65.8	4.9
4 PM - 5 PM	71	107	385	61.3	63.1	1.8	68.7	5.6
5 PM - 6 PM	66	100	461	61.0	62.8	1.8	69.4	6.6
6 PM - 7 PM	48	72	351	59.6	61.4	1.8	68.3	6.9
7 PM - 8 PM	35	52	252	58.2	60.0	1.8	66.8	6.8
8 PM - 9 PM	26	42	168	57.2	59.3	2.1	65.3	6.0
9 PM - 10 PM	25	37	117	57.0	58.7	1.7	63.7	5.0
10 PM - 11 PM	16	24	74	55.1	56.8	1.7	61.7	4.9
11 PM - 12 AM	11	16	30	53.4	55.1	1.7	57.8	2.7
Leq(24)				58.6	60.4	1.8	66.1	5.7
Ldn				61.7	63.5	1.8	69.5	6.0

TABLE 29

PREDICTED NOISE LEVELS
SITE 5
Weekday
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	6	8	8	49.8	51.1	1.3	51.1	0.0
1 AM - 2 AM	3	5	5	46.8	49.0	2.2	49.0	0.0
2 AM - 3 AM	2	3	3	45.0	46.8	1.8	46.8	0.0
3 AM - 4 AM	3	4	4	46.8	48.0	1.2	48.0	0.0
4 AM - 5 AM	4	5	50	48.0	49.0	1.0	56.8	7.8
5 AM - 6 AM	11	17	89	52.4	54.3	1.9	61.5	7.2
6 AM - 7 AM	35	53	227	60.7	62.5	1.8	68.8	6.3
7 AM - 8 AM	59	89	339	62.9	64.7	1.8	70.5	5.8
8 AM - 9 AM	60	90	269	63.0	64.8	1.8	69.5	4.7
9 AM - 10 AM	47	70	170	61.9	63.7	1.8	67.5	3.8
10 AM - 11 AM	54	80	172	62.5	64.2	1.7	67.6	3.4
11 AM - 12 PM	66	99	289	56.7	60.4	1.7	65.1	4.7
12 PM - 1 PM	71	107	300	59.0	60.8	1.8	65.3	4.5
1 PM - 2 PM	63	94	186	58.5	60.2	1.7	63.2	3.0
2 PM - 3 PM	63	94	202	58.5	60.2	1.7	63.5	3.3
3 PM - 4 PM	58	87	225	58.1	59.9	1.8	64.0	4.1
4 PM - 5 PM	71	107	315	61.3	63.1	1.8	67.8	4.7
5 PM - 6 PM	66	100	370	61.0	62.8	1.8	68.5	5.7
6 PM - 7 PM	48	72	281	59.6	61.4	1.8	67.3	5.9
7 PM - 8 PM	35	52	202	58.2	60.0	1.8	65.9	5.9
8 PM - 9 PM	28	42	136	56.5	58.3	1.8	63.4	5.1
9 PM - 10 PM	25	37	97	56.0	57.7	1.7	61.9	4.2
10 PM - 11 PM	16	24	62	54.1	55.8	1.7	59.9	4.1
11 PM - 12 AM	11	16	27	52.4	54.1	1.7	56.3	2.2
Leq(24)				58.8	60.5	1.7	65.3	4.8
Ldn				61.8	63.6	1.8	68.8	5.2

TABLE 30

PREDICTED NOISE LEVELS
SITE 6
Weekday
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	54	82	82	54.4	56.2	1.8	56.2	0.0
1 AM - 2 AM	35	52	52	52.5	54.2	1.7	54.2	0.0
2 AM - 3 AM	21	31	31	50.3	52.0	1.7	52.0	0.0
3 AM - 4 AM	27	41	41	51.4	53.2	1.8	53.2	0.0
4 AM - 5 AM	36	94	99	52.6	56.8	4.2	57.0	0.2
5 AM - 6 AM	114	251	265	57.6	61.1	3.5	61.3	0.2
6 AM - 7 AM	352	648	683	64.7	67.3	2.6	67.6	0.3
7 AM - 8 AM	594	1011	1061	67.0	69.3	2.3	69.5	0.2
8 AM - 9 AM	598	997	1033	67.0	69.2	2.2	69.4	0.2
9 AM - 10 AM	466	799	819	65.9	68.3	2.4	68.4	0.1
10 AM - 11 AM	537	905	924	66.5	68.8	2.3	68.9	0.1
11 AM - 12 PM	660	1110	1148	64.7	66.9	2.2	67.1	0.2
12 PM - 1 PM	712	1207	1246	65.0	67.3	2.3	67.4	0.1
1 PM - 2 PM	527	1061	1080	63.7	66.7	3.0	66.8	0.1
2 PM - 3 PM	639	1065	1087	64.5	66.7	2.2	66.8	0.1
3 PM - 4 PM	581	1011	1039	64.1	66.5	2.4	66.6	0.1
4 PM - 5 PM	712	1207	1249	68.3	70.6	2.3	70.7	0.1
5 PM - 6 PM	665	1137	1192	68.0	70.3	2.3	70.5	0.2
6 PM - 7 PM	480	820	862	66.6	68.9	2.3	69.1	0.2
7 PM - 8 PM	347	600	630	65.2	67.6	2.4	67.8	0.2
8 PM - 9 PM	302	463	482	61.9	63.7	1.8	63.9	0.2
9 PM - 10 PM	247	371	383	61.0	62.8	1.8	62.9	0.1
10 PM - 11 PM	160	241	248	59.1	60.9	1.8	61.0	0.1
11 PM - 12 AM	107	151	163	57.4	58.9	1.5	59.2	0.3
Leq(24)				64.1	66.4	2.3	66.6	0.2
Ldn				66.8	69.2	2.4	69.3	0.1

TABLE 31

PREDICTED NOISE LEVELS
SITE 1
Weekend
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	135	202	202	56.6	58.4	1.8	58.4	0.0
1 AM - 2 AM	82	122	122	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	75	113	113	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	50	75	76	52.3	54.1	1.8	54.1	0.0
4 AM - 5 AM	66	209	216	53.5	58.5	5.0	58.6	0.1
5 AM - 6 AM	160	620	634	57.3	63.2	5.9	63.3	0.1
6 AM - 7 AM	289	953	976	61.1	66.3	5.2	66.4	0.1
7 AM - 8 AM	470	1246	1279	63.2	67.4	4.2	67.6	0.2
8 AM - 9 AM	564	1337	1368	64.0	67.7	3.7	67.8	0.1
9 AM - 10 AM	750	1624	1656	65.2	68.6	3.4	68.7	0.1
10 AM - 11 AM	844	1705	1741	65.8	68.8	3.0	68.9	0.1
11 AM - 12 PM	825	1787	1838	61.1	64.4	3.3	64.6	0.2
12 PM - 1 PM	809	1764	1807	61.0	64.4	3.4	64.5	0.1
1 PM - 2 PM	856	1774	1815	61.2	64.4	3.2	64.5	0.1
2 PM - 3 PM	865	1798	1837	61.3	64.5	3.2	64.6	0.1
3 PM - 4 PM	750	1724	1766	60.7	64.3	3.6	64.4	0.1
4 PM - 5 PM	790	1785	1830	65.9	69.5	3.6	69.6	0.1
5 PM - 6 PM	640	1560	1606	65.0	68.9	3.9	69.0	0.1
6 PM - 7 PM	480	1250	1302	63.8	67.9	4.1	68.1	0.2
7 PM - 8 PM	436	1154	1192	63.3	67.6	4.3	67.7	0.1
8 PM - 9 PM	298	947	974	60.0	65.1	5.1	65.2	0.1
9 PM - 10 PM	295	622	643	60.0	63.2	3.2	63.4	0.2
10 PM - 11 PM	260	390	406	59.5	61.2	1.7	61.4	0.2
11 PM - 12 AM	226	339	342	58.8	60.6	1.8	60.6	0.0
Leq(24)				61.8	65.5	3.7	65.6	0.1
Ldn				65.2	68.9	3.7	69.0	0.1

TABLE 32

PREDICTED NOISE LEVELS
SITE 2
Weekend
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	95	142	142	56.6	58.4	1.8	58.4	0.0
1 AM - 2 AM	57	86	86	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	53	79	79	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	35	53	57	52.3	54.1	1.8	54.4	0.3
4 AM - 5 AM	45	169	244	53.4	59.1	5.7	60.7	1.6
5 AM - 6 AM	112	508	654	57.3	63.9	6.6	65.0	1.1
6 AM - 7 AM	202	764	1008	61.1	66.9	5.8	68.1	1.2
7 AM - 8 AM	330	975	1321	63.2	67.9	4.7	69.2	1.3
8 AM - 9 AM	396	1034	1364	64.0	68.2	4.2	69.4	1.2
9 AM - 10 AM	526	1249	1583	65.2	69.0	3.8	70.0	1.0
10 AM - 11 AM	592	1288	1662	65.7	69.1	3.4	70.2	1.1
11 AM - 12 PM	578	1368	1896	64.1	67.8	3.7	69.2	1.4
12 PM - 1 PM	567	1351	1797	64.0	67.8	3.8	69.0	1.2
1 PM - 2 PM	600	1341	1765	64.2	67.7	3.5	68.9	1.2
2 PM - 3 PM	608	1351	1756	64.3	67.8	3.5	68.9	1.1
3 PM - 4 PM	526	1329	1760	63.7	67.7	4.0	68.9	1.2
4 PM - 5 PM	554	1371	1830	65.9	69.8	3.9	71.1	1.3
5 PM - 6 PM	449	1213	1691	65.0	69.3	4.3	70.8	1.5
6 PM - 7 PM	337	985	1429	63.8	68.4	4.6	70.0	1.6
7 PM - 8 PM	306	899	1299	63.3	68.0	4.7	69.6	1.6
8 PM - 9 PM	209	753	1039	60.0	65.6	5.6	67.0	1.4
9 PM - 10 PM	207	470	684	60.0	63.6	3.6	65.2	1.6
10 PM - 11 PM	183	274	431	59.5	61.2	1.7	63.2	2.0
11 PM - 12 AM	158	238	272	58.8	60.6	1.8	61.2	0.6
Leq(24)				62.5	66.5	4.0	67.8	1.3
Ldn				65.6	69.6	4.0	70.8	1.2

TABLE 33

PREDICTED NOISE LEVELS
SITE 3
Weekend
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	33	50	50	54.6	56.4	1.8	56.4	0.0
1 AM - 2 AM	20	30	30	52.4	54.1	1.7	54.1	0.0
2 AM - 3 AM	19	28	28	52.2	53.8	1.6	53.8	0.0
3 AM - 4 AM	12	19	19	50.2	52.2	2.0	52.2	0.0
4 AM - 5 AM	16	64	79	51.4	57.4	6.0	58.3	0.9
5 AM - 6 AM	40	139	167	55.4	60.8	5.4	61.6	0.8
6 AM - 7 AM	71	227	274	59.1	64.1	5.0	64.9	0.8
7 AM - 8 AM	116	295	361	61.2	65.2	4.0	66.1	0.9
8 AM - 9 AM	140	310	373	62.0	65.5	3.5	66.3	0.8
9 AM - 10 AM	186	378	443	63.2	66.3	3.1	67.0	0.7
10 AM - 11 AM	209	413	485	63.7	66.7	3.0	67.4	0.7
11 AM - 12 PM	204	426	528	59.1	62.3	3.2	63.2	0.9
12 PM - 1 PM	200	440	526	59.0	62.4	3.4	63.2	0.8
1 PM - 2 PM	212	438	519	59.3	62.4	3.1	63.1	0.7
2 PM - 3 PM	214	441	519	59.3	62.4	3.1	63.1	0.7
3 PM - 4 PM	185	418	501	58.7	62.2	3.5	63.0	0.8
4 PM - 5 PM	196	433	522	61.9	65.4	3.5	66.2	0.8
5 PM - 6 PM	158	378	470	61.0	64.8	3.8	65.7	0.9
6 PM - 7 PM	119	278	364	59.8	63.5	3.7	64.6	1.1
7 PM - 8 PM	108	242	319	59.3	62.9	3.6	64.1	1.2
8 PM - 9 PM	74	151	206	58.1	61.2	3.1	62.5	1.3
9 PM - 10 PM	73	109	151	58.0	59.7	1.7	61.2	1.5
10 PM - 11 PM	64	97	127	57.4	59.2	1.8	60.4	1.2
11 PM - 12 AM	56	84	90	56.8	58.6	1.8	58.9	0.3
Leq(24)				59.3	62.7	3.4	63.5	0.8
Ldn				63.0	66.5	3.5	67.3	0.8

TABLE 34

PREDICTED NOISE LEVELS
SITE 4
Weekend
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	10	15	15	52.8	54.5	1.7	54.5	0.0
1 AM - 2 AM	6	9	9	50.6	52.3	1.7	52.3	0.0
2 AM - 3 AM	5	8	8	49.8	51.8	2.0	51.8	0.0
3 AM - 4 AM	4	5	7	48.8	49.8	1.0	51.2	1.4
4 AM - 5 AM	5	7	36	49.8	51.2	1.4	58.3	7.1
5 AM - 6 AM	12	17	73	53.6	55.1	1.5	61.4	6.3
6 AM - 7 AM	21	31	125	58.1	59.8	1.7	65.8	6.0
7 AM - 8 AM	34	51	184	60.2	61.9	1.7	67.5	5.6
8 AM - 9 AM	41	61	188	61.0	62.7	1.7	67.6	4.9
9 AM - 10 AM	54	81	210	62.2	64.0	1.8	68.1	4.1
10 AM - 11 AM	61	91	235	62.7	64.5	1.8	68.6	4.1
11 AM - 12 PM	59	89	292	60.1	61.9	1.8	67.0	5.1
12 PM - 1 PM	58	87	259	60.0	61.8	1.8	66.5	4.7
1 PM - 2 PM	62	93	256	60.3	62.1	1.8	66.4	4.3
2 PM - 3 PM	62	94	250	60.3	62.1	1.8	66.3	4.2
3 PM - 4 PM	54	81	247	59.7	61.5	1.8	66.3	4.8
4 PM - 5 PM	57	85	262	59.9	61.7	1.8	66.6	4.9
5 PM - 6 PM	46	69	253	59.0	60.8	1.8	66.4	5.6
6 PM - 7 PM	35	52	223	57.8	59.5	1.7	65.9	6.4
7 PM - 8 PM	31	47	201	57.3	59.1	1.8	65.4	6.3
8 PM - 9 PM	21	32	142	56.0	57.8	1.8	64.3	6.5
9 PM - 10 PM	21	32	114	56.0	57.8	1.8	63.3	5.5
10 PM - 11 PM	19	28	89	55.6	57.2	1.6	62.3	5.1
11 PM - 12 AM	16	24	38	54.8	56.6	1.8	58.6	2.0
Leq(24)				58.4	60.2	1.8	65.1	4.9
Ldn				61.7	63.4	1.7	68.2	4.8

TABLE 35

PREDICTED NOISE LEVELS
SITE 5
Weekend
Peconic Village Alternative

Hour	Traffic Volumes			NOISE LEVELS (dBA)				
	Existing	No Build	Build	Existing	No Build	DIFFERENCE (Exist-No Build)	Build	DIFFERENCE (No Build-Build)
12 AM - 1 AM	10	15	15	53.8	55.5	1.7	55.5	0.0
1 AM - 2 AM	6	9	9	51.6	53.3	1.7	53.3	0.0
2 AM - 3 AM	5	8	8	50.8	52.8	2.0	52.8	0.0
3 AM - 4 AM	4	5	7	49.8	50.8	1.0	52.2	1.4
4 AM - 5 AM	5	7	29	50.8	52.2	1.4	58.4	6.2
5 AM - 6 AM	12	17	59	54.6	56.1	1.5	61.5	5.4
6 AM - 7 AM	21	31	102	58.1	59.8	1.7	65.0	5.2
7 AM - 8 AM	34	51	151	60.2	61.9	1.7	66.7	4.8
8 AM - 9 AM	41	61	156	61.0	62.7	1.7	66.8	4.1
9 AM - 10 AM	54	81	178	62.2	64.0	1.8	67.4	3.4
10 AM - 11 AM	61	91	199	62.7	64.5	1.8	67.9	3.4
11 AM - 12 PM	59	89	241	60.1	61.9	1.8	66.2	4.3
12 PM - 1 PM	58	87	216	60.0	61.8	1.8	65.7	3.9
1 PM - 2 PM	62	93	215	60.3	62.1	1.8	65.7	3.6
2 PM - 3 PM	62	94	211	60.3	62.1	1.8	65.6	3.5
3 PM - 4 PM	54	81	206	59.7	61.5	1.8	65.5	4.0
4 PM - 5 PM	57	85	218	62.9	64.7	1.8	68.8	4.1
5 PM - 6 PM	46	69	207	62.0	63.8	1.8	68.5	4.7
6 PM - 7 PM	35	52	180	60.8	62.5	1.7	67.9	5.4
7 PM - 8 PM	31	47	163	60.3	62.1	1.8	67.5	5.4
8 PM - 9 PM	21	32	115	57.0	58.8	1.8	64.4	5.6
9 PM - 10 PM	21	32	94	57.0	58.8	1.8	63.5	4.7
10 PM - 11 PM	19	28	73	56.6	58.2	1.6	62.4	4.2
11 PM - 12 AM	16	24	34	55.8	57.6	1.8	59.1	1.5
Leq(24)				59.3	61.0	1.7	65.2	4.2
Ldn				62.5	64.2	1.7	68.2	4.0

TABLE 36

PREDICTED NOISE LEVELS
SITE 6
Weekend
Peconic Village Alternative

	Traffic Volumes			NOISE LEVELS (dBA)				
						DIFFERENCE		DIFFERENCE
Hour	Existing	No Build	Build	Existing	No Build	(Exist-No Build)	Build	(No Build-Build)
12 AM - 1 AM	69	104	104	56.6	58.4	1.8	58.4	0.0
1 AM - 2 AM	42	63	63	54.4	56.2	1.8	56.2	0.0
2 AM - 3 AM	39	58	58	54.1	55.8	1.7	55.8	0.0
3 AM - 4 AM	26	39	39	52.4	54.1	1.7	54.1	0.0
4 AM - 5 AM	34	91	95	53.5	57.8	4.3	58.0	0.2
5 AM - 6 AM	82	203	212	57.3	61.3	4.0	61.5	0.2
6 AM - 7 AM	146	342	356	63.0	66.7	3.7	66.9	0.2
7 AM - 8 AM	241	482	502	65.2	68.2	3.0	68.4	0.2
8 AM - 9 AM	290	535	554	66.0	68.7	2.7	68.8	0.1
9 AM - 10 AM	385	677	696	67.2	69.7	2.5	69.8	0.1
10 AM - 11 AM	433	749	771	67.7	70.1	2.4	70.2	0.1
11 AM - 12 PM	423	755	785	65.1	67.6	2.5	67.8	0.2
12 PM - 1 PM	415	763	789	65.0	67.6	2.6	67.8	0.2
1 PM - 2 PM	439	779	804	65.2	67.7	2.5	67.9	0.2
2 PM - 3 PM	444	785	810	65.3	67.8	2.5	67.9	0.1
3 PM - 4 PM	365	717	742	64.4	67.4	3.0	67.5	0.1
4 PM - 5 PM	406	748	775	65.9	68.6	2.7	68.7	0.1
5 PM - 6 PM	328	633	660	65.0	67.9	2.9	68.0	0.1
6 PM - 7 PM	248	469	495	63.8	66.6	2.8	66.8	0.2
7 PM - 8 PM	224	416	439	63.3	66.0	2.7	66.3	0.3
8 PM - 9 PM	153	269	286	60.1	62.5	2.4	62.8	0.3
9 PM - 10 PM	151	227	239	60.0	61.8	1.8	62.0	0.2
10 PM - 11 PM	134	200	209	59.5	61.2	1.7	61.4	0.2
11 PM - 12 AM	116	174	176	58.9	60.6	1.7	60.7	0.1
Leq(24)				63.5	66.1	2.6	66.3	0.2
Ldn				66.4	69.1	2.7	69.3	0.2

APPENDIX E

CORRESPONDENCE

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Wildlife Resources Center
700 Troy-Schenectady Road
Latham, NY 12110-2400

Michael D. Zagata
Commissioner

(518) 783-3932

John Major
Director

June 7, 1996

Marc J. Lawlor
TAMS Consultants Inc.
Tams Bldg.
655 Third Ave.
New York City, NY 10017

Dear Mr. Lawlor:

We have reviewed the New York Natural Heritage Program files with respect to your recent request for biological information concerning the Environmental Impact Statement for the U.S. Navy, for the former Grumman property, site as indicated on your enclosed map, located in the Town of Riverhead, Suffolk County, New York State.

Enclosed is a computer printout covering the area you requested to be reviewed by our staff. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

Our files are continually growing as new habitats and occurrences of rare species and communities are discovered. In most cases, site-specific or comprehensive surveys for plant and animal occurrences have not been conducted. For these reasons, we can only provide data which have been assembled from our files. We cannot provide a definitive statement on the presence or absence of species, habitats or natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

This response applies only to known occurrences of rare animals, plants and natural communities and/or significant wildlife habitats. You should contact our regional office, Division of Regulatory Affairs, at the address enclosed for information regarding any regulated areas or permits that may be required (e.g., regulated wetlands) under State Law.

If this proposed project is still active one year from now we recommend that you contact us again so that we can update this response.

Sincerely,

Beth O'Neill

Beth O'Neill
Information Services
N.Y. Natural Heritage Program

Encs.
cc: Reg. 1, Wildlife Mgr.
Peter Nye, ESU, Delmar

RECORD OF NONAPPLICABILITY

RECORD OF NON-APPLICABILITY
DISPOSAL AND REUSE OF THE NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
CALVERTON, NEW YORK

The Defense Authorization Act for Fiscal Year 1995 authorizes the Secretary of the Navy to convey the property at the Naval Weapons Industrial Reserve Plant (NWIRP), Calverton NY directly to the Community Development Agency of the Town of Riverhead, New York. Any part of the facility not conveyed to the Town would be disposed of by the General Services Administration (GSA) in accordance with the Federal Property and Administration Services Act of 1944. Therefore, the proposed action is the disposal and reuse of the NWIRP pursuant to the redevelopment/reuse plan prepared for the Town of Riverhead Joint Planning and Redevelopment Commission.

In accordance with 40 CFR 51.853,

(1) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of transfer; and

(2) actions (or portions thereof) associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific reasonable condition is met and where the Federal agency does not retain continuing authority to control emissions with the lands, facilities, title, or real properties are clearly *de minimis* with regard to the General Conformity Rule of the Clean Air Act.

Accordingly, it is my determination that the proposed action conforms to the applicable State Implementation Plan (SIP) and is exempt from the conformity requirements of the Clean Air Act General Conformity Rule.

9/6/96
Date

S. R. BEATTIE
Capt., CEC, USN