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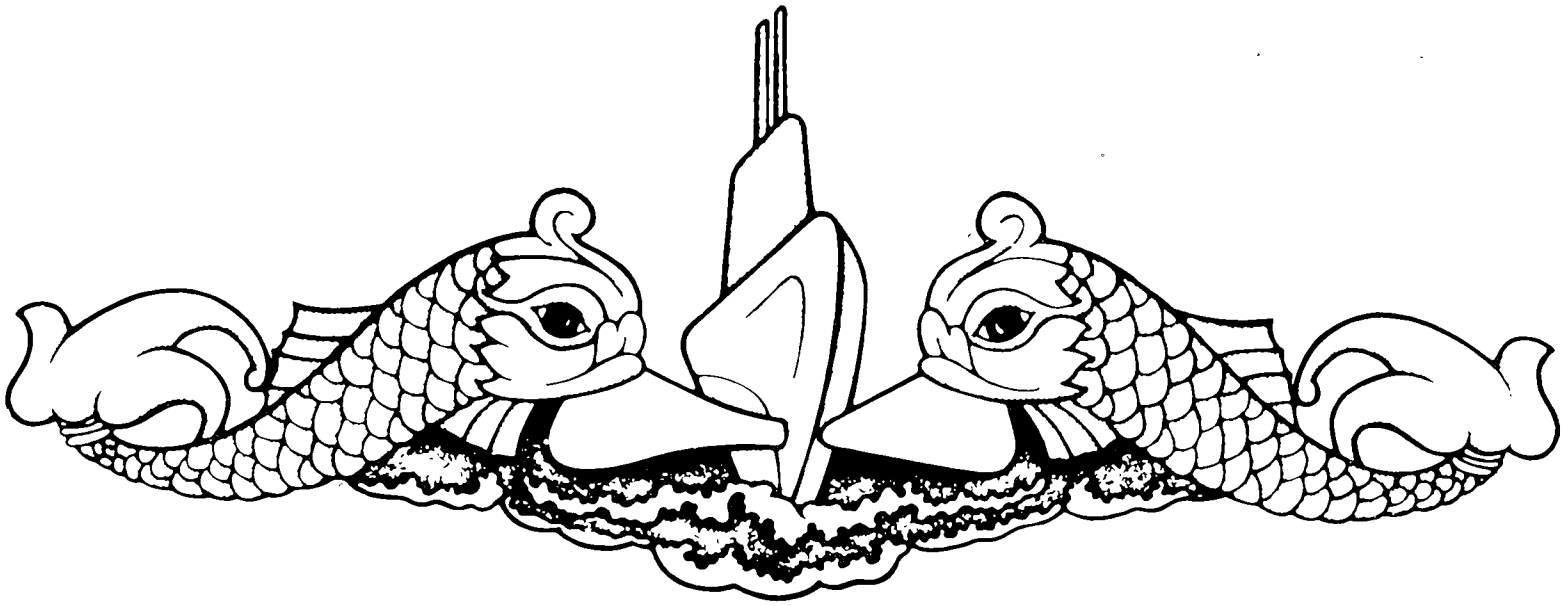


1. EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

This plan is an update of the 31 August 1982 Naval Submarine Base, New London Master Plan. It is produced as a guide for future Base development. The Plan includes an analysis of existing conditions and presents a development scheme which will reduce incompatible land uses and enhance the Base's flexibility to serve the fleet. Use of this plan will ensure that future developments will follow proper land use, environmental, and planning practices.

ISSUES

The key issues addressed in this plan are as follows:

1. SSN 21. The SUBASE must prepare for the arrival of the Navy's first SSN 21 class submarine in 1994 and several major projects that will be required. In the operations area, the Thames River channel will require dredging and Piers 2, 6, and 31 will require upgrading. The maintenance and production function will require a new floating drydock and possibly new shop and storage spaces for the modular component repair concept that will be employed for the SSN 21. The training function will require new applied instruction and operational trainer facilities. Ordnance maintenance and storage functions will increase and require additional facilities. Finally, the supply function will require a new shipping and receiving facility, and facility reconfiguration for the modular component storage system.

2. Weapons Handling and Storage. Weapons handling and storage functions operate under several waivers. The arcs that result from these operations encumber private land or inhabited structures. The private lands encumbered by the Explosive Safety Quantity Distance (ESQD) arcs will be acquired by the Navy. The only other options for eliminating the waivers would be to remove non-homeporting functions from the lower Base and/or remove the weapons handling from the Base. These would be impractical solutions; consequently, operations will continue under the waivers.

3. Troop and Family Housing A shortage of BEQ and BOQ space has resulted in paying for remote off-base housing, separation from personnel services, and a requirement for transportation to carry enlisted personnel to work and school. Family housing is affected by a long waiting list resulting in many families spending considerable personal resources on private lodging and the necessary additional transportation.

4. Fuel Storage. The existing underground fuel tank farm along Crystal Lake Road is environmentally unsound. The tanks are more than 25 years old, are beyond the designed economic life, and need to be replaced before serious environmental issues arise.

5. Encroachment. Encroachment from local community development, proposed riverfront development and a new vehicular traffic pattern caused by the Nautilus Museum will require close scrutiny by the Navy.

6. Security. A major concern of the plan is to provide the necessary concepts and projects to guide and upgrade the security on base, particularly at the waterfront.

7. Future Growth. Future growth is severely limited by the ESQD arcs generated by weapons operations and the limited boundaries of the Base. Any future development will require the demolition of existing facilities or Navy purchase of new land areas adjacent to the Base.

8. Base Infrastructure. Aging and overloaded utility systems are failing frequently, causing blackouts and other service interruptions in various parts of the Base. Hospital and Sub School operations have been disturbed and expansion or new facilities throughout the Base are difficult to accomplish under these circumstances. Base roads, gates, and parking areas are stressed by overloading and crowding caused in part by growth in staff and students and also by the considerable traffic generated by dependents and retirees visiting the Base for personnel services and exchange or commissary shopping.

9. Other Issues of Concern.
   a. Improved Public Works Transportation, and Shops
   b. Futur NAVSUBSCOL Training Requirements
   c. Future Supply Storage and Operations Requirements

DEVELOPMENT CONCEPTS

The Plan establishes general development concepts for the SUBASE. They are:

1. Increase the capacity and flexibility of the SUBASE to support the fleet.
2. Remove all non-waterfront related functions from the lower Base.
3. Consolidate similar functions to increase the efficiency of their operations.
4. Relocate functions that occupy sites having a higher and better use or are constrained by SUBASE operations.
5. Utilize multi-story construction including parking whenever possible due to shortage of buildable land.
6. Provide expansion opportunities for all major SUBASE functions and tenants.
7. Rehabilitate major facilities for SUBASE functions.
8. Support the Base Exterior Architecture Program (BEAP).
9. Consider third party financing to reduce facility deficiencies.
10. Encourage multi-claimant projects to conserve developable land.
11. Design all projects with security as a major consideration in the design.

The Plan further establishes specific recommendations for the following functional areas:

1. Operations and Training

   Improve berthing piers for submarines and SRA support barges.

   Dredge channel and berthing areas for the SSN 21.

   Expand Intermediate Maintenance Facility for SSN 21 support.

Develop a port control facility and support facility for Naval Research Submarine, NR 1.

Replace the fueling pier.

Develop a modern facility for Advanced Engineering Training, i.e., mechanical, electrical, nuclear.

Construct a submarine fire fighting trainer.

Provide facilities for "A" schools, advanced weapons and SSN 21 training.

Provide improvements at State Pier with land acquisition.

2. Maintenance and Production

Construct automotive vehicle maintenance and public works shop facilities.

Expand weapons maintenance shops and storage magazines and acquire additional land for ESQD arc clearance.

Consolidate shop administrative spaces.

Improve fleet cryptologic support facility.

3. Supply and Storage

Replace leaking underground storage tanks at the power plant.

Construct shipping and receiving facility.

Replace leaking underground storage tanks along the north side of Crystal Lake Road.

Provide sufficient magazines for SSN 21 weapons storage.

4. Medical

Upgrade utility services to Naval Hospital, Groton, CT.

5. Administration

Construct new Legal Service Office.

Consolidate scattered administrative functions into new headquarters building.

6. Housing and Community Support

Modernize and upgrade existing BEQ and BOQ facilities.

Construct new BEQ on acquired land along Route 12 SUBASE boundary.

Construct new BOQ adjoining existing BOQ.

Expand BEQ maintenance and storage facilities.

Construct new Community Center Addition.

Construct Child Care Center Addition.

Construct Fire Station.

Provide air conditioning in Special Services Center.

Construct Submarine Museum Archive Storage.

Develop playing fields in family housing area with land acquisition.

Construct Consolidated Club Facility.

Construct Religious Education Center.

7. Utilities, Roads, Parking, Security

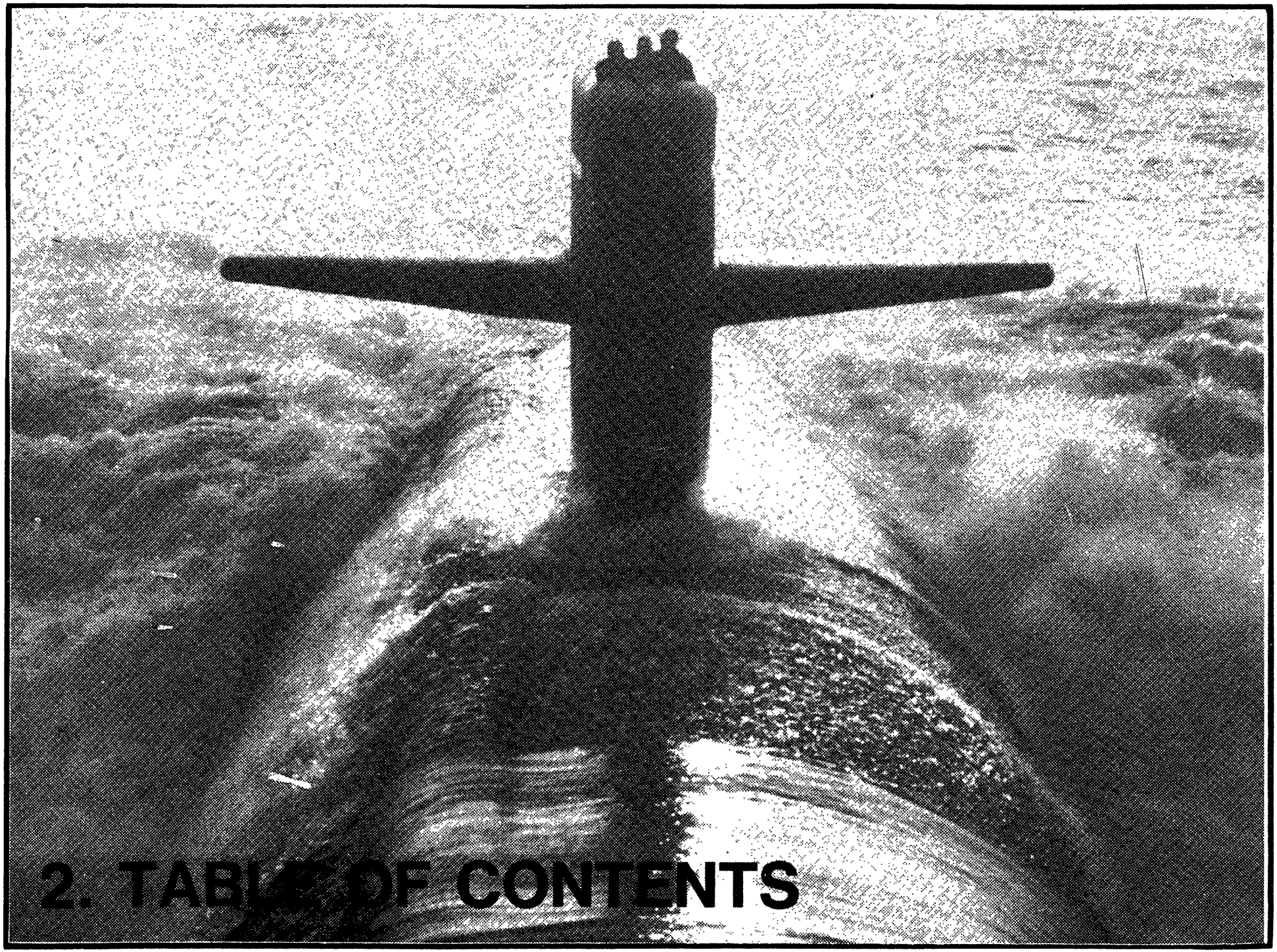
Construct new gate along Route 12 and an east-west connector road.

Upgrade steam, water, sewer, and electric distribution lines.

Improve magazine security.

Provide parking spaces by improving lots and constructing a community parking structure located at the commissary-exchange.

Redesign Main Gate area to provide improved security and traffic flow capacity.



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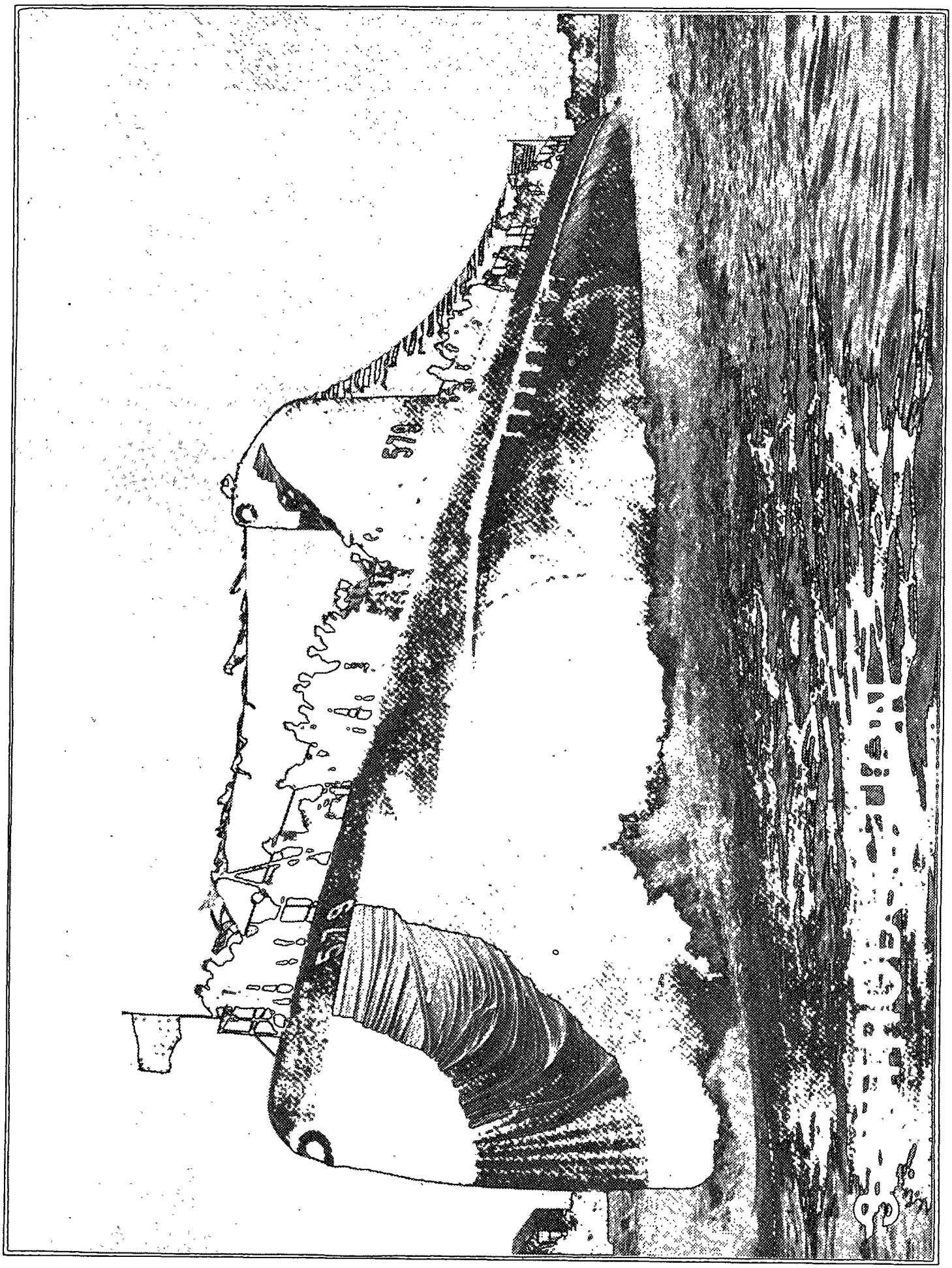


INTRODUCTION

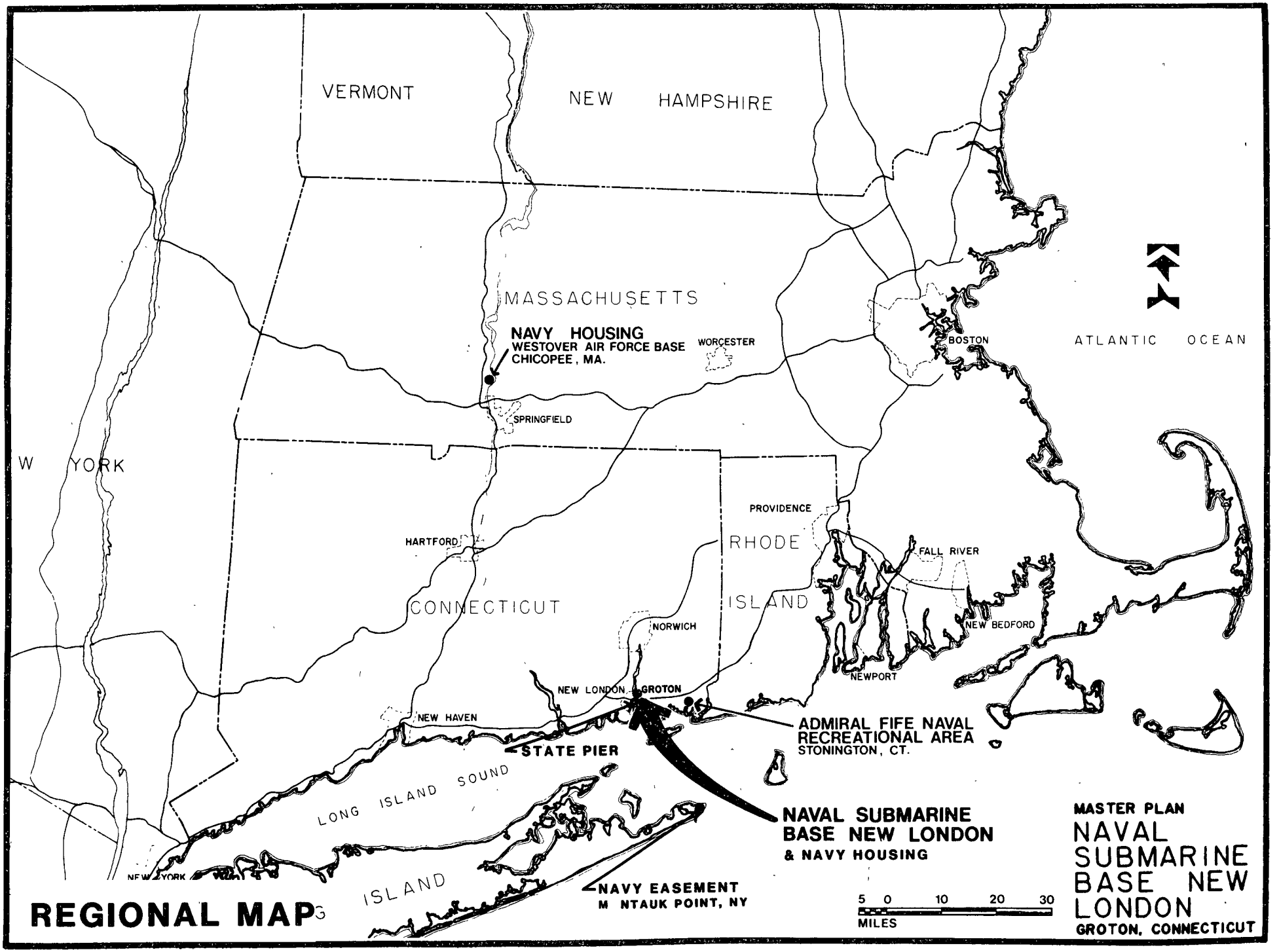
LOCATION

The Naval Submarine Base, New London, Groton, Connecticut is located on the Atlantic seacoast approximately midway between the cities of Boston and New York. Situated on the east bank and approximately six miles from the estuary of the Thames River, the Naval Submarine Base lies within the two Connecticut Townships of Ledyard and Groton. The Master Plan for the Naval Submarine Base also includes the facilities leased at the Connecticut State Pier, located approximately two miles below the SUBASE on the west bank of the Thames River within the City of New London, Connecticut. Navy-owned family housing areas serving the New London Complex are located in the town of Groton, Connecticut, and at Westover Air Force Base, Chicopee, MA. See Plates 3-1 and 3-2. Recreational facilities are located at Admiral Fife Naval Recreational Area located in Stonington, CT.

Other Naval activities in the immediate area include the Supervisor of Shipbuilding Conversion and Repair, located at the Electric Boat Division of General Dynamics Corporation, Groton, and the New London Laboratory of the Naval Underwater Systems Center, which is located on the Thames River in New London, Connecticut. Also situated on the Thames River in New London is the U.S. Coast Guard Academy. There are several Naval activities located about 58 miles east in Rhode Island. The major ones are the Naval Education and Training Center, Naval War College, Naval Underwater Systems Center, Naval Regional Medical Center, Surface Warfare Officers School, all at Newport, and the Naval Construction Battalion Center at Davisville.

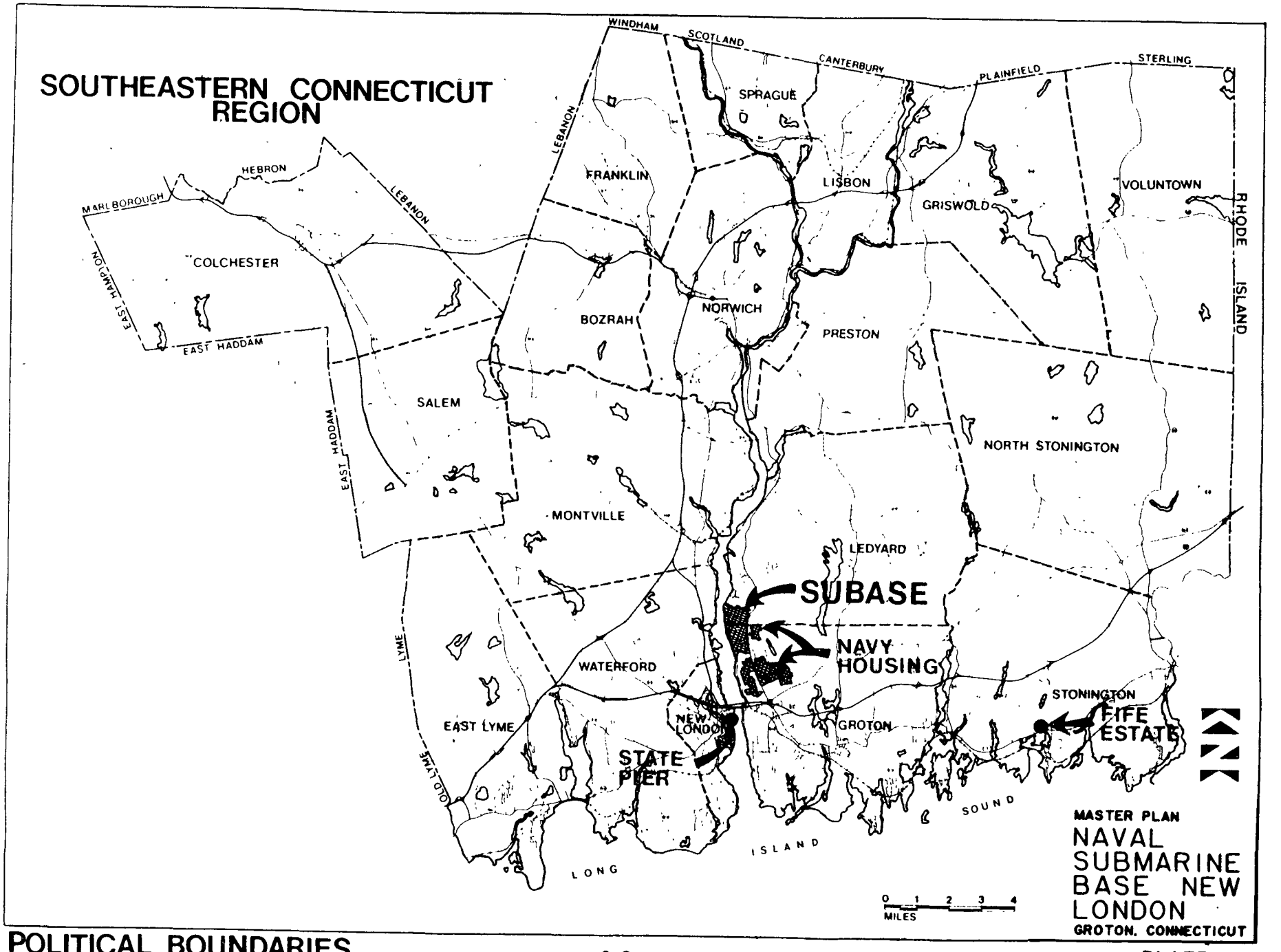
PLANNING OBJECTIVE

The objective of this Master Plan is to provide a realistic and orderly development scheme for the SUBASE, considering the interface and needs of tenant activities on base and the growing need to provide service to present and future submarin s while recognizing natural, manmade, environmental and security constraints, and the development pressures of the local communities.



REGIONAL MAP

PLATE 3-1



POLITICAL BOUNDARIES

PLATE 3-2

SCOPE

The Master Plan is bas d on requir ments generated by the most recent Shore Facility Planning System (SFPS) documents. The Proposed Land Use Plan allocates sufficient land areas to satisfy all basic facility requirements and provides for growth in the Administration, Supply, Production, and Training functional areas.

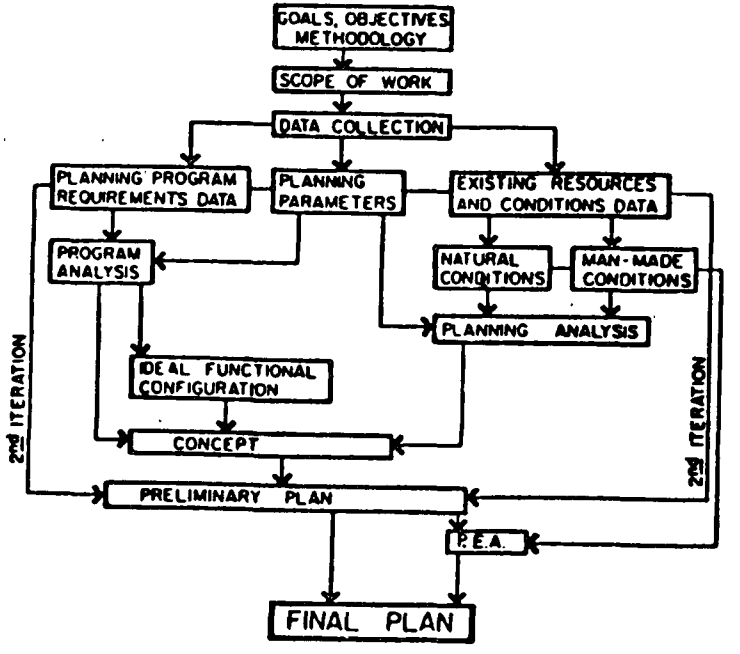
USE OF PLAN

The Plan is intended to be used as a decision making tool by all echelons of Navy, military, and civilian personnel. The narrative portion of the Plan provides a comprehensive analysis to ensure the orderly development of all short, mid-range, and long-range facility projects.

In order for the plan to remain viable, it will be updated every six years to reflect changes made necessary through mission or workload modifications and the resultant facility requirements. The Capital Improvements Plan (CIP) portion will be updated more frequently to show the latest fiscal programming of MCON projects.

METHODOLOGY

The methodology for preparing the Master Plan is portrayed in the following diagram.



METHODOLOGY DIAGRAM

REQUIREMENTS ANALYSIS

General

Fundamental to any planning process is an understanding of the basic purpose of the various activities at an installation and any interface that exists between the various activities. The purpose of this section is to provide that information through a brief description of the SUBASE mission, organization, base loading, and tenant activities and their corresponding function/interface with the SUBASE.

For detailed information on all facility requirements and existing assets, the reader should refer to the appropriate Facilities Requirements Plan.

Submarine Base

MISSION

The Submarine Base mission can be summarized as follows: to maintain and operate facilities to support training and experimental operations of the submarine force; to provide support to submarines, submarine rescue vessels and assigned service and small craft; to provide support to other activities of the Navy and other governmental activities in the area; and to perform such other functions as may be directed by competent authority.

ORGANIZATION

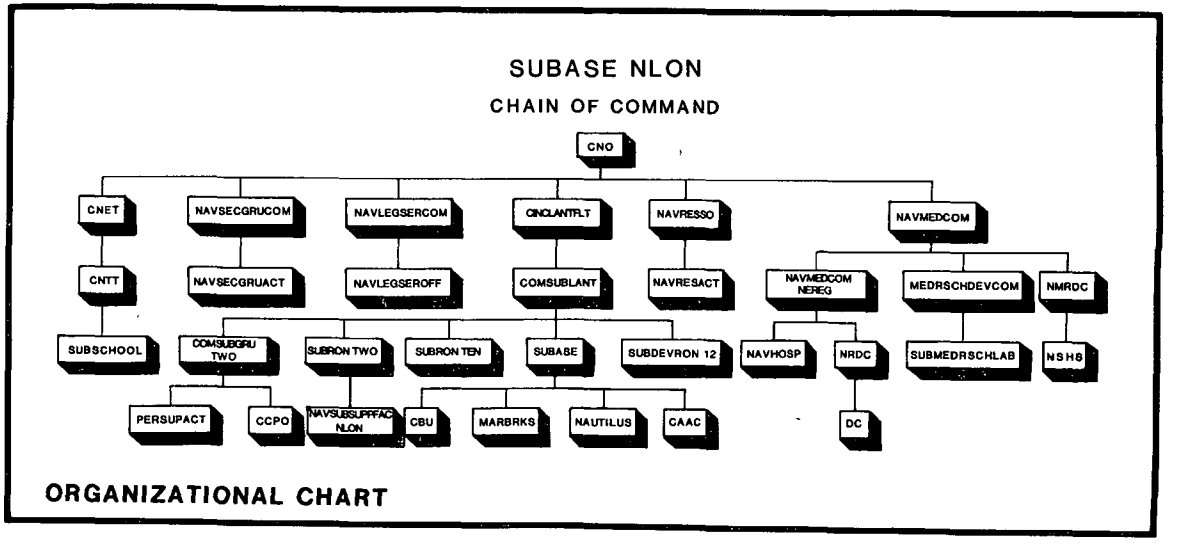
The current organizational chart is shown on page 3-7.

BASE LOADING

	FY-86	FY-92
MILITARY	6,113	7,915
CIVILIAN	724	753
AFLOAT*	6,724	5,658
SHIPS (SUBASE & STATE PIER)	38	37

* Crews of submarines and other military personnel attached.

Source: Base Loading Report



FACILITY REQUIREMENTS

A total list of all facility requirements called the Basic Facility Requirements (BFR) has been prepared by the SUBASE in accordance with OPNAV and NAVFAC directives. The inclusion of the BFR here is not appropriate due to its accessibility elsewhere, its length, and its frequent changes in various entries.

The BFR for the SUBASE includes requirements for several supported/supporting activities but not all activities at the SUBASE. The following is a list of all tenant and supported activities.

Tenant Activities	Function
1. Commander Submarine Group TWO	Operations
2. Commander Submarine Squadron TWO	Operations
3. Commander Submarine Development Squadron TWELVE	Operations
4. Commander Submarine Squadron TEN	Operations
5. Homeported & transient commands & units of the Operating Forces	Admin, Operations
6. SSBN Off Crews	ENG & Admin. & Training
7. Naval Submarine Support Facility	Repair & Weapons
8. Naval Submarine School	Training
9. Naval Hospital	Medical
10. Naval Submarine Medical Research Laboratory	Research
11. Navy Resale Activity	Retail Sales
12. Marine Barracks	Security
13. Personnel Support Activity	Admin
14. Naval Investigative Service Office Resident Agency	Admin
15. Navy Consolidated Publications & Printing Service Facility, Brooklyn	Printing
16. Personnel Support Detachment	Admin
17. Naval Reserve Submarine Training Detachment (Reserve Recruiter)	Admin
18. Naval Electronic Systems Engineering Center, Portsmouth	Admin/ Repair
19. Naval Security Group Activity, Groton	Communication/ Repair/Training
20. LANTFLT Supply Operations Assistance Program Team	Admin
21. Naval Construction Battalion Unit 414	Construction Training
22. Navy Counseling & Assistance Center	Admin
23. D fense Reutilization and Marketing Office	Scrap Yard, Sales
24. Mobile Ordnance Technical Unit-4	Repair

25.	Navy Alcohol Safety Action Program Detachment	Admin
26.	Navy Legal Service Branch Office, Newport	Law
27.	Northeast Judicial Branch Office, NLON	Law
28.	Branch Navy Dental Clinic	Dental Care
29.	Naval Undersea Medical Institute	Training
30.	Officer in Charge of Construction	Admin
31.	Navy Food Management Team, New London	Admin
32.	Consolidated Civilian Personnel Office	Admin
33.	Naval Training Equipment Center, Field Engineering Office	Training
34.	Naval Sea Systems Support Center, Atlantic Field Office	Engineering, Admin
35.	Navy Campus for Achievement	Training
	SOC - Mohegan Community College (Serviceman's Opportunity College)	
	Eastern Connecticut State College	
	PACE - Florida Junior College & City Colleges of Chicago (Program for Afloat College Education)	
	SIU - Southern Illinois University	
36.	Regional Librarian	Admin
37.	NUSC Newport, Shipboard Data Recording Instrumentation Laboratory	RDT&E

<u>Non-Federal Activities</u>

1.	American Red Cross	Admin
2.	Navy Relief Society	Personnel Services
3.	Connecticut National Bank	Personnel Services
4.	Community Service Credit Union	Personnel Services
5.	Scheduled Airlines Traffic Office (SATO)	Personnel Services

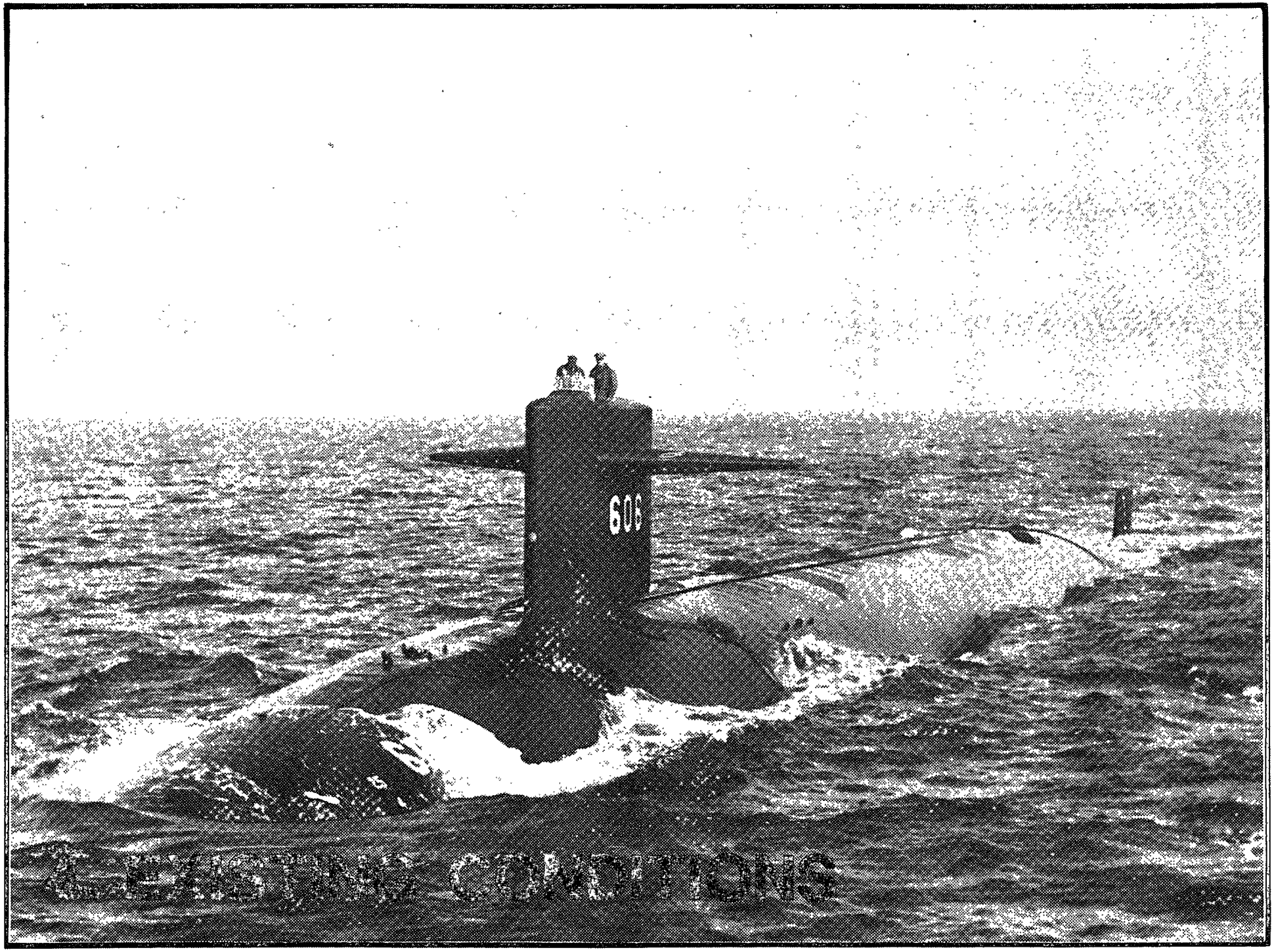
Supported Activities

1.	Assigned Submarines in New Construction & Overhaul. (SSN's assigned to SQ 2 and SSBN's assigned to GRU 2 when in new construction or overhaul)	Admin, Repair Engineering
2.	Units of the Operating Forces Homeported in New London	Admin, Operations
3.	Supervisor of Shipbuilding, Conversion & Repair, USN, Groton	Admin, Engineering
4.	Naval Underwater Systems Center, New London Laboratory	Research
5.	Naval Nuclear Power Training Unit, Windsor, Connecticut	Training
6.	Naval Reserve Officers Training Corps Unit, New Haven	Training
7.	Coast Guard Academy, New London	Training
8.	Coast Guard Moorings, New London	Operations
9.	Army Reserve Units not specified elsewhere in this instruction	Admin
10.	Connecticut Army & Air National Guard Units not specified elsewhere in this list	Admin, Training
11.	Supply Point Control Center Representative (Supervisor of Shipbuilding, Conversion & Repair, USN, Groton)	Supply
12.	Naval Plant Representative Office, Stratford	Admin
13.	Naval Recruiting Branch Station, New London	Admin
14.	Defense Investigative Service	Admin
15.	Supply and Service Company, East Windsor, Connecticut	Supply
16.	Transportation Company, East Windsor, Connecticut	Admin
17.	76th Support Battalion, East Windsor, Connecticut	Admin
18.	1st Battalion, 385th Regiment, East Windsor, Connecticut	Admin

19.	Headquarters 2nd Battalion, 385th Regiment, Waterbury, Connecticut	Admin
20.	Headquarters 3rd Battalion, 385th Regiment, Fairfield, Connecticut	Admin
21.	Headquarters Company, 76th Division, West Hartford, Connecticut	Admin
22.	395th Supply & Service Battalion, Ansonia, Connecticut	Supply
23.	433rd General Supply Company, Waterbury, Connecticut	Supply
24.	411th Civil Affairs Company, West Hartford, Connecticut	Admin
25.	819th Station Hospital, USAR, West Hartford, Connecticut	Medical
26.	DA 340th General Hospital, New Haven, Connecticut	Medical

MAJOR CLAIMANTS

The major claimants which sponsor the majority of the building construction at the Submarine Base include the Commander-in-Chief, U.S. Atlantic Fleet; Commander Naval Medical Command; Chief of Naval Education and Training and Commander Naval Security Group.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EXISTING CONDITIONS

REGIONAL/VICINITY DESCRIPTION

Jurisdiction

The Naval Submarine Base lies within the two Connecticut Townships of Ledyard and Groton. The Naval Submarine Base also includes the facilities leased at the Connecticut State Pier, located within the City of New London, Connecticut. Navy-owned family housing areas are located within the town of Groton, Connecticut. See plates 4-1 and 4-2.

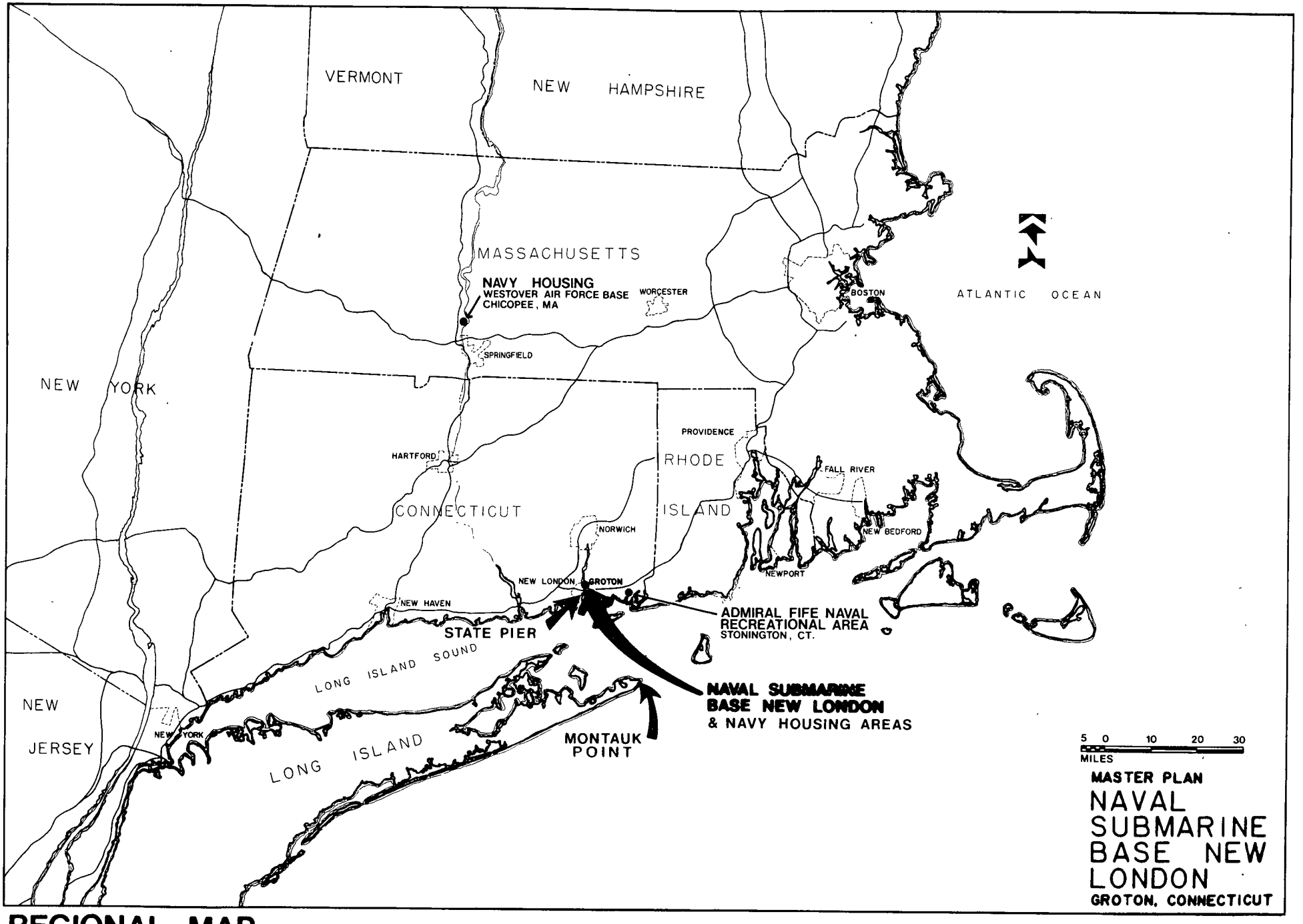
History

John Winthrop, Jr., son of the great Massachusetts leader, founded "Pequot," which would be renamed "New London" in 1658. Winthrop had an excellent eye for picking a good community site. New London's advantages were many: it was Connecticut's best harbor, was at the junction of the Thames (then the Pequot) River and Long Island Sound, and occupied moderately rolling ground, healthy and suitable for cultivation.

Main activities were those industries needed to process local products: shipbuilding, trading, fishing and farming.

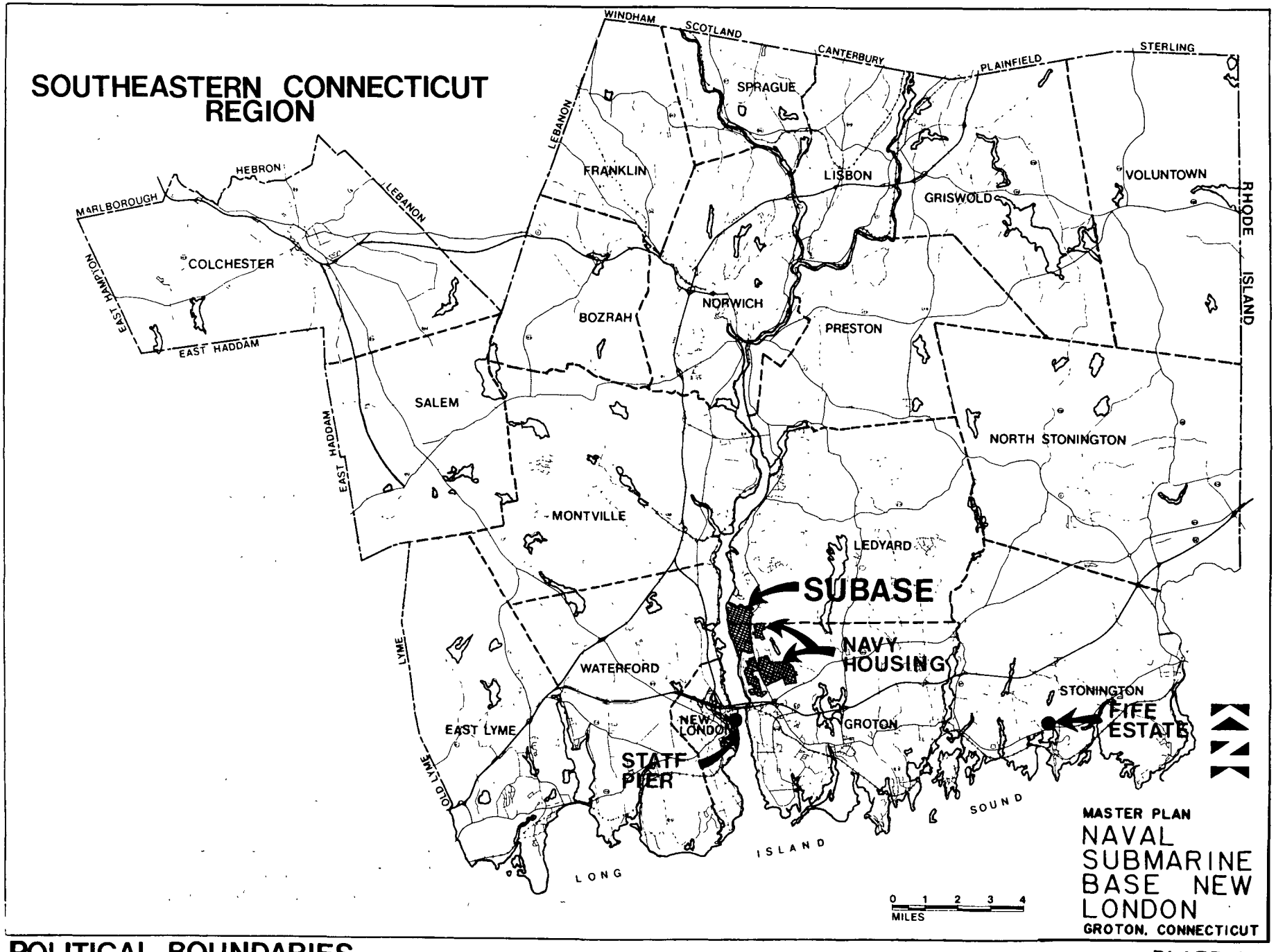
Shrewd Yankees very early in the Revolutionary War realized that idle ships and seamen could be put to highly profitable and socially acceptable use as privateers. New London was by far the most important privateering port in Connecticut. In the course of the war, approximately 300 captured vessels sailed into the New London harbor under prize crews.

This success did not go unnoticed by the British who in the early fall of 1781, organized a punitive raid against New London. New London was looted, and about 130 buildings were burned to the ground. The small



REGIONAL MAP

PLATE 4-1



POLITICAL BOUNDARIES

PLATE 4-2

village of Groton on the east bank of the Thames Riv r was also burned by the British before th y withdrew.

Early in the 19th century, the region's businessmen looked to the sea. Shipbuilding, depressed by the Revolutionary War, revived, and names like Mystic, Stonington, and Noank became synonymous with well-built vessels. New London and Stonington were the leading whaling ports. At its height New London was home port to 79 whaling ships.

Throughout the 19th century, transportation facilities were improving. Sail packets linked the region to New York, Providence, and Boston in the 18th century and into the 19th century, but beginning in 1817 they had to compete with regularly scheduled steamboats. By 1840, a railroad connected ports where steamboats arrived at Norwich to Worchester and Boston, Massachusetts. Before the end of the century, railroads had been extended to even the smaller industrial villages.

Since World War II, defense activities have supplanted textiles as the region's leading employer. Together, the United States Navy, Coast Guard, and Electric Boat Division of General Dynamics account for nearly three-fourths of all employment in southeastern Connecticut.

Changes in the economy have produced equally significant shifts in the region's population. In total, the area now has about 208,000 inhabitants, and most of these have long since abandoned the small, compact mill villages for suburban living. Between redevelopment of older communities and the suburban population surge, southeastern Connecticut's physical and cultural landscape is now changing more rapidly than ever.

OVERVIEW OF SOUTHEASTERN CONNECTICUT

Southeastern Connecticut is a region of historical significance, modern communities and advanced scientific research and technology.

Tourism is a major industry and sightseeing is a major activity. Mystic Seaport, Mystic Marine Aquarium, Old Mystic Shopping Village, tours of the Coast Guard Academy, and th Nautilus Memorial ar

popular tourist attractions. New London, replet with artifacts of our nation's beginnings, has many historic points of interest that are observed on whaling tours. See plate 4-3.

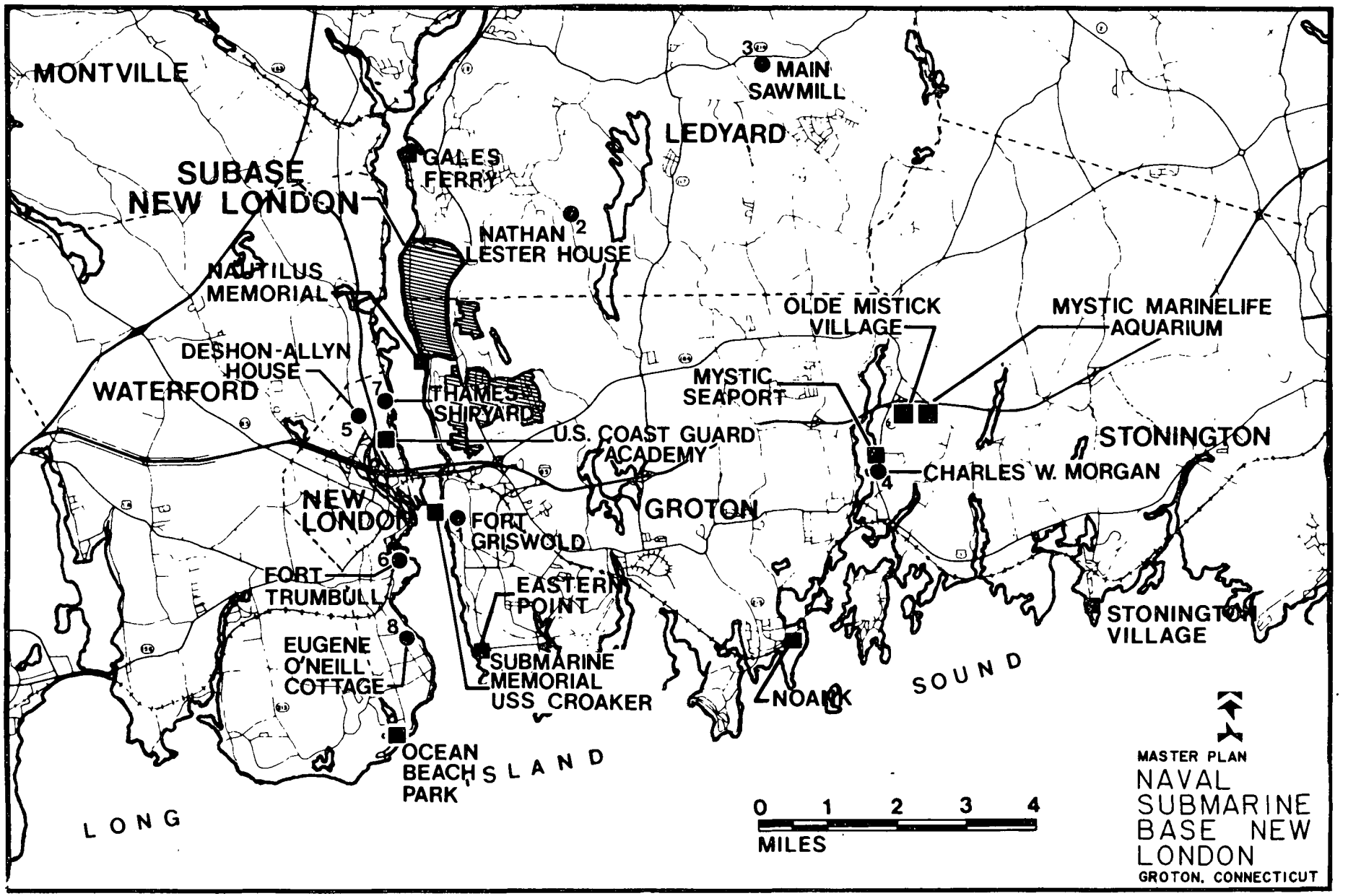
Single-family houses, condominiums and rental units are available throughout the region. Single-family houses can be found in the middle of cities as well as in the suburbs and countryside. The most recent trends in housing show an increase in the popularity of condominiums.

The educational systems in Southeastern Connecticut are well rated. Generally, all public schools are equal in facilities and scholastic ratings. There is no tuition and bus service is provided by the school district. The region has excellent opportunities in higher education for almost any academic endeavor.

Three top-notch voluntary hospitals serve as the area's primary health-care facilities. Staffed by full complements of highly trained professionals, all three hospitals offer a broad range of medical care. Services and facilities in these hospitals are constantly under review with an eye to improvement, expansion, and installation of new services to meet the communities' changing needs.

The influence of high-technology companies is supplementing the traditional industries, of government, tourism, manufacturing, agriculture, and fishing. The area's established core of technical companies includes: Analysis and Technology and Eclechtech Associates, North Stonington; Crescent Communications Corporation, New London; Reactor Controls, Waterford; and United Nuclear Corporation Naval Products, Norwich. Among other well-known companies in the region are Dow Chemical Company, producing plastics, the Thermos Division of Kinf-Seeley Company, Prentice-Hall Inc., and TRACOR Inc.

A large segment of the economy is represented by the Navy's Submarine Base in Groton. With 43,000 military and civilian employees and their families, this is the world's largest submarine base. Not far from the base is General Dynamics Corporation's Electric Boat Division, a prime Navy contractor for the construction of nuclear submarines. In N w London, th Naval Underwater Systems Center employs more than 1,450 civilians and about 14 Naval personnel in research and development of und rwater acoustics and undersea warfare.



HISTORIC POINTS OF INTEREST

PLATE 4-3

The r gion is accessible by car, bus, air, train, or boat. The East's major highway, Interstate 95, which runs from Florida to the Canadian border, passes through the region and intersects many principal highways and arteries. These include the Boston Post Road or U.S. 1, Interstate 395, and State Routes 2, 9, 12, 32, 85, and 184.

Northeast Utilities meets every power need, industrial and residential, in part through its three nuclear plants. Gas is distributed by Connecticut Natural Gas Co., while Southern New England Telephone handles telephone service.

There is an abundance of recreational opportunities in the region. Many of them are water related; fishing, boating, swimming, and water skiing. In addition, every city and town offers the opportunity to participate in a full range of sports, at private country clubs and public recreational centers. Tennis courts, indoor and outdoor, and playing fields are plentiful.

Southeastern Connecticut has extensive cultural opportunities. Theater, dance, music, film and fine arts are in abundance. All area colleges open special-interest lectures to the public, along with art shows, plays, and foreign film programs. All the public libraries of Southeastern Connecticut conduct cultural programs, many especially for children. Cultural programs are constantly expanded in response to the needs of the growing communities. Plans call for construction of a Regional Center for the Performing Arts in Norwich.

Population

POPULATION PROFILE OF THE SOUTHEASTERN CONNECTICUT REGION (SCR)

According to the 1980 Census, there were 225,666 people living in the SCR. This number is expected to increase by 5.9 percent by 1990.

As indicated by the breakdowns in Table IV-1, forty-eight percent of this regional population live in urban towns, forty-seven percent live in suburban towns and five percent live in rural towns. These figures demonstrate the fact that the population is moving to the suburbs.

TABLE IV-1 POPULATION

URBAN TOWNS:	1980	1990	POP CHANGE	PERCENT CHANGE
Groton	41,062	42,320	1,258	3.1
New London	28,842	29,800	958	3.3
Norwich	38,074	39,580	1,506	4.0
URBAN TOTALS	107,978	111,700	3,722	3.4%
SUBURBAN TOWNS:				
Conchester	7,761	8,840	1,079	13.9
East Lyme	13,870	15,130	1,260	9.1
Griswold	8,967	9,600	633	7.1
Ledyard	13,735	14,900*	1,165	8.5
Lisbon	3,279	3,480	201	6.1
Montville	16,455	17,090	635	3.9
Preston	4,644	4,920	276	5.9
Sprague	2,996	3,120	124	4.1
Stonington	16,220	17,720	1,500	9.2
Waterford	17,843	18,910	1,067	6.0
SUBURBAN TOTALS	105,770	113,710	7,940	7.5%
RURAL TOWNS:				
Bozar	2,135	2,220	85	4.0
Franklin	1,592	1,840	248	15.6
North Stonington	4,219	4,640	421	10.0
Salem	2,335	3,040	705	30.2
Voluntown	1,637	1,750	113	6.9
RURAL TOTALS	11,918	13,490	1,572	11.7%
REGIONAL TOTALS	223,666	238,900	13,234	5.9%

*Population Projections, 1990, (SCPR), March, 1984. Exclusive of military personnel.

Stonington will have the largest numerical increase in 1990 (1,500) while Salem will have the largest rate of growth at 30.2 percent. The next fastest growing towns will be Franklin, Conchester, North Stonington and Stonington, with respective percentages of 15.6, 13.9, 10.0, and 9.2.

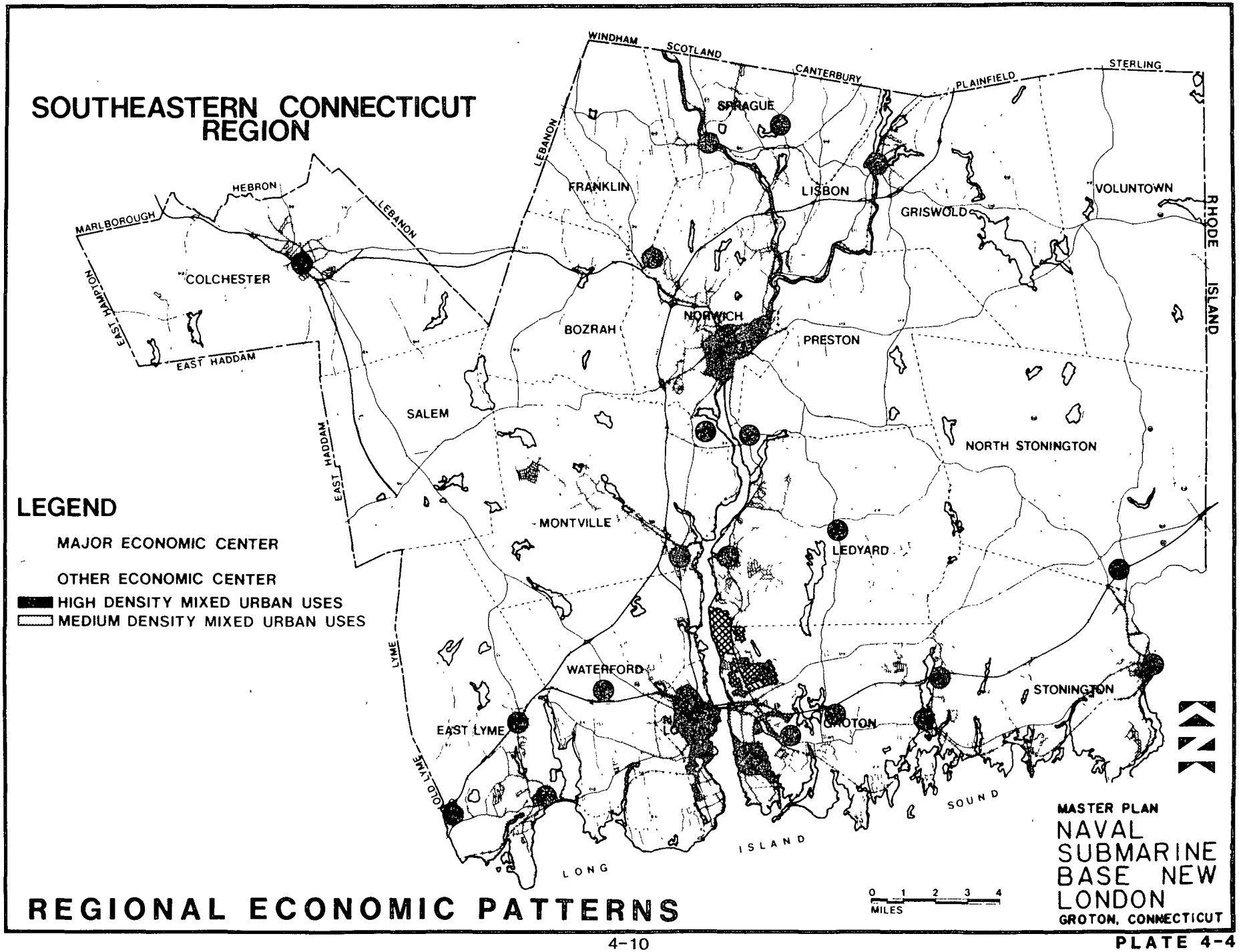
Economy

The Norwich-New London Labor Market Area consists of all the towns in the Southeastern Connecticut Region with the exception of Conchester and also includes the towns of Lyme and Old Lyme. The area contains 614 square miles with a population of 225,856, giving an overall density of 368 persons per square mile. The southern boundary of the Labor Market Area is formed by Long Island Sound. This and the area's other major natural feature, the Thames River, are important economic assets in the form of transportation and recreational opportunities.

The Labor Market Area is not located within easy commuting distances of any of the major metropolitan centers of Connecticut and adjacent states. Its economy is thus comparatively self-sufficient. It is, however, within reasonable travel distance of several of these major cities. For example, from New London it is 45 miles to Hartford, 36 to New Haven, 113 to New York City and 74 to Providence, Rhode Island.

The Cities of Groton and New London form two of the Area's three urban centers, located at the mouth of the Thames River. The other center is located in the northern part of the Area, in the City of Norwich. These three nuclei are linked by two ribbons of suburban development, which stretch along both banks of the Thames River. A similar ribbon of suburban development stretches along the coast, on the southern border of the area, from Stonington on the east to Waterford on the west. Future economic growth will reflect the benefits of transportation along RT I-95 and the Thames River. The growth of river traffic will continue to have a long term effect on the SUBASE. See Plate 4-4.

The Labor Market Area contains but one important overseas water transportation terminal, the State Pier in New London. In addition, th re are several oil terminals on the Thames River, where p troleum



REGIONAL ECONOMIC PATTERNS

PLATE 4-4

products are off-loaded from barges. The terminal of the Amerada Hess Corporation in Groton can off-load p troleum products brought in by large tankers.

EMPLOYMENT TRENDS

Jobs available in Southeastern Connecticut increased by over 25% from 1970 to 1980 while the region's population grew by only 2.5%. Table IV-2 gives the total non-agricultural employment for the towns of the Labor Market Area for 1971 and 1980. The table shows that the most important increase is in Groton. While New London's increase is the smallest of those reported for the three urban towns, it must be remembered that New London's population has decreased slightly over the same time period. Groton's dominance of the areas's economy is illustrated by the fact that it contains 45% of the Area's increase in employment, as well as by far the largest overall employment. The table shows that employment in the suburban and rural towns is low compared to that in urban towns.

UNEMPLOYMENT

The unemployment rate for May of each year for the New London-Norwich Labor Market Area is shown for 1971 to 1980 in Table IV-2. The table also gives the rank of the Labor Market Area with respect to the other areas in the State for the same time period. The table shows that in the early part of the decade the area had one of the lower unemployment rates in the State, and in fact had the lowest rate in 1974. However, in May 1978, the unemployment rate in the area was the highest in the State, and since that time the area has not regained its former good standing, although it is improving. As of June 1983, the unemployment rate in the area was lower than that of Connecticut. Both the New London-Norwich Labor Market area and the state unemployment rate are far below that of the United States.

TABLE IV-2
NOT SEASONALLY ADJUSTED
NEW LONDON-NORWICH LABOR MARKET AREA
EMPLOYMENT STATISTICS

YEAR	LABOR FORCE	EMPLOY-MENT	UNEMPLOY-MENT	% UNEM-PLOYED	STATE % UNEM-PLOYED	RANK IN STATE*
1980	107,249	101,601	5,648	5.3	4.9	8
1979	104,063	98,237	5,826	5.6	4.8	13
1978	96,890	89,260	7,630	7.7	5.3	16
1977	104,433	98,280	6,153	5.9	7.3	4
1976	98,700	91,400	7,300	7.3	9.2	4
1975	96,340	90,140	6,200	6.4	8.5	5
1974	96,700	92,900	3,800	3.9	5.6	1
1973	91,820	87,420	4,400	4.8	5.3	3
1972	89,110	82,010	7,100	6.9	8.5	2
1971	87,590	81,590	6,000	6.9	8.6	3

SOURCE: Connecticut Labor Situation; Connecticut Labor Department

*Low rank number indicates low unemployment. There are 16 labor market areas in the state.

DEFENSE EMPLOYMENT

A very important aspect of the economy of the New London-Norwich Labor Market Area is military and defense employment. This is presented in Table IV-3 below:

TABLE IV-3 CIVILIAN DEFENSE EMPLOYMENT, MAJOR EMPLOYERS, NEW LONDON-NORWICH LABOR MARKET AREA, 1980-1982

General Dynamics Corporation, Groton	19,000
U.S. Submarine Base	1,008
U.S. Coast Guard Academy	143
U.S. Navy, Underwater Systems Center	1,200
Total:	21,351

Source: Survey by SCRPA

The table does not include small defense contractors, several of which are engineering firms, which provide services both to General Dynamics Corporation and to the military organizations.

In addition to civilian employment, 13,950 U.S. Navy military personnel are currently attached to the U.S. Submarine Base in Groton. Also there are 494 U.S. Coast Guard enlisted men and officers at the Coast Guard Academy in New London plus about 900 cadets. These figures give a grand total for military personnel residing in the Labor Market Area of 15,344. These people, together with their families, have an important impact on the economy of the area, especially on retail trade and on the housing market.

TOURISM

Tourism is an important part of the economy of the New London-Norwich Labor Market Area and appears to have potential for economic growth. The center of tourism in the area is Mystic in the Town of Stonington, which contains two of Connecticut's most important attractions, Mystic Seaport and Mystic Marine Life Aquarium.

Some measures of the current size of the tourist industry in the area are given by the available statistics. In the Mystic area alone, there are at least 772 motel rooms*. Annual paid attendance at the Mystic Marine Life Aquarium for 1983 was 650,000 persons.**

The Nautilus Memorial Submarine Force Library and Museum, located at the SUBASE was opened to the public in April 1986. The new 14,000 SF museum is the permanent berth for the USS Nautilus.

* Mystic Chamber of Commerce
** Attendance figures provided by Mystic Marine Life Aquarium.

Circulation and Transportation

HIGHWAYS

The New London/Groton area is very accessible to vehicular traffic due to the proximity of Interstate 95 and Interstate 395. Local arterial roads include Routes 32 and 12. Secondary roads include Routes 117 and 164.

I-95 and I-395 are the only interstate highways in this region and they serve both through and local traffic. On the east side of the Thames River, U.S. Route 1 parallels I-95 and both serve the sub-regional and through traffic between Groton, Stonington and Westerly, Rhode Island. U.S. Route 1 in Groton carries the bulk of the traffic destined for the commercial areas of the town. On the west side of the Thames River, both Route 1 and Route 156 serve the local and intra-regional traffic in East Lyme and Waterford. I-95 is a 4-lane expressway from where it enters the labor market area in Lyme to New London. Route 156 in the towns of East Lyme and Waterford is an arterial road for east/west traffic. This highway carries very heavy recreational traffic during summer months in addition to normally significant year-round traffic. See Plate 4-5.

The major cities of Hartford, CT and Providence, RI are less than one hour away using Routes 9 and 91 to enter Hartford and Route I-95 to Providence. Boston, MA is approximately 90 minutes away using I-95.

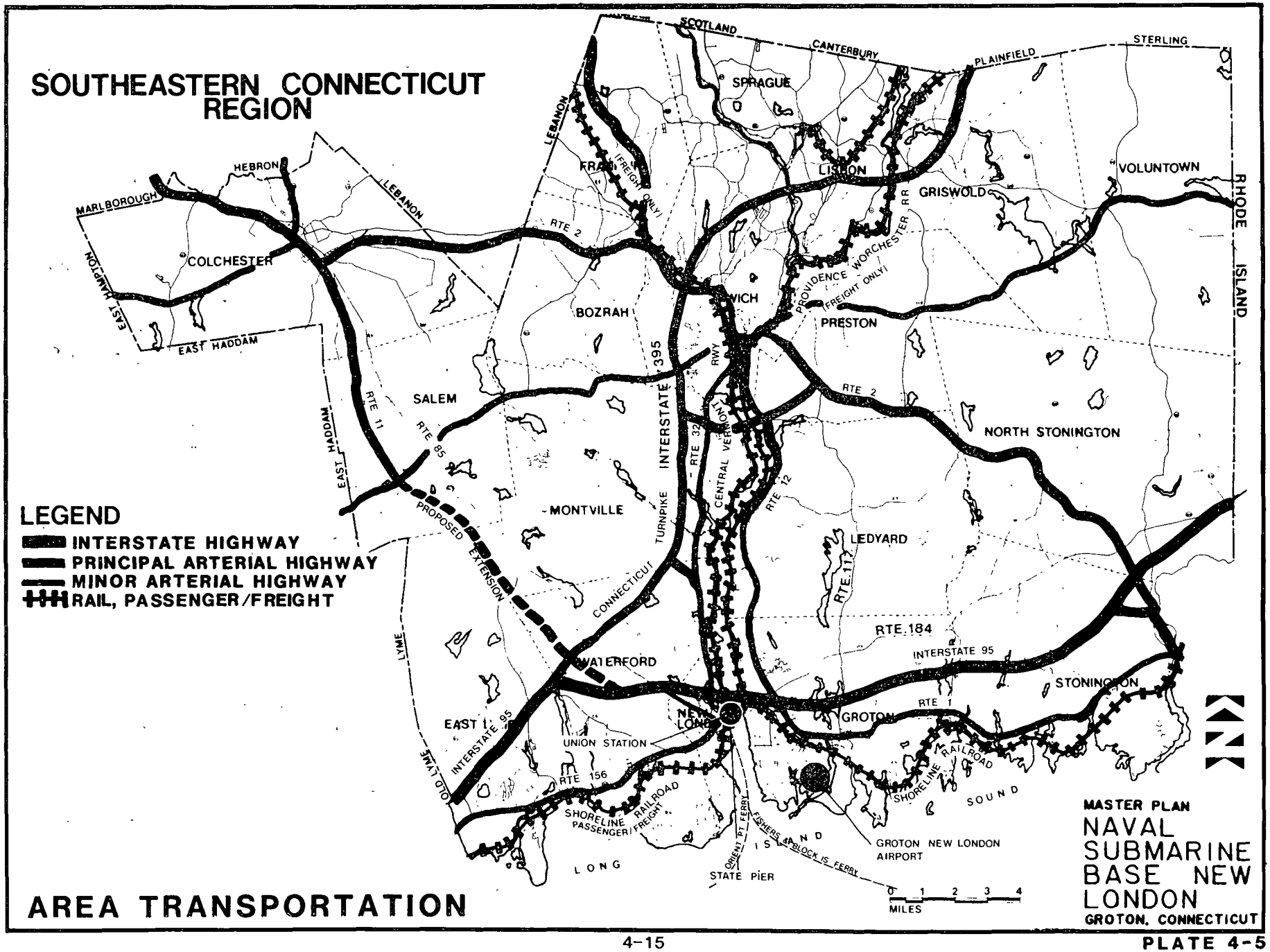

SOUTHEASTERN CONNECTICUT REGION
LEGEND
INTERSTATE HIGHWAY
PRINCIPAL ARTERIAL HIGHWAY
MINOR ARTERIAL HIGHWAY
RAIL, PASSENGER/FREIGHT
AREA TRANSPORTATION
MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT
SCOTLAND
CANTERBURY
PLAINFIELD
STERLING
SPRAGUE
LISBON
GRISWOLD
VOLUNTOWN
RHODE ISLAND
HEBRON
MARLBOROUGH
LEBANON
COLCHESTER
EAST HAMPTON
EAST HADDAM
RTE 2
BOZRAH
PROVIDENCE WORCHESTER RR
(FREIGHT ONLY)
PRESTON
SALEM
RTE 11
RTE 85
INTERSTATE 395
RTE 32
CENTRAL VERMONT RWY
RTE 12
NORTH STONINGTON
MONTVILLE
TURNPIKE
PROPOSED EXTENSION
CONNECTICUT
LEDYARD
RTE 117
RTE 184
INTERSTATE 95
WATERFORD
STONINGTON
RTE 1
GROTON
EAST I
OLD LYME
LYME
UNION STATION
RTE 156
SHORELINE RAILROAD
PASSENGER/FREIGHT
ORIENT PT FERRY
FISHERS & BLOCK IS FERRY
STATE PIER
GROTON NEW LONDON AIRPORT
LONG ISLAND SOUND
MILES
0 1 2 3 4

PLATE 4-5

Nearby Naval Bases are located in Rhode Island, New York, and Massachusetts.

US Naval Complex, Newport, RI is approximately 60 miles east and is accessible via I-95 in the northerly direction and RT 138 in the easterly direction. After crossing the Jamestown Bridge, the Newport Bridge provides access directly to the Naval Complex.

Naval Construction Battalion Center (CBC) Davisville, RI is approximately 50 miles northeast and is accessible from SUBASE New London via Routes I-95, 138, and 1 in the northeasterly direction.

Naval Base, New York is approximately 130 miles southwest and is accessible from SUBASE New London via I-95 and the Brooklyn Queens Expressway in the southwesterly direction.

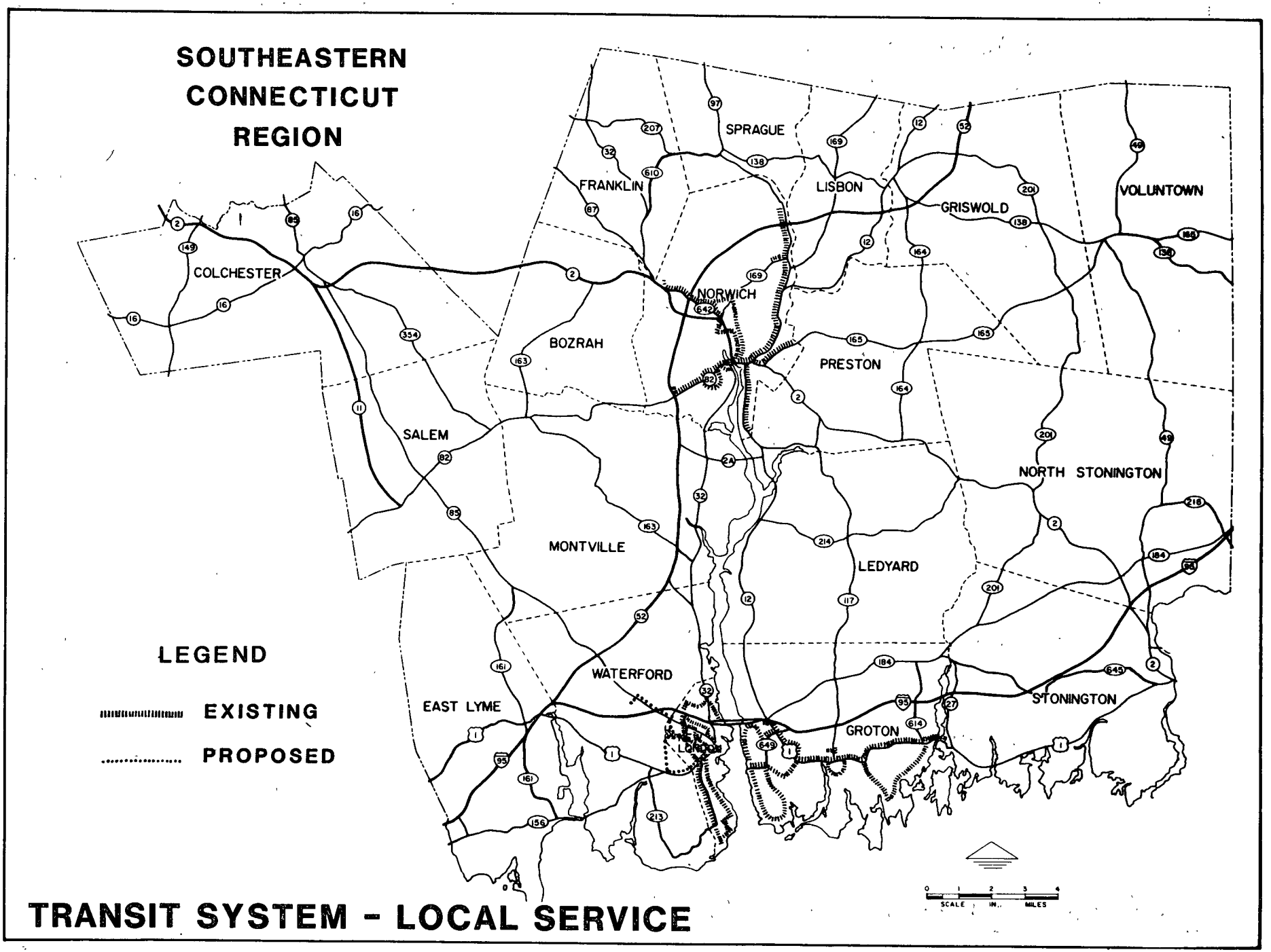
Naval Air Station, South Weymouth, MA is approximately 80 miles northeast and is accessible from SUBASE New London via routes I-95, 495 and 24 in the northeasterly direction.

MASS TRANSIT

In May of 1980, the Southeast Area Transit (SEAT) began regional transit service. The Southeast Area Transit (SEAT) provides local, corridor and commuter service in the following nine towns: East Lyme, Griswold, Groton, Ledyard, Montville, New London, Norwich, Stonington, and Waterford. The local transit system services three of the nine SEAT communities (Groton, New London, and Norwich). See Plate 4-6.

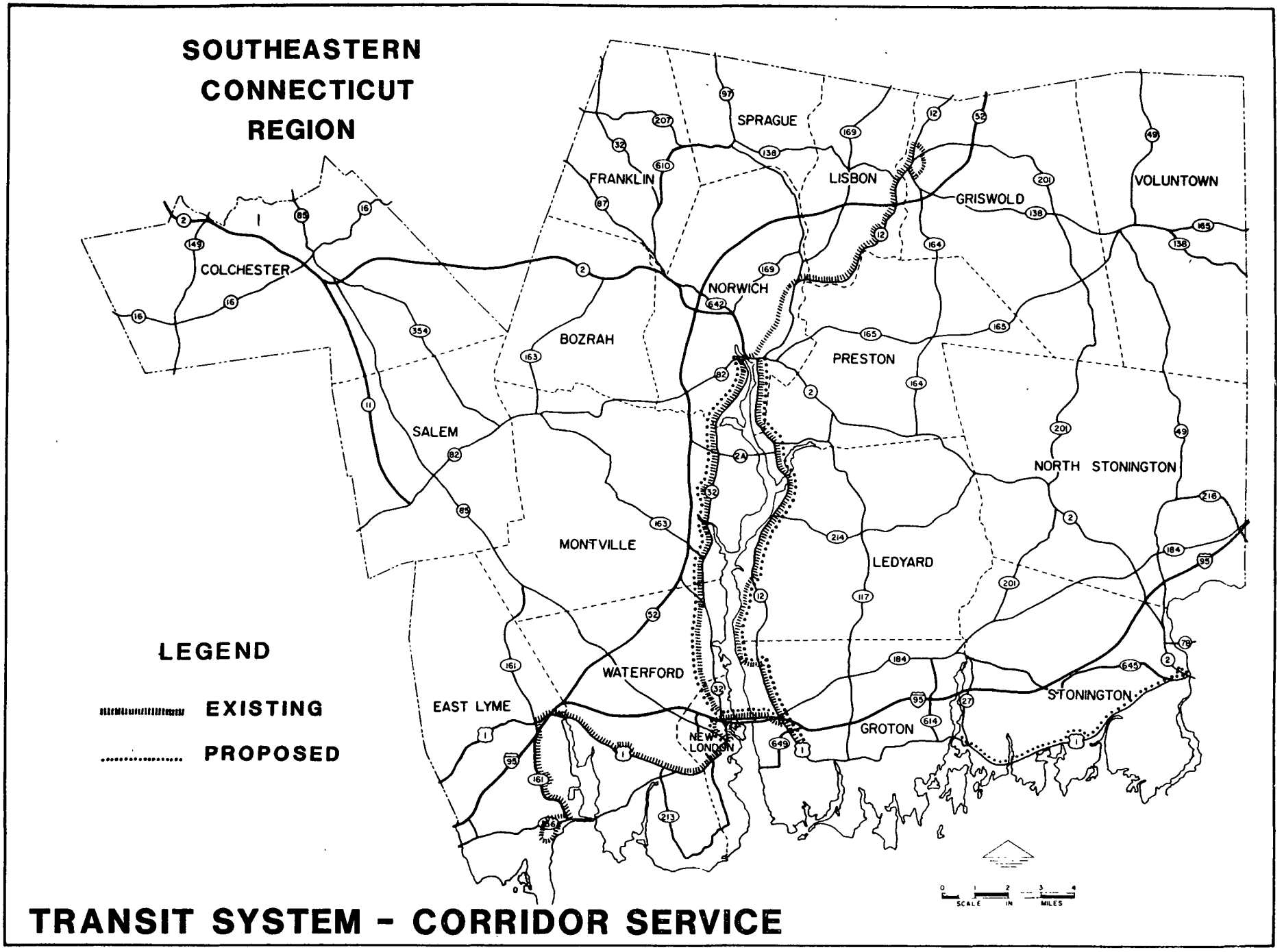
Corridor service is distinquished from local service in that it is designed to link all the municipalities together. See Plate 4-7.

The commuter service is a special, limited type of service offered by SEAT to employees who work in the Groton industrial area, primarily at the Electric Boat Division of the General Dynamics Corporation. Eastern Bus Lines and Greyhound are also available from New London. See Plate 4-8.



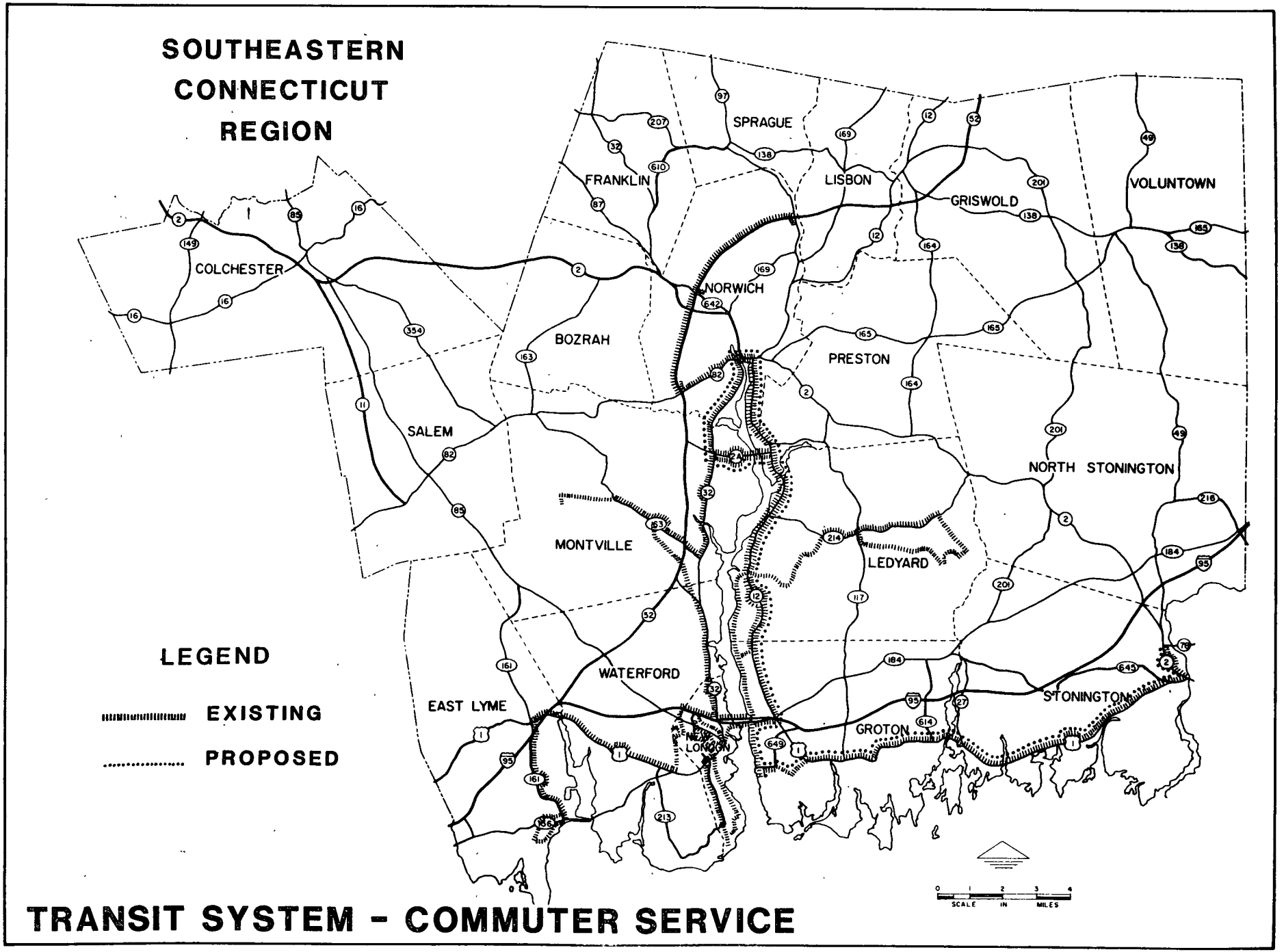
TRANSIT SYSTEM - LOCAL SERVICE

PLATE 4-6



TRANSIT SYSTEM - CORRIDOR SERVICE

PLATE 4-7



TRANSIT SYSTEM - COMMUTER SERVICE

PLATE 4-8

RAIL SERVICE

Southeastern Connecticut has a rail network that adequately connects the region's major production and distribution centers with each other and with mainline passenger and freight routes.

The mainline of the Northeast Corridor service runs along the Southeastern Connecticut coast. This accounts for about one-third of the railroad mileage in the region. The line is operated by the Consolidated Rail Corporation. Passenger service is provided by AMTRAK from New London and Mystic to the major destinations of Boston/Providence and New York/New Haven.

The Providence and Worchester Company operates a rail line from Groton to Worchester, Massachusetts. The Providence and Worchester interchanges with Conrail at Worchester and with the Boston and Main Railroad at Gardiner, Massachusetts. The Providence and Worchester provides freight service on a third mainline route within Southeastern Connecticut. A second line, operated by the Central Vermont Railway provides freight service along the north-south axis.

Overall, Southeastern Connecticut is reasonably well served by its present rail system. The major needs are to upgrade the present physical facilities and to improve the level of service. Important physical improvements include repair of the rail bridges over the Thames River.

AVIATION FACILITIES

The Groton-New London Airport serves both the New London and Norwich Areas. It is located in the Town of Groton one mile south of U.S. Route 1 between the Poquonock River and Baker Cove.

MARINE TRANSPORTATION

New London is the most favorable natural harbor on the Connecticut coast. Its location at the eastern end of Long Island Sound provides direct access to the major trans-Atlantic and coastal sea lanes. The ntranc to the harbor is perfectly straight, unusually short, with

deep-water access directly to the Thames River channel. The River is free-flowing and non-sedimenting. This self-cleansing capability eliminates the need for frequent maintenance dredging of sedimentary build-up.

New London's harbor entry channel has recently been dredged to a depth of 40' and is 500' wide. It is approximately 3.8 miles in length. The channel and main harbor essentially ends at the State Pier and railroad bridge. The channel continues beyond this point up to Norwich, but at progressively shallower depths. See "Dredging" page 5-11.

Various activities on both sides of the Thames River have private docking facilities for freight shipping and receiving. On the east side of the river major activities are the Charles Pfizer Company, Electric Boat, Hess Oil, the U.S. Submarine Base, and the Dow Chemical Company. On the west side of the river, major facilities include the State Pier, New London City Pier, U.S. Coast Guard Academy, and the Connecticut Light and Power Company generating plant. These activities are major users of the Thames River for marine transportation, especially for the receipt of fuel and chemicals. See Plate 4-9.

The principal overseas commercial terminal on the harbor is the State Pier. This facility, designed for use in handling cargo and for storage, is 1,000' long and 200' wide. Its north side is under long-term lease (until 2013) to the U.S. Navy and is used for submarine repair and maintenance. The south side, which has access to the two-story storage shed on the pier, is used for commercial ship docking. Presently, there are a total of 280,000 square feet of covered storage areas and approximately 15 acres of yard area which could be developed for storage. The Connecticut Department of Transportation is in the process of generally upgrading the facilities at the State Pier. State Pier cargo activities are handled by a lease arrangement and consist largely of off-loading varied bulk and specialized cargos for temporary storage and shipment out.

FERRY SERVICE

Year-round ferry service is provided on a daily basis from New London

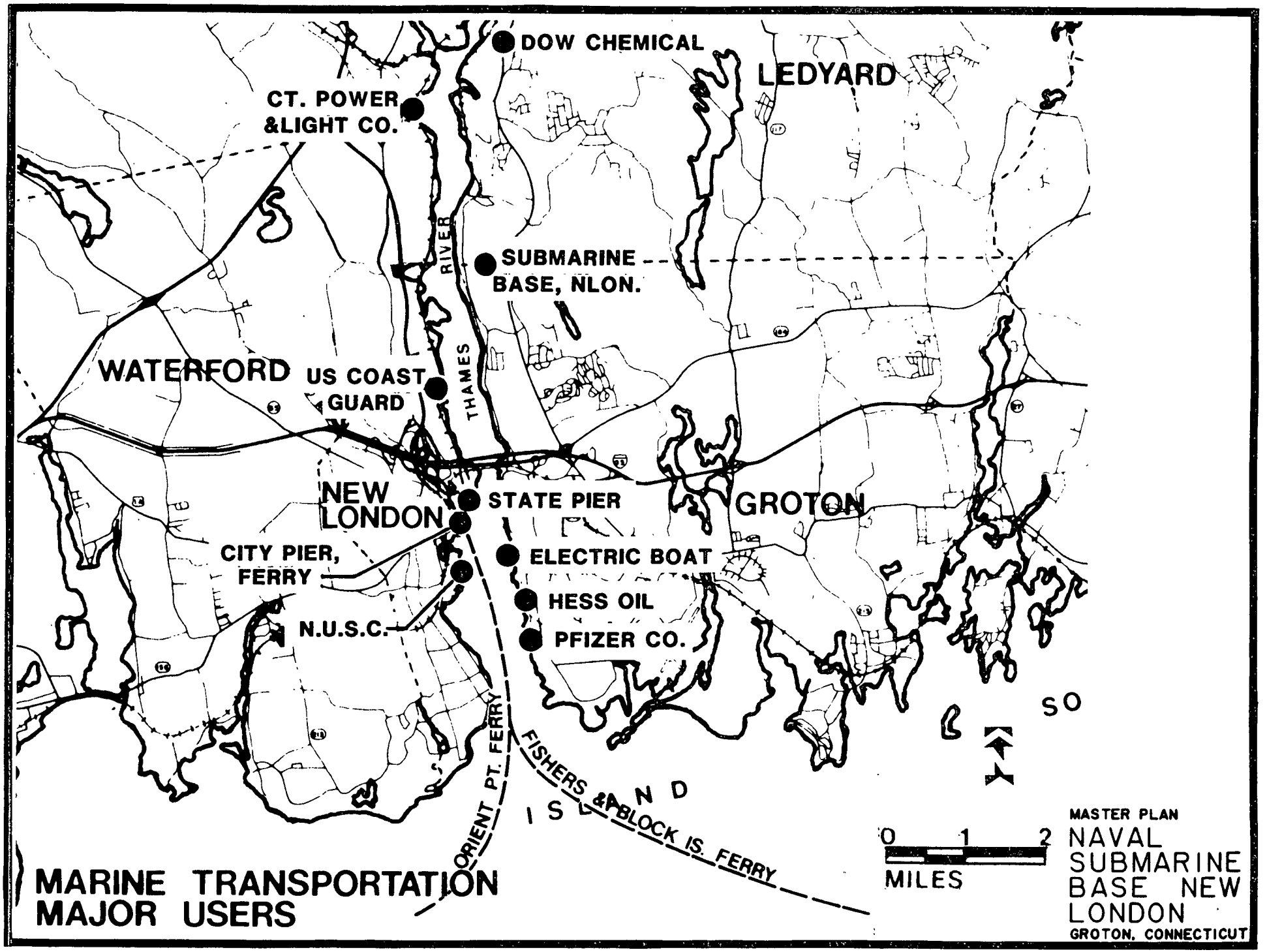

DOW CHEMICAL
LEDYARD
CT. POWER &LIGHT CO.
SUBMARINE BASE, NLON.
THAMES RIVER
WATERFORD
US COAST GUARD
NEW LONDON
STATE PIER
GROTON
CITY PIER, FERRY
ELECTRIC BOAT
HESS OIL
N.U.S.C.
PFIZER CO.
ORIENT PT. FERRY
FISHERS ISLAND
BLOCK IS. FERRY
SO
0 1 2
MILES
MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT
MARINE TRANSPORTATION MAJOR USERS

PLATE 4-9

to Fishers Island and Orient Point, Long Island. In addition, service is provided to Block Island between June and September. The need to improve cross-sound transportation access between Connecticut and Long Island has been perceived for some time. The most recent study, (Connecticut DOT and NY State DOT, "Long Island Sound Ferry Service Improvement Study, Executive Summary and Recommendations", 1981) found strong evidence of potential cross-sound travel demand that could grow in the next decade to ten or more times present ferry service usage. It was concluded that a combination of crossing locations, including the possibility of a third centrally located service between New London and Greenport, Long Island is needed.

In light of these projections, SCRPA supports efforts to expand ferry service between Southeastern Connecticut and Long Island. This type of service has become a very important component of the region's transportation system.

Many types of public services and community facilities are offered by the municipalities surrounding SUBASE. These typically include fire and police protection, public education, library services, health services, recreation and cultural services and shopping centers. One of the most important services offered by communities around a military installation is the education of personnel and their dependents.

Community Support

EDUCATION

Elementary and High School

The educational systems in Southeastern Connecticut are well rated. There is no tuition and bus service is provided by the school district. Schools are established by districts and may transcend town boundaries.

The Town of Groton has 11 elementary schools, 3 junior high schools, and 1 senior high school. The 1980 student population of 6,614 shows a shrinking student population.

Four elementary schools, William Seeley, Pleasant Valley, Charles G. Barnum, and Mary Morrison School, are located close to the SUBASE and account for 50% of the total Groton school population.

Federal subsidy to the school system for "A" students, dependent children of federal government personnel who reside in Navy housing, averages $1,285 per student. "B" students, dependent children of federal government personnel whose parents reside in private housing, represent an average federal subsidy of $267.00 to the school system for each child. The cost to the town for each child in the school system averages $1,798.

The Ledyard School System is comprised of 4 elementary schools, 1 junior high school, and 1 senior high school. Similar to Groton, Ledyard has shown a decrease in enrollment over the past years. As of October 1, 1980 there were 12 "A" students and 990 "B" students attending the Ledyard School System. The cost to the town for each child in the school system averages $1,765.

Higher Education

The region has excellent opportunities in higher education. Mitchell College in New London is a private, 2 year college offering a wide variety of degrees. Also in the region is the Connecticut College, an excellent liberal arts college. Located in Groton, the University of Connecticut, Southeastern branch, offers the first two years of academic degrees. Students then transfer to the main campus in Storrs, Connecticut to finish their college education. The U.S. Coast Guard Academy in New London trains candidates for commissions as career officers in the Coast Guard.

HOUSING

In the past, housing has not kept pace with the economy in this area. Building costs have increased markedly, reducing the tempo of construction of rental and sale units in the private sector and significantly increasing the cost of those that are built. In this environment, the demand for government housing is at a maximum. Naval personnel are finding it xtremely difficult to locate suitable housing in this area at prices within th ir MAHC. During the summer

months (May-Sept.) normal rental rates triple, aggravating an already difficult problem. This directly affects the submarine school student whose housing requirement is short term during the period of training in New London. A shortage of space in BEQ and BOQ on board the SUBASE forces a number of single enlisted and officers to find housing in the civilian community. This has had a definite impact on the married member, creating an even greater shortage in an area already classified as critical.

In September of 1983, Navy families totaled 6,113 of which 5,636 were living in the region (Data presented in this section is from Connecticut Department of Housing, 1984). Of this latter total, 2,573 families were in military-owned or military-controlled rental housing, 377 families more than in 1981. The balance of 3,062 families were in private housing of which 1,505 (49%) were renter-occupied units and 1,557 (51%) were owner-occupied units, including mobile homes.

Of the renter-occupied units 576 (38%) were considered unsuitable due to excessive travel distance or condition, while 143 (9.2%) of the owner-occupied units were considered unsuitable for the same reasons.

Based on the above figures there appears to be a continuing total private market of about 3,000 units, of which at least 1,500 are rental units. For those groups which receive the lowest housing allowances, the lower enlisted ranks and junior officers, there will be a demand for low-moderate income rentals in the private sector. In addition, the unsuitable rental units in the private sector referred to above will have to be replaced. One possible method of meeting these needs which the Navy currently uses successfully is in lease housing. Under this arrangement, the Navy rents a certain number of units from a private developer over a specified time period.

In 1981, the waiting list for Navy-controlled housing contained 691 names. At the present time, it contains over 750, in spite of the fact that since that date the Navy has added 400 new units to its inventory. This shows that more service families prefer Navy-controlled housing. This is because of both the short supply and the high costs associated with private sector housing.

RECREATION FACILITIES

The Navy provides a wide range of recreational facilities and programs for its personnel and dependents. In addition, the towns bordering SUBASE, contain many recreational facilities.

The Town of Groton owns a total of 951 acres of land that is developed or has the potential to be developed into recreational facilities. Of these 951 acres, 145.9 acres are classified as neighborhood recreational facilities, 284.71 are playgrounds and play fields, the majority of which are located on school property, 260 acres are community recreational facilities, and 260 acres are considered recreational facilities for special purpose.

The region offers a wide variety of public recreational opportunities, including golf, boating, roller skating, tennis, fishing and hunting, swimming and camping. Some of the well known attractions visited by tourists are Old Mystic Shopping Village, Mystic Marine Life Aquarium, Mystic Seaport Museum, the Submarine Memorial, and Fort Griswold. There are four Connecticut State Parks within the region, all being located on the coast. See Plate 4-10.

For the winter months, facilities are available for ice skating, cross-country skiing and sledding.

CULTURAL RESOURCES

There are extensive cultural opportunities in the region. Theater, dance, music, film and fine arts are all in abundance.

The nationally known Eugene O'Neill Theater Center in Waterford, presents a long season of professional drama. The Good Speed Opera House in East Haddam has a season that runs from June to December.

The 70 member Eastern Connecticut Symphony Orchestra offers concerts, opera, and ballet in New London and Groton, and has a summer music festival at Mystic Seaport. Several museums, including the Lyman Allyn in New London, are located in the region.

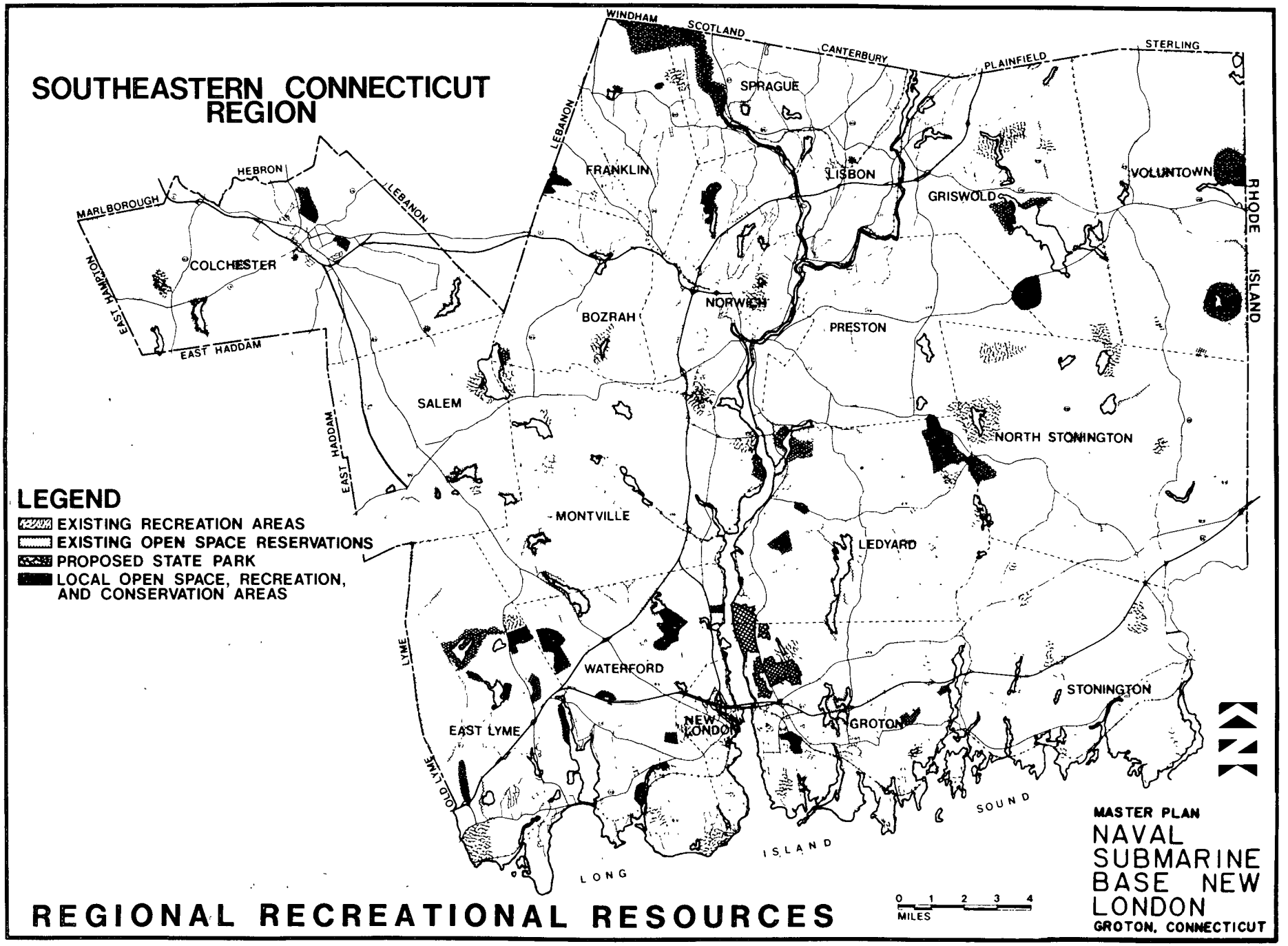

SOUTHEASTERN CONNECTICUT REGION
LEGEND
EXISTING RECREATION AREAS
EXISTING OPEN SPACE RESERVATIONS
PROPOSED STATE PARK
LOCAL OPEN SPACE, RECREATION, AND CONSERVATION AREAS
WINDHAM
SCOTLAND
CANTERBURY
PLAINFIELD
STERLING
SPRAGUE
LEBANON
FRANKLIN
LISBON
GRISWOLD
VOLUNTOWN
RHODE ISLAND
HEBRON
MARLBOROUGH
COLCHESTER
EAST HAMPTON
EAST HADDAM
BOZRAH
NORWICH
PRESTON
SALEM
NORTH STONINGTON
MONTVILLE
LEDYARD
LYME
WATERFORD
STONINGTON
EAST LYME
NEW LONDON
GROTON
OLD LYME
LONG ISLAND SOUND
0 1 2 3 4
MILES
MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT
REGIONAL RECREATIONAL RESOURCES

PLATE 4-10

All the public libraries of Southeastern Connecticut conduct cultural programs, many especially for children. The New London Public Library brings in experts to speak about artists and writers.

MEDICAL FACILITIES

The Naval Submarine Medical Center provides general clinical and comprehensive hospitalization services primarily for active duty Navy and Marine Corps personnel and active duty members of other Federal Uniformed Services.

In addition to this facility, the area has three modern primary health care facilities: Lawrence Memorial, W.W. Backus, and Westerly.

Lawrence Memorial Hospital is the largest of the three. The 226-bed W.W. Backus Hospital is located in Norwich. At the eastern edge of the community, in Westerly, Rhode Island, the 147-bed Westerly Hospital meets the health-care requirements of the population of several cities and towns.

SHOPPING

The Navy Exchange/Commissary Complex provides personnel with a full range of retail shopping.

Supplementing these facilities is the abundance of area retail centers and specialty stores such as the New London Mall, Factory Square in Mystic, the Captain's Walk in downtown New London and Old Mystic Village.

A regional shopping mall is located in the Town of Waterford.

FIRE PROTECTION

The SUBASE, has its own base Fire Department. Under a written mutual aid agreement, local volunteer fire districts will respond to calls for assistance from the SUBASE Fire Department. In turn, the SUBASE Fire Department will provide assistance and/or back-up to any local fire company.

RELIGIOUS FACILITIES

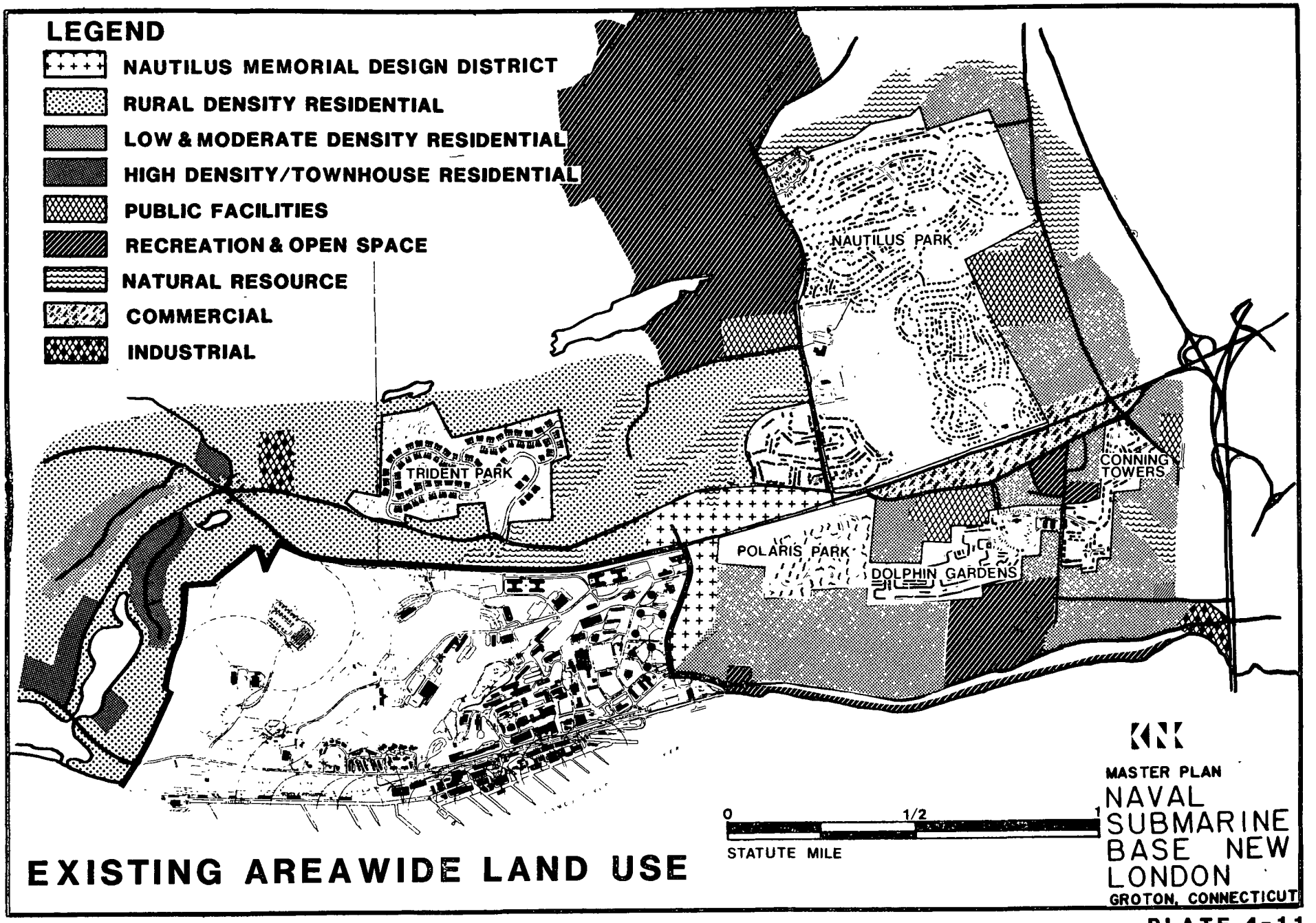
The SUBASE offers a wide variety of services to military personnel and their dependents. Throughout the communities of the region, religion has been bound up in the daily life of the people since the Puritan settlers gathered in their original meeting house in New London, the first Church of Christ, Congregational, in the 1640's. Most major denominations are represented in the region and about 250 houses of worship serve the communities.

Areawide Land Use and Development Trends

The SUBASE lies within the two towns of Ledyard and Groton with the boundary line between them bisecting the Base to make northern and southern sections. The northern part of the base is bordered by the Town of Ledyard and the southern part is bordered by the town of Groton. Existing land use outside the perimeter of the Base is quite varied. See Plate 4-11.

The western boundaries of the Base and both towns adjoin the Thames River. Immediately adjacent to the northern boundary of the Base is undeveloped land with scattered residential use. Further north the land use is predominantly medium and high density residential use. The rest of this northern area is a mixture of commercial, reserved open space, institutional, major wetlands, active recreational, low density residential and scattered residential uses.

East of Route 12 there is primarily undeveloped land, predominatly rural, with scattered industrial and residential use. Trident Park, a 400 unit Navy Family Housing is in this area. To the north and northeast, there is also a mixture of commercial, medium and high density residential, and major wetlands. To the southeast are areas of natural resource use that encompass many acres of protected wetlands. Among the wetland areas are moderate density residential uses which include the Nautilus Park Navy housing.



EXISTING AREAWIDE LAND USE

PLATE 4-11

Crystal Lake Road parallels the southern boundary of the Base. The property south and adjacent to this road is zoned Nautilus Memorial Design District. Th remainder of the land south of the Base is primarily moderate density residential use with recreation/open space use interspaces. The five Navy housing developments: Nautilus Park, Polaris Park, Dolphin Gardens, Conning Towers, and Trident Park are located in this area. Further south, beyond the Navy housing, the land use becomes more urban with moderate density residential and commercial uses dominating.

The current future land use plan for the Town of Ledyard's coastal area identifies several goals regarding development. Two major issues are to avoid crowded appearances by keeping fields open, encouraging farming, protecting scenic vistas and discouraging strip development along all thoroughfares, and to avoid disruption or pollution of natural drainage ways, potential impoundments, major wetlands, and high-yield ground water areas through acquisition and regulation.

There is an emphasis to develop the downtown area of Groton. It is the center for retail trade and business activity within the community and accommodates one of the most intensive commercial areas in the region. Key undeveloped parcels of land have been designated "Core Areas". The commercial core area will be developed and eventually merge and function together with the existing commercial area to provide a strong centralized shopping district that will make a stimulating shopping experience. See "Development Constraints" at the end of this chapter.

Another central concept that will be applied to the downtown area is the introduction of additional residences within its boundary. The tracts identified as core residential use have been designated for high density housing with a sizable population concentration. This will allow people to walk to adjacent shopping areas from their homes and will especially benefit the elderly people who do not drive, and those who prefer or require this type of urban living arrangement.

The Southeastern Connecticut Chamber of Commerce in New London has identified two major goals that will have an effect on future regional development. On is to improve the economic climate of the region. With the heavy dependence of the region on gov rnment contracting, a vital concern is a greater diversification of the industrial and comm rcial base.

The Chamber is working to achieve this goal by assisting companies to expand and by working to attract new business and industry to the region. Priority concerns include assisting in the development of industrial parks in local communities in the region, promoting existing assets through an effective marketing effort and working with elected officials to make them more cognizant of the importance of keeping Connecticut competitive with other industrial states.

The second goal of the Chamber is to further develop the Southeastern Connecticut region as a prime tourist destination area in the Northeast. The continued growth and expansion of the tourist industry will be a major asset to the region. The location of the region is unique as a tourist destination and the influx of tourism dollars to the region has produced a strong economic impact. More than $350 million is realized by the region each year due to visitors and residents alike enjoying the beaches, attractions, restaurants, museums, retail stores and accommodations. The Chamber plans to effectively sell the Southeastern Connecticut Region to the Northeast and Mid-Atlantic states as the prime tourist destination in New England.

Hydrology

SURFACE WATER

The Town of Groton has within its 35.9 square mile area approximately 300 acres of surface water which is part of the City Reservoir System. Water in the reservoir system is officially certified as very suitable for human consumption. The reservoir system extends beyond the town boundary because of connections with ponds in Ledyard.

Within the town's boundaries are four main bodies of water: Poheganut Reservoir, Smith Lake, Groton Reservoir, and Buddington Pond. Ledyard Reservoir is split by the boundary of the two towns with the remaining Morgan Pond and Billings Every Brook being in Ledyard.

Th total system covers 15.1 square miles and has a total storage capacity of 2,292 million gallons. Water flows by gravity to the terminal reservoir, Poquonock Reservoir, from which the water is treated and pumped into the City of Groton transmission system. The

accepted yield of the surface supply is 11.8 mgd. The City also has the capability of pumping Smith Lake into the Poquonock Reservoir, when required. Smith Lake responds under such a pumping condition as a deep well, and has an accepted yield of 1.0 mgd.

STREAMS AND STREAMBELTS

Stream belts are defined as environmental corridors of land and water which follow the general courses of the streams and contain many features with important bearing on water-related aesthetic, recreational wildlife, historic, and land use aspects of the town.

The total stream belt area of Groton encompasses 18% of the total 35.9 square mile area of town. This means that nearly 20% of all the town's land has development limitations, in fact, 2,803 acres or 69% of the soils in the stream belts have severe limitations for most urban uses.

WETLANDS

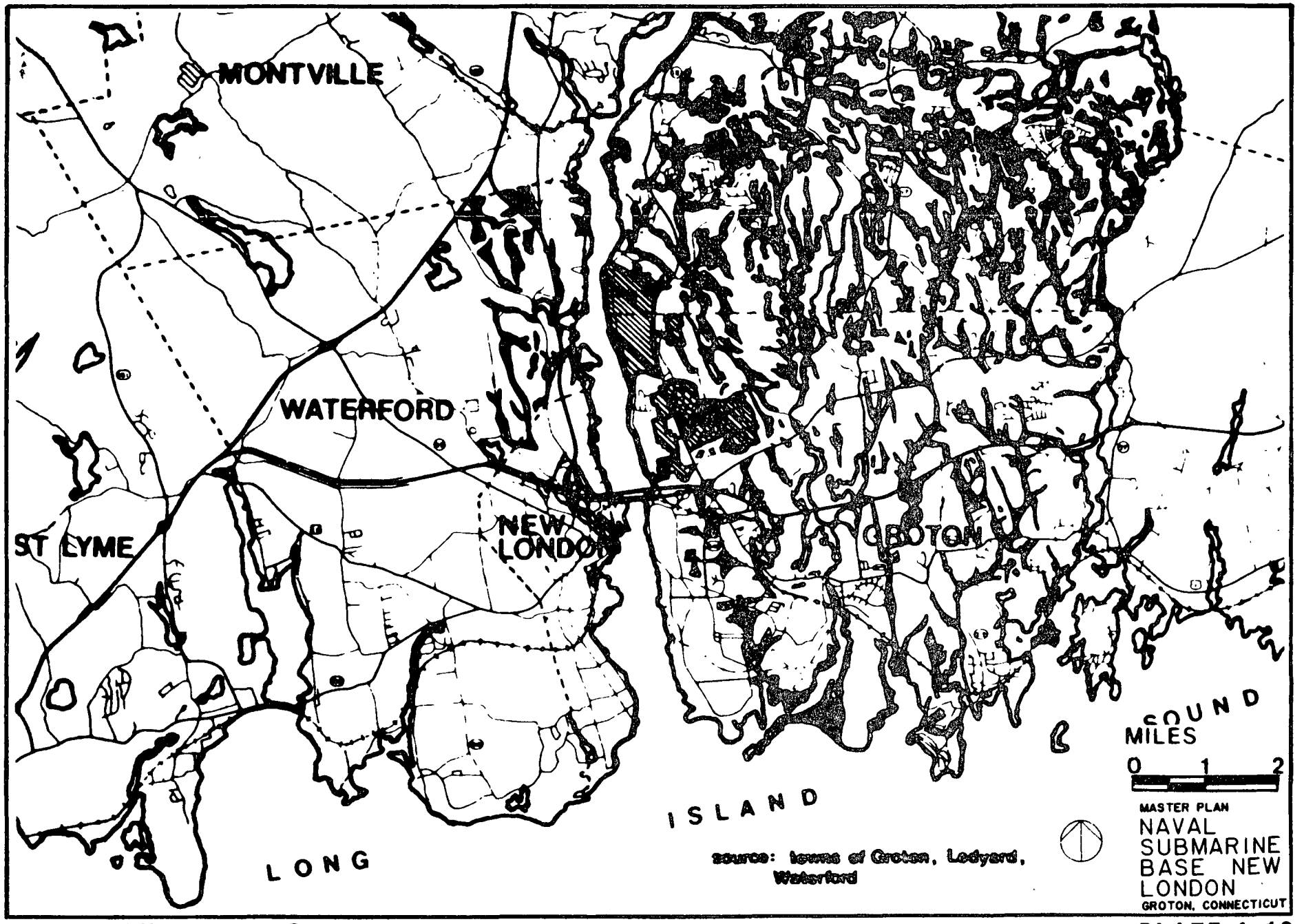
In essence, the "wetland" can indicate a marsh, swamp, or bog in any area and can be influenced by salt or fresh water or both.

The land surrounding the SUBASE has both coastal and inland wetlands. See Plate 4-12.

Tidal Wetlands

The tidal-influenced wetlands or marshes occur along the shores of the Thames River from the Submarine Base to Poquetanuck Cove in Ledyard. These particular tidal marshes are usually less than one acre in size. Tidal wetlands also occur along the shores of the estuaries, coves and rivers of Groton. All of these tidal influenced wetlands serve as feeding and nesting areas for a variety of waterfowl, and as nurseries to many other aquatic forms such as fish and shellfish.

Groton has at least seven major tidal areas totalling 339 acres. These marshes are unique compared to others on the Connecticut coast because they are extremely shallow and have subsurface layers of sand and peat deposits. Therefore, Groton marshes are very bleak, unstable



WETLAND AREAS

PLATE 4-12

and unsuitable for future development. When storms come, the shallow marshes serve as a buffer for the adjoining lowlands.

Inland Wetlands

The number of inland wetlands in the area is extensive with the largest ones occuring in Ledyard. These include the Great Cedar Swamp, Pine Swamp, Shewville Brook Wetlands and the Haley Brook Wetlands. The inland wetlands act as natural catch basins absorbing 16 to 18 times their weight in excess runoff water and releasing it at a slower velocity into the watershed streams and soil. As a result, Ledyard's wetlands are especially important as natural flood control areas which minimize erosion and runoff. Much of Ledyard's water supply is from these underground sources.

ESTUARIES

The Town of Groton is bounded by three estuaries: on the west by the Thames River, on the east by the Mystic River, and on the south by Fishers Island Sound making the area unique as a coastal estuarine environment. Additional estuaries include Baker Cove, the Poquonock River mouth, Mumford Cove, Palmer Cove, and Beebe Cove.

FRESH WATER

Fresh water can be obtained from wells almost anywhere in the area, but the amount obtainable at any particular point depends upon the type and water bearing properties of the particular aquifer. The three types of aquifers in the area are stratified drift, bedrock, and till. Yields from stratified drift far exceed amounts from till or bedrock. Stratified drift in the area is capable of yielding an average of 85 gallons per minute to individual wells which is an exceptionally abundant amount. A properly drilled well in bedrock will supply at least three gallons per minute, with some cases exceeding 50 gallons per minute. Till yields are even less than bedrock and produce only a few hundred gallons per day on a yearly average.

In Groton, stratified drift covers most of the lowland and floodplain area where it overlies till and bedrock. Statistically, of the total 24,672 acres of land in town, 5,679 acres or 23% of this total occurs in areas serviced by the stratified drift type aquifer. In addition, approximately 25% of the vacant land existing today occurs over this aquifer.

SALT WATER INTRUSION

Salt water intrusion is essentially the mixing of salt water into the subsurface fresh water subsequently rendering the water unfit for human and vegetative consumption. In some cases, salt water has intruded aquifers in the Groton area when wells have been over-pumped for extended periods of time. Each of the three types of aquifers is vulnerable, but intrusion is most commonly reported when stratified drift allows the salt water to be sucked into the water table as the fresh water is drawn out. Damage from intrusion is minor provided the activity which caused the upset is curtailed, but the loss of trees and the pollution of wells can occur.

RIVERS

The Thames River is navigable (to the SUBASE) year round via a dredged channel. From deep water in Long Island Sound to the Electric Boat plant in Groton, the channel is 40' deep, below Mean Low Water, and 500' wide. From Electric Boat to the Submarine Base the channel is 36' deep, below Mean Low Water and 500' wide.

The Department of the Army Corps of Engineers flood data for the area indicates the following inundation levels.

Tide Level (Feet Above Mean Sea Level Datum)

Hurricanes	SUBASE	State Pier/NUSC
31 Aug 54	9.1	8.9
21 Sep 38	10.5	9.7
Recurrence Interval		
10 year	--	6.7
25 year	--	8.2
50 year	--	9.3
100 year	11.2	10.5
500 year	14.0	--

The U.S. Department of Commerce indicated in 1968 that Mean Low Water at New London was based on 19 years of records, 1941-59. Reduced to mean values, the elevations of other tide planes referring to this datum are as follows:

	Feet
Highest Tide Observed 21 Sep 38	10.7
Mean High Water	2.60
Mean Tide Level	1.30
Mean Low Water	0.00
Lowest Tide Observed 11 Dec 43	3.4

Submarine Base records indicate the following water levels were observed at the Base.

	Feet
Mean Low Water	0.00
Mean High Water	2.37
Extreme Low Water	2.30
Extreme High Water	5.80
Hurricane High Water 21 Dec 38	11.6

The tidal currents follow the general direction of the channel and usually are not strong. At the Submarine Base, the velocity is normally about 1 knot at ebb and negligible at flood.

Although ice does not obstruct navigation in the river north of the railroad bridge, it sometimes forms a thin crust near the Submarine Base. In extremely severe winters, however, heavy ice from the sound, driven in by the winds, has been known to extend 1.8 miles above the harbor entrance. Drift ice sometimes obstructs river approaches through Long Island Sound during severe winters, especially during February and March.

The Thames River is suitable for fish, shellfish, wildlife habitat, and suitable for recreational boating and industrial cooling plus good aesthetic value. It is not suitable for bathing.

Vegetation

The Groton area lies in the Central Hardwoods zone that covers a great portion of the northeastern United States. Due to settlement, agriculture, lumbering and coal production, the virgin forests have been replaced by second or third growth stands.

The climate supports a mixed deciduous and coniferous forest comprised of such common tree species as oak, hickory, chestnut, beech, birch, maple, white pine and hemlock.

Forest cover varies from place to place, depending on soil, moisture, soil fertility and temperature. Groton's climate favors hardwoods over softwoods yet the latter can be found on poorer sites where competition from hardwood species is less intense.

Typical of most municipalities in Connecticut, oak-beech-red maple forest dominate among the upland vegetational types in Groton. These hardwoods comprise most of the total vegetative cover, with oak the dominate species. The evergreens account for less than 10% of the forest types, with white pine, cedar, and hemlock as the major trees in this category. The evergreens usually occur naturally in concentrated clusters or stands. Both the Pine Swamp and the Gr at

Cedar Swamp in Ledyard are excellent examples of this condition. Though a deciduous tree, red maple usually dominates along with the evergreens in these special wet areas.

Although mature hardwoods and softwoods exist in the area, nearly 70% of the total woodland is occupied by immature trees as a result of the extensive logging and clearing for agricultural purposes that occurred in the last century and into the present one.

Some common understory plants of wooded areas are dogwood, cherry, tupelo, sassafras, catbriar and grape vine. Poison ivy is also common. In open areas and old pasture land, bittersweet, barberry, golden rod, green briar, sumac, hawthorne, grasses, and wildflowers flourish.

Dowhan and Craig (1976)* have compiled a list of endangered plants for the State of Connecticut. Of the three U.S. endangered species found in Connecticut, only the Isotria Medesloides or small whorled pogonia, a woodland orchid which grows in dry, rich woods, frequently under beech trees could possibly occur in the SUBASE area. This orchid remains dormant underground for periods up to twenty years before sending off a flower stalk.

Wildlife

The land of the towns surrounding the SUBASE provides habitats for a wide variety of wildlife.

Mammals common to the area are gray squirrel, raccoon, white tailed deer, opossum, and rabbit. The common small mammals are white-footed mouse, meadow mouse, red-back valve, mole, and little brown bat.

Local amphibians include the American toad, bullfrog, green frog, leopard frog, spring peeper, and red-backed and dusky salamander.

*Rare and Endangered Species of Connecticut and Their Habitats, Joseph J. Dowhan and Robert J. Craig (Natural Resource Center), 1976.

Common water, common garter, hog-nosed, black (rat), milk and ringed neck snakes can be easily found. The most common turtles are of the painted and spotted varieties.

Birds are seasonal and geographically separable. Winter birds often found around feeders are tufted titmouse, nut hatch, creeper and cardinal. Many varieties of duck winter along the Thames River and Poquetanuck Cove. Summer birds are blue jay, robin, chickadee, house sparrow, morning dove, common crow, Eastern kingbird, and sparrow hawk. Over 20 species of breeding birds can be found in the uplands, forests, and fields including bobwhite, yellow-shafted flicker, towhee, brown thrasher, and several owls. Aquatic birds are mut swan, belted king fisher, herring gull and common tern. Redwinged blackbird and wood duck are fresh-water aquatic birds found in the area.

Climate

The southeastern Connecticut region has a variable climate characterized by frequent but short periods of heavy precipitation. The region lies in the path of "prevailing westerlies" and of cyclonic disturbances that cross the country from the west or southwest towards the east or northeast. It is also exposed to occasional storms that travel up the Atlantic coast. Some storms are tropical and occasionally are of hurricane intensity. All storms in the region are heavily laden with moisture from the ocean. The maximum tide of record was in September 1938 when a hurricane generated surges 12 feet above normal high tide and caused severe damage to the region.

The average annual temperature is about 50 degrees F. Average monthly temperatures vary widely throughout the year, from 58 to 72 degrees F in July and August to 23 to 30 degrees F in January and February. Extremes in temperature range from the upper nineties to infrequent lows of 10 degrees F or lower.

The av rage monthly and annual temperatures at New London, Connecticut for 82 years of record are summarized below:

MONTH	DEGREES F	MONTH	DEGREES F
JAN	29.9	JUL	71.6
FEB	29.3	AUG	70.5
MAR	37.6	SEP	64.5
APR	47.1	OCT	54.2
MAY	57.8	NOV	43.4
JUN	66.3	DEC	32.8
		ANNUAL	50.4

Annual precipitation has ranged from about 32 inches to 65 inches. About 22 inches are returned to the atmosphere each year by evaporation. The average monthly and annual precipitation at New London, Connecticut for 81 years of record is summarized below:

MONTH	INCHES	MONTH	INCHES
JAN	4.01	JUL	3.57
FEB	3.61	AUG	4.29
MAR	4.18	SEP	3.36
APR	3.74	OCT	3.55
MAY	3.43	NOV	3.95
JUN	3.19	DEC	3.71
		ANNUAL	44.59

ACTIVITY DESCRIPTION

History

HISTORICAL BACKGROUND OF THE NAVY ESTABLISHMENT

In 1867, the State of Connecticut, in an effort to assist the United States Navy in its change from sail to steam, presented 112 acres on the east bank of the Thames River above the Town of Groton, Connecticut to the Navy. After Secretary of the Navy Gideon Wells formally accepted the land from Connecticut, there was little immediate activity. Without federal appropriations, construction could not begin.

In July of 1868, Commodore Timothy A. Hunt took charge of the new facility and became the first Commandant. In 1872, the facility was officially designated a Navy Yard and two brick buildings, including Building 1 which remains standing today and a "T" shaped pier were constructed. By the year 1881, the yard consisted of five or six structures; however, having been of little use, it reached its lowest level of activity and was reduced to a coaling station for the Atlantic Fleet's small craft at this time.

The New London Naval Station was slated for disposal in the Navy Appropriations Bill of 1912. Only an impassioned and carefully documented speech by Edwin Higgins of Norwich saved the site for future growth of the Navy.

In 1915, the monitor Ozark arrived at the Yard with four submarines which made up the then infant submarine service. Other tenders and submarines soon followed. Boat building activity was taking place down river at Groton and new methods for powering submarines were being perfected. With these developments, permanent status came to the facility in 1916 when the Navy Department designated it a Submarine Base, the nation's first continental Submarine Base.

America's entry into World War I caused facilities at the Base to be greatly expanded. Between October 1917 and October 1918, 81 buildings were either completed or under construction, 6 piers were added, and the old "T" pier removed. In 1917, the Submarine School was established and over 10,000 officers and enlisted men were trained for duty in America's infant Silent Service during the war. In 1918, the Naval Hospital was originally activated as a dispensary. After the war, the Base again sank into lethargy but continued to service the submarines homeported there. During this peace time much was learned about submarine rescue operations and the submarine school curriculum was expanded to include this new knowledge.

World War II presented the Base with the awesome task of servicing a submarine fleet which was undergoing unprecendented growth. From 1935 to 1945 the Base expanded from 112 acres to 497 acres and from 86 to 270 buildings. At the beginning of World War II the Navy took control of the Connecticut State Pier, constructed in 1915 and located on the west shore of the Thames in the City of New London, and exluded it from commercial cargo handling for the duration of the hostilities. Commercial activities resumed after the war. In 1942 the submarine Medical Research Laboratory was organized as a Medical Department. Following the end of the war, the SUBASE and its tenant activities continued to expand. In 1946, the Medical Research Department was established as a separate activity and designated the Medical Research Laboratory. The Station Hospital was disestablished to form the Submarine Medical Center later renamed the Naval Hospital Groton. Naval use of the Connecticut State Pier, which now includes 3.4 acres of land, was regained in 1951 under a long term lease to the United States Navy, expiration date 2013. The Navy leased the easterly half of the Pier, the outer berthing face and apron, and some backland area. In June 1968, the status of the Submarine School was changed from an activity to a command and became the largest single tenant on the Base. In February 1974, the Naval Submarine Support Facility, NAVSUBSUPPFAC, was established encompassing the former SUBASE departmental areas of Submarine Repair, Operations, and Weapons. In February of 1975, the Naval Undersea Medical Institute, NUMI, was established as a separate command and later renamed Naval School of Health Sciences Detachment, NSHS. Since its establishment, the Submarine Base and its tenant activities have continued to grow and change, keeping pace with realignments of the submarine force.

For a discussion of historic resources at the Submarine Base see Development Constraints section of this chapter.

Existing Facilities

According to the Detailed Inventory of Naval Shore Facilities (NAVFAC P-164) for the SUBASE dated 30 September 1987, there are 1,745 permanent and 8 semi-permanent buildings that contain a total of 7,496,003 SF of floor area. Existing facilities are shown on the Existing Conditions Map in pocket at back of binder. Total floor area of buildings classified by functional category codes is shown on Table IV-4.

TABLE IV-4

			TOTAL FLOOR AREA (SF)
100		OPERATIONS & TRNG FACILITIES	
	125	Pol Pipeline	450
	131	Comm. Bldg.	9,888
	137	Ship Nav & Tr Bldg	10,986
	141	Operations Bldgs	3,747
	143	Ship & Oth. Ops Bldg	46,472
	159	Other Waterfront Ops.	10,825
	171	Training Bldgs.	549,967
200		MAINTENANCE FACILITIES.	
	213	MNT-Ships	161,830
	214	MNT-Tank/auto	30,240
	216	MNT-Ammunition	38,123
	217	MNT-ELEX NX/COMS	15,092
	218	MNT-Miscl/Proc	1,908
	219	MNT- INS REP OPN	57,835
	229	PROD-MNT REP 09	6,106
300		RES. DEV. TEST. & EVAL FACILITIES	
	310	Science Labs	41,288
	313	Ship/Marine Equipment	22,645
	315	Weapon/Weap Sys	1,164
	319	MISC	4,892

TABLE IV-4

			TOTAL FLOOR AREA (SF)
400		SUPPLY FACILITIES	
	421	AMMO Stor/Depo	962
	431	Cold Storage	10,078
	441	Covered Storage	231,370
500		HOSPITAL, MEDICAL, DENTAL, FACILITIES	
	510	Medical Cen/Hos.	129,238
	530	Labs	6,383
	540	Dental Clinic	12,946
	550	Dispensary/Clinic	13,707
600		ADMINISTRATIVE FACILITIES	
	610	Administration	314,245
700		HOUSING, COMMUN, MWR	
	711	Family Housing	3,926,016
	714	Fam Hsg/Det Fac	280,265
	721	BEQ	737,499
	722	Dining Facilities	29,424
	723	BEQ -Det Fac	19,212
	724	BOQ	123,659
	730	Community Personnel Supt.	54,273
	740	Morale Recreation	510,384
	760	Museum/Memorial	24,115
800		UTILITIES & GROUND IMPROVEMENT	
	811	Electrical Prod.	22,471
	812	Electrical Trans.	1,251
	813	Electrical Subs	2,406
	821	Heat-Source	21,544
	822	Heat-TMSN	402
	823	Heat-Gas Source	252
	831	Sewage Treatment	3,189
	832	Sewage/Collection	120
	842	Water Potable Dist.	2,767
	872	Fence/Wall/Twr	182
	890	Misc Utilities	4,185

Note: Information taken from NAVFAC P-164 Detailed Inventory of Naval Shore Facilities 30 Sept 1987.

OPERATIONAL AND TRAINING FACILITIES

The majority of the operational and training facilities are adequate. Building 119 (Code 160 MARS Station) and portions of Building 18 and 106 are considered substandard.

The Subase has 5,178 linear feet of berthing pier, 463 linear feet of repair pier and 400 linear feet of pier for fuel. Most of the piers are in good condition. However, some upgrading is required on piers 2, 6, and 31 and piers 1 and 4 require replacement. Building 70, the Diving Tower, is eligible for inclusion on the National Register of Historic Places. Currently, it is in inadequate condition, and well beyond its economic life.

MAINTENANCE FACILITIES

Shop maintenance facilities number 26 buildings and contain a total of 283,914 SF of space. Of the 26 structures in this Category Code, 21 were constructed prior to 1945 and 5 were constructed after 1945. These figures show that 80% of the buildings were constructed prior to or during WW II. Fifteen facilities are adequate, the remaining eleven are partially or totally substandard.

RESEARCH, DEVELOPMENT, TESTING AND EVALUATION

There is approximately 69,989 SF of floor area in 4 buildings in this category. These permanent buildings are considered adequate.

SUPPLY FACILITIES

There is approximately 242,410 SF of floor area in 15 buildings in this category. A minor portion is considered substandard. The majority of the buildings were constructed before WW II. The SUBASE has 11 storage tanks with a total capacity of 104,155 BL of fuel. The SUBASE also has approximately 21,857 SF of magazine storage for high explosives which includes 2,886 SF for small arms and pyrotechnics.

MEDICAL FACILITIES

The Dental Clinic is located in Building 341 and occupies 12,946 SF. The hospital occupies five structures and an area of 149,328 SF. The facilities are considered adequate with some substandard supply areas.

ADMINISTRATIVE FACILITIES

The administrative functions are located in 17 buildings and amount to 314,245 SF. All of these buildings are adequate.

HOUSING AND COMMUNITY FACILITIES

BEQ facilities at SUBASE consist of 12 permanent structures. There are 11 buildings for ranks E-1/E-4 and E-5/E-6, and 1 building for E-7/E-9. The total capacity for these 12 buildings is 4,074 persons, in addition to a 48-person disciplinary barrack. The existing enlisted dining facility accommodates 2,000 persons.

BOQ facilities at SUBASE consist of four permanent structures. There are three buildings for ranks W-1/O-2 and one building for ranks O-3 and above. (Total 105 persons).

SUBASE maintains a full complement of personnel support facilities including a fire station, police station, child day care center, chapel and a post office.

The Base Fire Station, located in Building 107, is of permanent construction and is considered adequate. A section of Building 18 is for fire station use and is considered inadequate. The existing station is located close to the waterfront area and the community support areas.

The Police station is located in Building 138 and is considered adequate.

The Child Care Center at SUBASE NLON is located in Building CT-186 and occupies 5,235 SF. This is not large enough for current demand. Building 460 houses the base Short Stop Nursery which is remote from

the center of community support functions.

The Chapel, located in Building 168, is of permanent construction and is considered adequate.

The Post Office is located in Building 164 and is considered substandard.

Other Community Support facilities on the SUBASE include an Exchange, Credit Union, Service Station, Thrift Shop, Hobby Shop, Bowling Alley, Officer and Enlisted Service Clubs, Rehabilitation Center, Playing Fields and Courts, Golf Course and a Marina, all housed in 30 buildings and 18 outdoor fields and courts.

The SUBASE supports three service clubs that include an Officer's Club, a CPO Club, and an Enlisted Service Club. The Officer's Club is located in Building 223 with a smaller facility in Building D. Building 223 is considered substandard and is located within ESQD arcs.

The CPO Club is housed in Building 125 and occupies 15,590 SF of space. It is in substandard condition.

The EM Club is located in Building 440 and is considered adequate.

Two gyms are located at the SUBASE in Buildings 83 and 169. These permanent structures provide 48,850 SF of space although Building 83 is considered substandard.

The Bowling Center is located in Buildings 436 and 485. P-376 (FY-87) will add 10 lanes to the existing 24 lanes in Building 485 and utilize Building 436 for storage.

The Hobby Shops are in Building 460. The structure is considered adequate. The Auto Hobby Shop is on the lower level of the structure in 8,014 SF. The Arts and Crafts Hobby Shop occupies 13,178 SF.

The Theater is located in Building 164. The 1,375 seat theater occupi s 30,667 SF of space and is considered adequate.

The Outdoor Recreation Facilities are located on several different sections of th SUBASE. These facilities include 7 playing fields, 8 tennis courts, a golf course and a park/picnic area.

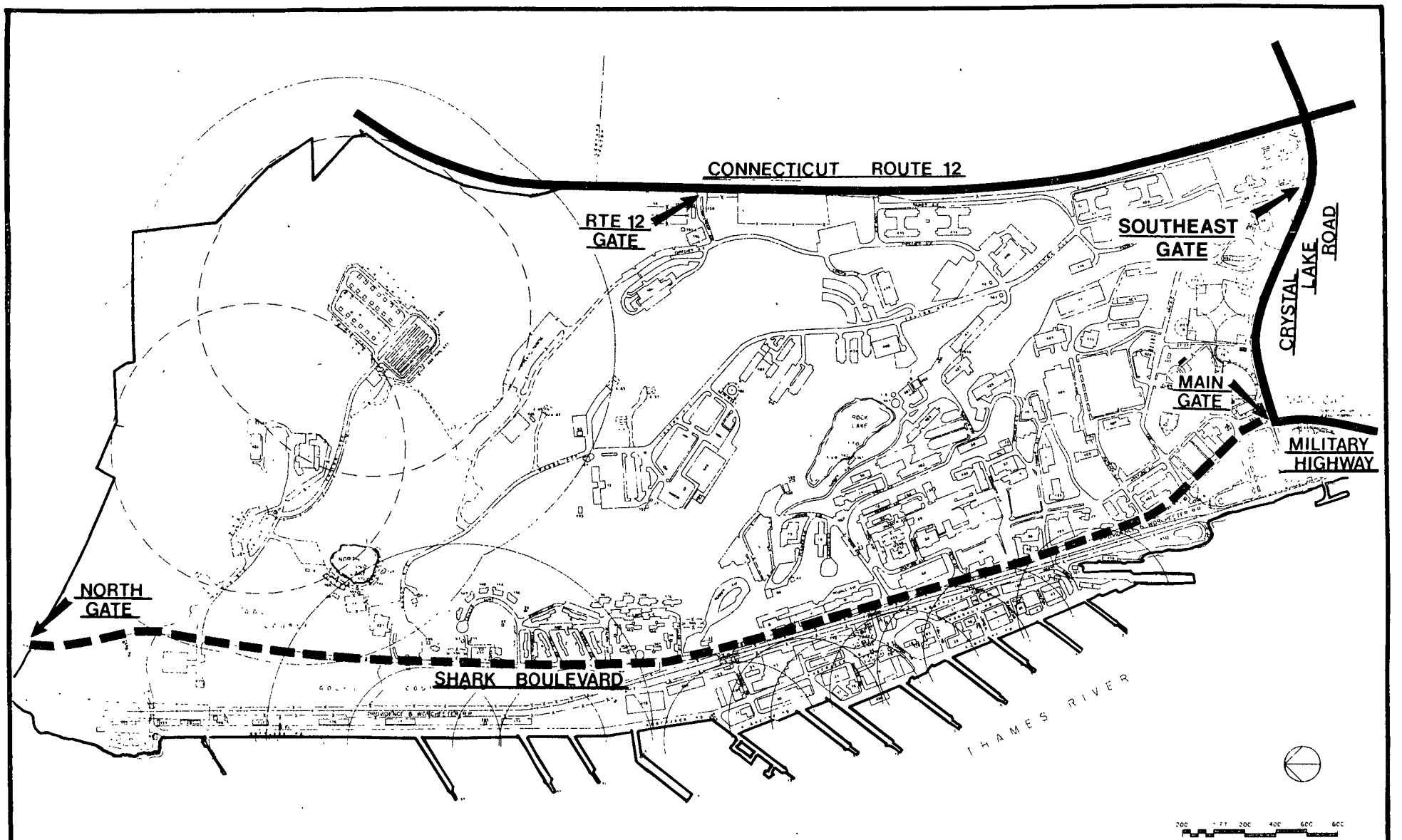
The USS NAUTILUS Memorial and Submarine Force Library and Museum opened in the Spring of 1986. The ship will become a National Monument and is expected to draw 350,000 visitors a year.

Circulation

The Naval Submarine Base is located at the foot of a rocky escarpment along the east side of the Thames River. Large local civilian population centers include Groton, two miles to the south of the SUBASE, Norwich, twelve miles to the north of the SUBASE and New London, across the Thames River from Groton.

Interstate Route 95 runs east-west, approximately two miles south of the base. Route 12 is the main north-south route on the east side of the Thames River Valley and generally follows the easterly limits of the Base. The main access to the Base is Crystal Lake Road which runs in a east-west direction along the southerly boundary of the Base proper. The main gate is located in the southwest corner of the Base at the south terminus of Shark Boulevard. Military Highway or Shark Boulevard is the only through road on the SUBASE and is oriented in a north-south direction. The north gate, located at the north terminus of Shark Boulevard, provides secondary access to the base from the north. See Plate 4-13. The Providence and Worchester Railroad (P&W) passes through the Base in a north-south direction between Shark Boulevard and the river. The railroad right-of-way and Shark Boulevard adjacent to it divide the installation into two distinct areas, the upper base and lower base.

The development and operation of the nuclear submarine fleet has created significant growth problems at the Submarine Base. Many of the new training facilities constructed on the Base in recent years have had to be located at higher elevations east of the older sections of the upper Base. Vehicular access to these new facilities has usually been provided by extending the roadways of the facility immediately below it. As a result, vehicle circulation on the main Base has become awkward and difficult.



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PRIMARY ACCESS ROUTES – MAIN BASE

PLATE 4-13

Circulation between upper and lower Base areas across the P&W Railroad track is provided through three underpasses and a single at-grade crossing near the south end of the Base. The grade crossing is the only one suitable for tractor-trailer truck and heavy equipment access due to the verylow (10'-6") clearances at the underpasses. As a result, truck and heavy equipment traffic circulation is marginal between the upper and lower Base areas. Due to the topography and configuration of the two areas, circulation also is marginal within the areas. Most of the streets, other than Shark Boulevard and Grayling Avenue, are little more than one or two blocks long terminating in right angle turns or dead ends.

Many personnel assigned to the Base live in the Groton - New London area. Approximately two-thirds of the personnel living to the south commute to the Base via Route 12. The other one-third of these off-base personnel utilize Military Highway which follows the river from Groton to the main gate. Off-base personnel living north of the SUBASE enter the north gate and the Route 12/Corsair Avenue gate and generate approximately 20% of the Base traffic.

Traffic on the Submarine Base has increased steadily over the past years. Daily average traffic numbers approximately 24,700 vehicles enter/exiting the Base via four gates. The main gate carries nearly 17,000 vehicles daily or almost 69 percent. The Southeast gate handles about 440 inbound vehicles in the morning amounting to 1.7 percent of the total.

It was found that two traffic categories account for the majority of the total vehicle volume in any given day. They are:

1. Morning and evening rush-hour traffic. This consists of civilian and military personnel reporting for duty in the morning and returning home in the evening.

2. Exchange, commissary and out-patient clinic traffic. This group is characterized as the dependent service traffic.

The first category is generated by the Base mission. The second category is generated by the dependent service activity. Both groups function simultaneously to som extent during morning and vening peak

hours when approximately 2,400 vehicles move through the gates, (during both peak hours). The visitors and dependents continue to enter and leave the Base at a fairly steady rate of about 400 vehicles per hour for the 10 hours between 0730 and 1730. The biggest conflict between the two groups occurs between 1630 and 1730 and traffic at the time is very heavy.

Daily operations generate a relatively small volume of on-base traffic. This traffic is not critical to the overall problem, but warrants serious consideration as a factor in the relocation of activities and the location of new facilities. There are over 800 automobiles on Base belonging to students, Base personnel, and fleet personnel. Most of these vehicles remain parked throughout the day and move at times different from the two major groups. They are part of the night traffic pattern which is not critical.

Base traffic control is good. The Security department handles the morning and evening rush as well as the physical layout of the Base roads will allow. Good use is made of one-way streets and the dual access roads at the main gate. The present circulation system, however, with only one through road, Shark Boulevard, and many dead-end streets or loops running off Shark Boulevard, is inadequate to handle rush-hour traffic and the dependent service traffic. In particular, the dependent service traffic frustrates and interferes near major Base activities. Any program to improve the existing physical road layout at the Submarine Base is limited by the available space between buildings and other facilities. Because there is heavy pedestrian traffic on the Base, sidewalk space is important and must be preserved.

The Military Traffic Management Command (MTMC) conducted a traffic engineering study of the SUBASE in September 1982 with the following findings: Lengthy traffic delays and queues occur during rush hours, especially at the off-base intersection of Connecticut Route 12 and Crystal Lake Road. Congestion, delays, and accident potentials were noted near Main, Southeast, and East Gates. The on-base street system is characterized by skewed intersections, dead ends, limited sight distance, and narrow, winding streets. No efficient east-west system exists.

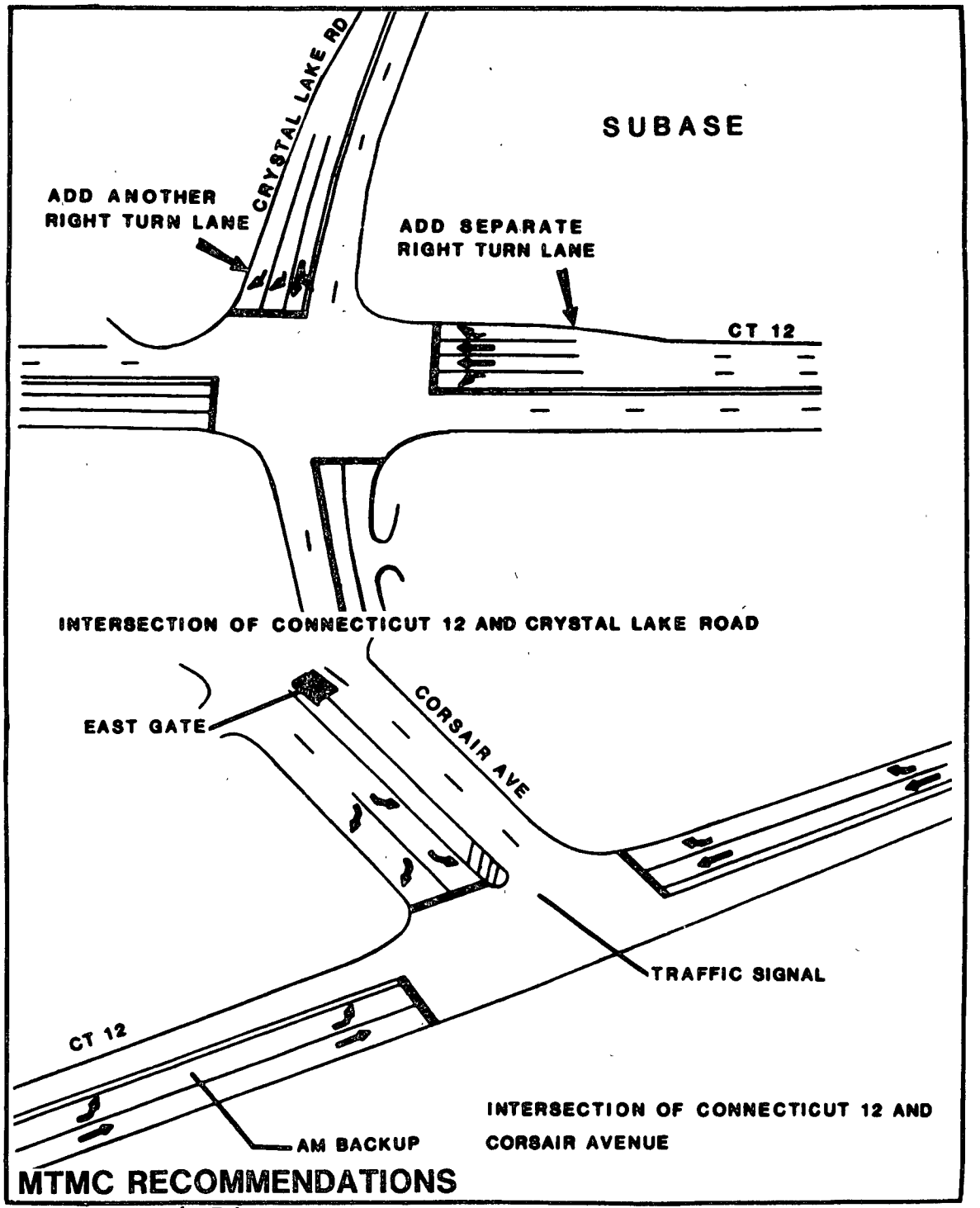
ACCESS ROAD INTERSECTIONS AND GATE APPROACHES

Direct access to SUBASE is provided by three roadways: Connecticut 12, Crystal Lake Road, and Military Highway. Shark Boulevard is the on-base extension of Military Highway. See Plate 4-13. The primary problem between the intersection of Crystal Lake Road and Connecticut 12 develops when the traffic volumes exceed the capacity of the intersection during rush hours. MTMC recommends that the State or county officials modify the intersection signal timing to reflect traffic demand, upgrade the signal equipment, and add auxiliary lanes to improve traffic flow. See Plate 4-14.

At the east gate, the intersection of Connecticut Rt 12 and Corsair Avenue causes vehicular backup in the left-turn lane of Connecticut Rt 12 because of stacking capacity during the morning peak. Sight obstructions and a lagging green of only 5 seconds are major problems at this intersection. MTMC recommends that state officials increase the green arrow time on Connecticut Rt 12 and improve the site distance at the intersection by removing foliage and under growth. See Plate 4-14.

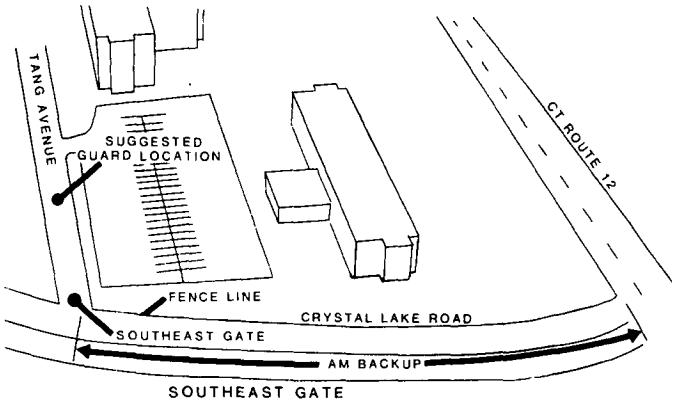
The Southeast gate which is only open during the morning peak hours, is on Tang Avenue at its terminus with Crystal Lake Road. The security procedures at this gate often block traffic on Crystal Lake Road through the Connecticut Rt 12 intersection. MTMC recommends the SUBASE relocate the security check point further onto base and request local officials to upgrade SUBASE visitor signage on Crystal Lake Road. See Plate 4-15.

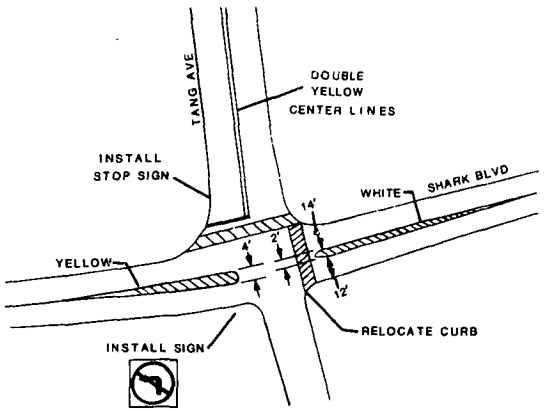
In the Nautilus Park housing area, numerous accidents occur at the four-way intersection of Gungywamp Road, Catalpa Road, and Sailfish Drive because of poor sight distance and the offset alignment of Catalpa Road and Sailfish Drive. MTMC recommends local officials increase the sight distance of the intersection and realign Sailfish Drive with Catalpa Road to eliminate the existing 30 foot offset.



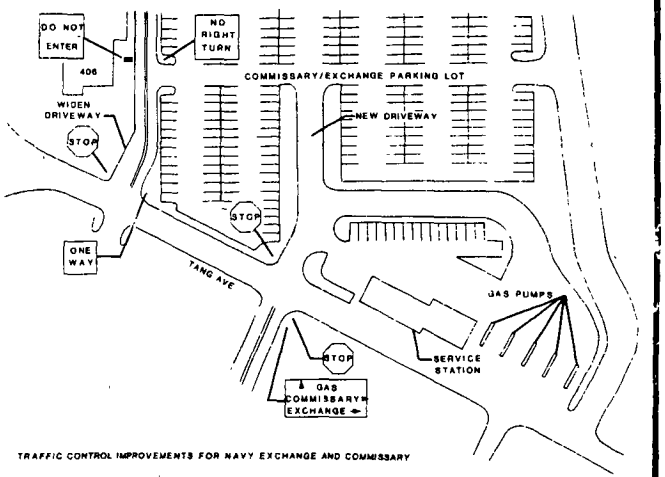
MTMC RECOMMENDATIONS

PLATE 4-14





INTERSECTION OF SHARK BOULEVARD AND TANG AVENUE



TRAFFIC CONTROL IMPROVEMENTS FOR NAVY EXCHANGE AND COMMISSARY

MTMC RECOMMENDATIONS

PLATE 4-15

INSTALLATION INTERSECTIONS

Major ingress/egress to and from the exchange and commissary is via driveway connections to Tang Avenue. This particular pattern represents a problem to the motorists unfamiliar with entering via both Flier and Tang Avenues. The motorist on the Flier Avenue approach is faced with six different signs: five directional and one control. As the driver looks ahead, the exchange and commissary are in full view and the natural tendency is to proceed straight. However, this maneuver is wrong and it forces the motorist into the service station gas line. MTMC recommends providing additional access and upgrading the traffic control signage. See Plate 4-15.

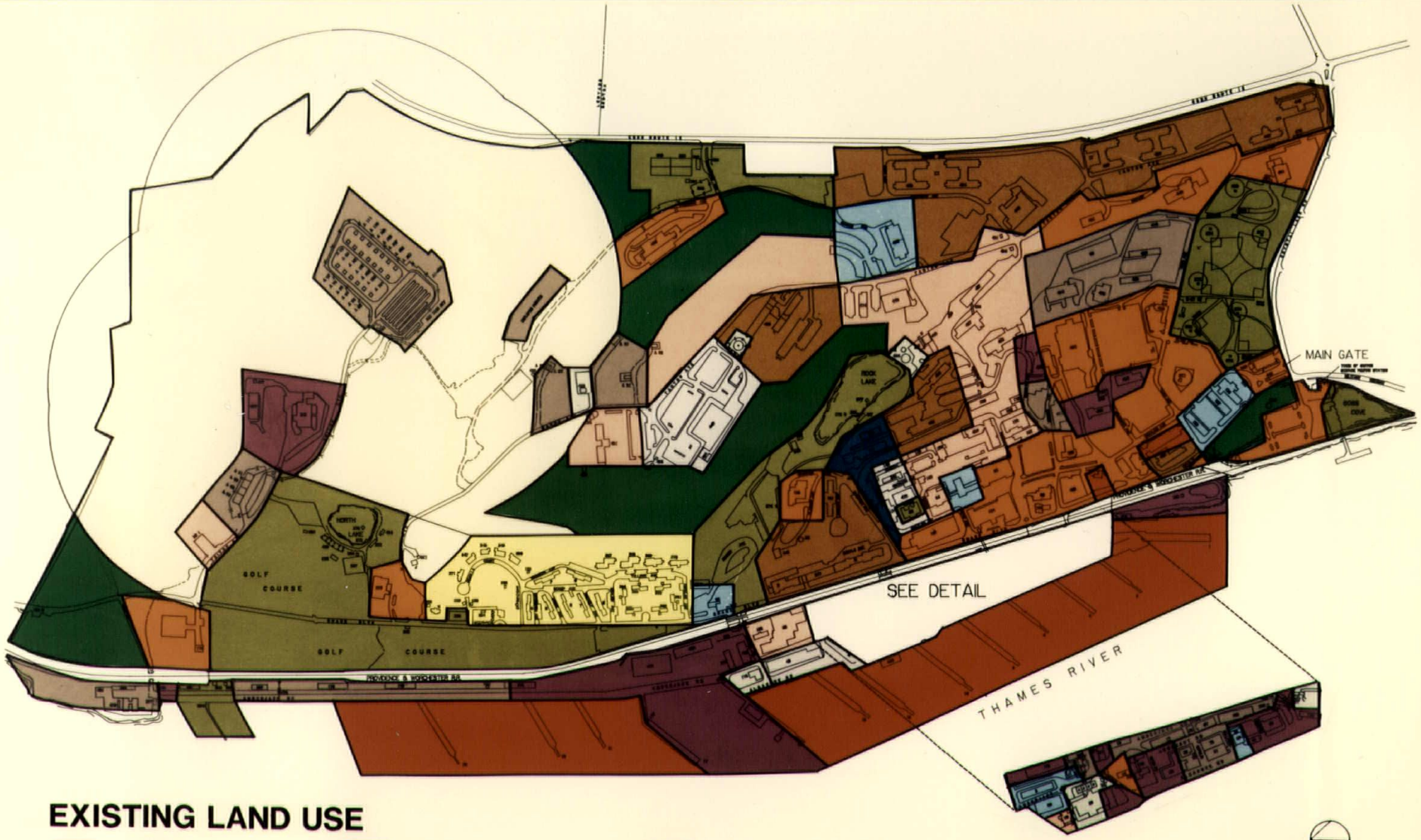
PARKING

Critical parking areas include the lower base, the Submarine School area, and the Exchange/Commissary facilities. In these areas, the number of available parking spaces is well below the level required for the personnel assigned.

The parking situation at the lower base is very congested. Little can be done to relieve the parking situation unless existing buildings in the area are demolished and converted to parking lots, or a major parking lot/parking garage is built in another area and the workers shuttled into the lower Base.

The Submarine School area is extremely congested with a parking lot for staff and E-7 and above parking only. There are few if any parking spaces available for E-6 and below. Most of the students are marched from the BEQ's to the Submarine School.

There is a shortage of convenient parking spaces for the existing Exchange and Commissary facilities. These activities are in close proximity to existing administration, public works, and Submarine School areas creating constant friction as both groups, the day-parkers and the dependent short-term parkers, contend for spaces. Several projects noted in this master plan provide for the consolidation and relocation of a Public Works building and a new administration building. The d molition of these antiquated buildings and conversion to parking lots will help relieve the heavy congestion.



EXISTING LAND USE

- OPERATIONS
- TRAINING
- MAINTENANCE & PRODUCTION
- RESEARCH & DEVELOPMENT
- SUPPLY
- ADMINISTRATION
- BACHELOR HOUSING
- MEDICAL/DENTAL
- ENVIRONMENTALLY CONSTRAINED
- COMMUNITY FACILITIES (INT.)
- HAZ. MATERIAL STORAGE
- FAMILY HOUSING
- COMMUNITY FACILITIES (EXT.)
- UTILITIES

MASTER PLAN

NAVAL SUBMARINE BASE NEW LONDON

GROTON, CONNECTICUT

not being used. This middle area is the only place on the Base that has potential sites for future construction and expansion. These sites are very limited due to one-half of the undeveloped land in the area being on slopes that are over 30 percent. The slopes make construction impractical. The southern section of the upper Base is highly developed and contains the majority of the structures built on the upper Base. This southern section also has an extensive road system and is the most accessible part of the upper Base. Each of the three general areas support a variety of land uses with the number of uses being fewer at the northern section and the most at the southern section.

The SUBASE buildings and structures along with the land areas they occupy were analyzed according to standard Navy facility category codes. This process generated the existing land use map shown on Plate 4-16.

100 OPERATIONAL (OPS) and TRAINING FACILITIES

The main operations area is located along the waterfront on the western half of the SUBASE. This long narrow band of land includes berthing, fueling, and repair wharves and small craft berths. Other smaller parcels of land throughout the Base used for operations include the sites of the filling station, communications center, telephone exchange building, and the waterfront operations building.

At Montauk Point, New York, 5.27 acres of land (easement) is reserved for government use with rights of ingress and egress and uninterrupted use of electrical utility distribution lines and systems. The site is the location of a Radio Ship Positioning System Base Station for Strategic Systems Programs. The easement will be reflected on the SUBASE plant account since Strategic Systems Program is not a plant account holder. See Map in Appendix.

200 MAINTENANCE AND PRODUCTION

Included in the M&P land use area are the quality assurance office, abrasive blast facility, foundry, paving and grounds equipment shed, and the printing plant.

300 RESEARCH, DEVELOPMENT, TEST AND EVALUATION

The R.D.T.& E. land area is a small land area located in the center of the SUBASE. This is the site of the technological services and research buildings.

400 SUPPLY AND STORAGE FACILITIES

The S&S land area is located on the north and south sides of the SUBASE. Included with the S&S land use area are storage facilities for steel; oil, paint and chemicals; lumber; batteries; compressed gas; nuclear hardware; cables; miscellaneous materials and the integrated logistics overhaul and outfitting (formerly SOAP) functions. Also, part of S&S land use areas are the interior and exterior facilities of the Defense Reutilization and Marketing Office, cold storage warehouse and the high explosive magazine.

500 MEDICAL FACILITIES

This category is represented by a small land area in the center of the SUBASE. This is the site of the Medical Clinic and Dental Clinic.

600 ADMINISTRATIVE FACILITIES

Many small administrative land use areas are located throughout the SUBASE. The headquarters and related administrative functions are accessible from the main gate. The remaining administrative land use areas are utilized for functions of various offices and departments including employee services and relations, data processing, PSD, ROICC, and public works.

700 HOUSING AND COMMUNITY FACILITIES

The following chart shows the number of housing units for the major developments.

PARCEL	HOUSING UNITS
SUBASE	118
NAUTILUS PARK	1,246
POLARIS PARK	300
CONNING TOWERS	156
DOLPHIN GARDENS	400
TRIDENT PARK	400
WESTOVER, MASS	313

Five Navy housing developments lie within one and one half miles of the SUBASE. Nautilus Park, the largest housing area, lies southeast of the SUBASE across Route 12. It is comprised of 1,246 housing units, 54 mobile home sites, a community center and a church, all situated on 518.66 acres of land. Three housing developments lie directly south of the Base. They are Dolphin Gardens, Polaris Park, and Conning Towers. Directly East of the Base lies the fifth housing development, Trident Park. Trident Park is comprised of 400 housing units situated on about 85 acres of land. See Real Estate summary maps in Appendix.

The SUBASE has been assigned the management, including maintenance, operational, and inventory responsibility for 313 housing units on 86 acres of land at the Westover Air Force Base, Massachusetts. This base is located approximately 55 miles northwest of SUBASE, New London. Housing here accommodates personnel from the Nuclear Propulsion Unit at Windsor Locks, Connecticut. See Real Estate summary maps in Appendix.

The Navy owns the Admiral Fife Recreation facility which lies about 12 miles southeast of the SUBASE in the town of Stonington. This 36 acre property is a passive recreational area for Naval personnel and their families and includes ponds, picnic sites, and volleyball and horseshoe courts. Finally, the Navy owns 2.29 acres of land adjacent to the Connecticut State Pier in New London. S e Real Estate summary maps in Appendix.

800 UTILITIES

There are two major land use areas in this category. One is the site of the electrical power plant/heating plant and the other is the site of the eight residual oil and diesel fuel storage tanks.

Utilities

The existing utility plants and associated distribution/collection systems which serve the Naval Submarine Base, New London, Groton, Connecticut have been extensively surveyed in recent years. In general, most of the gross deficiencies have been or are currently being corrected, and the systems will be able to satisfy the requirements of the Master Plan. For purposes of a brief review, each utility is presented separately in this study.

The following sections, based on the last Utility Systems Analysis (USA) report will briefly discuss utility systems at the SUBASE. A new USA is scheduled for FY 88.

STEAM PRODUCTION AND DISTRIBUTION

The overall condition of the steam production system at the SUBASE is fair. Boilers 1, 2, 3, and 1S are in good condition.

The power plant, Building 29, is the only steam plant on Base. There are four boilers that generate steam. Three of the boilers (Nos. 1, 2, and 3) are Babcock and Wilcox Boilers with a 76,000 lb/hr capacity. The final boiler (No. 1S) is a 80,000 lb/hr Keller Boiler. All boilers produce steam at 625 psig.

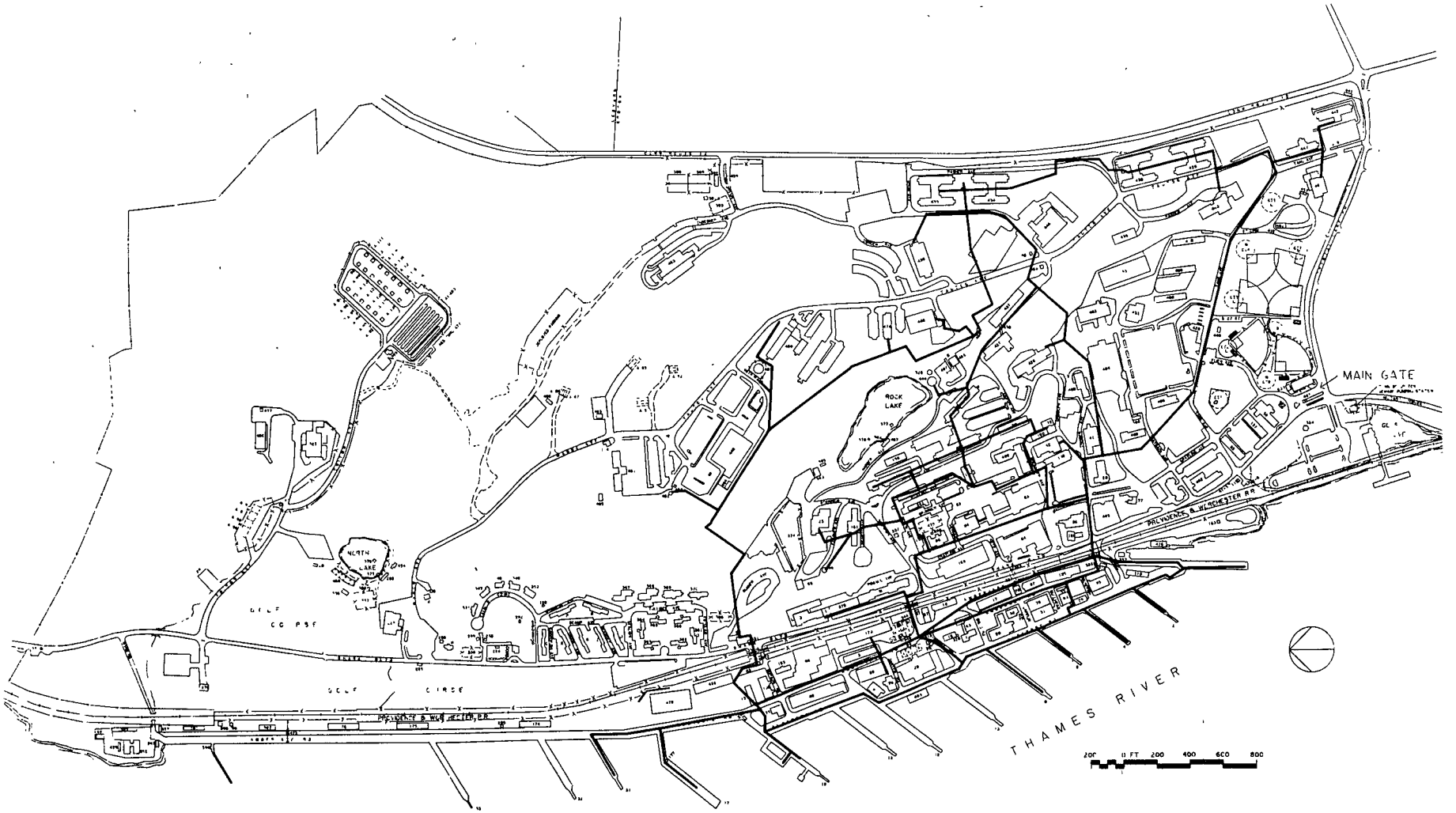
The capacity is adequate to meet present demands. The power plant, Building 29, output capacity is 308,000 lbs/hr. The firm capacity is 228,000 lbs/hr.

Previous to the installation of a 24/32/40 MVA main electrical substation, which enables the activity to purchase additional electric power in lieu of generation, the steam production had exc eded the firm capacity on several occasions. It has never operated at rated capacity.

The existing steam distribution system is in fair to poor condition and the existing condensate return system is generally in fair condition. The capacity of the existing power plant is adequate to meet the present and foreseeable future steam demands since the homeporting situation is expected to remain fairly constant. The Base steam supply system consists of three steam distribution systems originating in the power plant, Building 29. See Plate 4-17.

The distribution systems are:

The north steam distribution system consists of one 8" steam main from the power plant and serves the buildings located on the lower Base north of the power plant. The steam main, reduced to a 6" size 200' east of Building 98 runs east to serve the hospital, Building 449. A 5" steam main along the waterfront serves the north Base and Piers 15, 17, and 31.



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STEAM & CONDENSATE SYSTEM

PLATE 4-17

Th east steam distribution system consists of one 8" and one 6" steam main from the power house to valve house, Building 318, located adjacent and east of the power plant. An 8" steam main from the valve house furnishes steam to the central section of the Base and extends east to administration building 439. Two 6" steam mains from the valve house supply steam to the buildings located in the southern section of the lower and upper Base and terminate at the EM barracks alongside State Highway Route 12.

The 8" and one 6" steam distribution mains are interconnected in two areas. One connecting steam line is along Grayling Avenue between Grenadier and Trigger Avenues. The other connecting steam line is from the steam main along Thresher Avenue to the steam main between EM barracks, Buildings 434 and 435.

The pier steam distribution system is supplied through a 6" steam line from the power house. The steam distribution header, 4" for the piers, runs alongside the waterfront and serves all the piers with the exception of those piers north of Pier 31. There is a supplementary 4" steam connection from the east steam distribution system to the southern end of the pier steam system in the vicinity of Pier 4. A second supplementary steam connection exists between the north steam distribution system and the pier steam system in the vicinity of Pier 15. A third supplementary steam line running along Corvina Road connects to the pier steam system in the vicinity of Pier 8.

Steam is supplied from the power plant through a 200 psig pressure steam header. For the north and east steam systems the steam pressure is reduced from 200 to 125 psig pressure. For the pier steam distribution system the steam pressure is reduced to 100 psig pressure. Flow meters record the steam supplied to the north and east steam distribution system.

The steam is used for electric generation, pure water, building space heating, domestic hot water supply, and other industrial uses. Steam to the piers is for the various pier hose valve stations and for the protection of the pier water lines against freezing.

All condensate is returned to the power plant condensate receiver tank with the exception of that supplied to the piers and oil tank heating coils, which is not recovered. Most of the condensate system is under positive pressure.

The condensate return system receives condensate from the building low pressure heating systems through either Sterling Steam lift traps or motor driven condensate return pumps and from the steam distribution system bucket traps. The condensate return piping, in general, runs in parallel with the steam distribution piping.

The steam distribution and the condensate return piping is installed mainly in concrete tunnels, trenches or above grade. A small portion of the piping systems is buried. The tunnels have manholes for access and the trenches have removable concrete covers at grade level.

A large amount of steam piping in the lower Base is submerged during high tides and rainstorms. In addition, many of the approximately 2,000 steam traps at the activity are malfunctioning and there is no adequate preventive maintenance program. Consideration should be given to waterproofing of the trenches or piping, installing larger capacity sump pumps to keep the trenches dry, re-routing the piping to a more suitable location or even installing package boilers at point of use to eliminate distribution piping. A steam trap survey should be conducted including the development of a steam trap inspection and repair program. A Utilities Technical Study (UTS) was awarded in August 1987 to investigate the steam distribution and condensate return system. The UTS will make recommendations to correct the above deficiencies.

HOT WATER

The hot water heating system is in fair condition. The hot water heating system consists of two steam to water exchangers and three 2,500 gal/min pumps in Building 29.

Five pound steam is used as the heat source for the hot water exchangers. The hot water distribution system has four lines which export hot water from Building 29. These lines are either 14" or 16" in diameter. The distribution system serves the shop area, schools, BOQ, and the waterfront area.

The hot water heating system can deliver 6,000 gal/min. The maximum flow to date was approximately 5,000 gal/min. The average flow rate is approximately 2,500 gal/min. The temperature of the hot water varies from 120°F to 180°F according to the outside air temperature.

PURE WATER

The pure water system is in fair condition. The existing pure water system consists of two 3,000 gallon storage tanks and two demineralizer columns located in the power plant. Building 29 has a capacity of 400 gal/hr. There are two 5,000 gallon trailers and a 1,000 gallon truck which are utilized for storage and distribution of pure water to the submarines. The system is being upgraded.

ELECTRICAL GENERATION AND DISTRIBUTION

Electric power to SUBASE New London is provided from two sources from the City of Groton Department of Utilities (electric utility) and by steam turbine - generators located in the Central Power Plant, Building 29. It is necessary for the SUBASE to purchase power from the electric utility. Should this outside power become unavailable, the SUBASE would only be able to function on a severely limited basis.

The electric utility provides power @ 33 KV to two Navy transformers (TU1, TU2) each rated 13.4/17.9/22.4 (OA, FFA, FFA) MVA. Each transformer is fed from a separate 33 KV feeder (lines 323, 325) from the Buddington substation. A normally closed circuit breaker is located on the primary side of TU1 and TU2. Power within the SUBASE is distributed at 13.8 KV to 4 substations one of which is the Central Power Plant substation. The maximum available "purchased" power is 44.8 MVA.

The Central Power Plant, Building 29, contains two turbo-generators, #3 and #5. Turbine #5 has steam extraction only at 200 psig; and steam extraction is normally us d for building heating purposes.

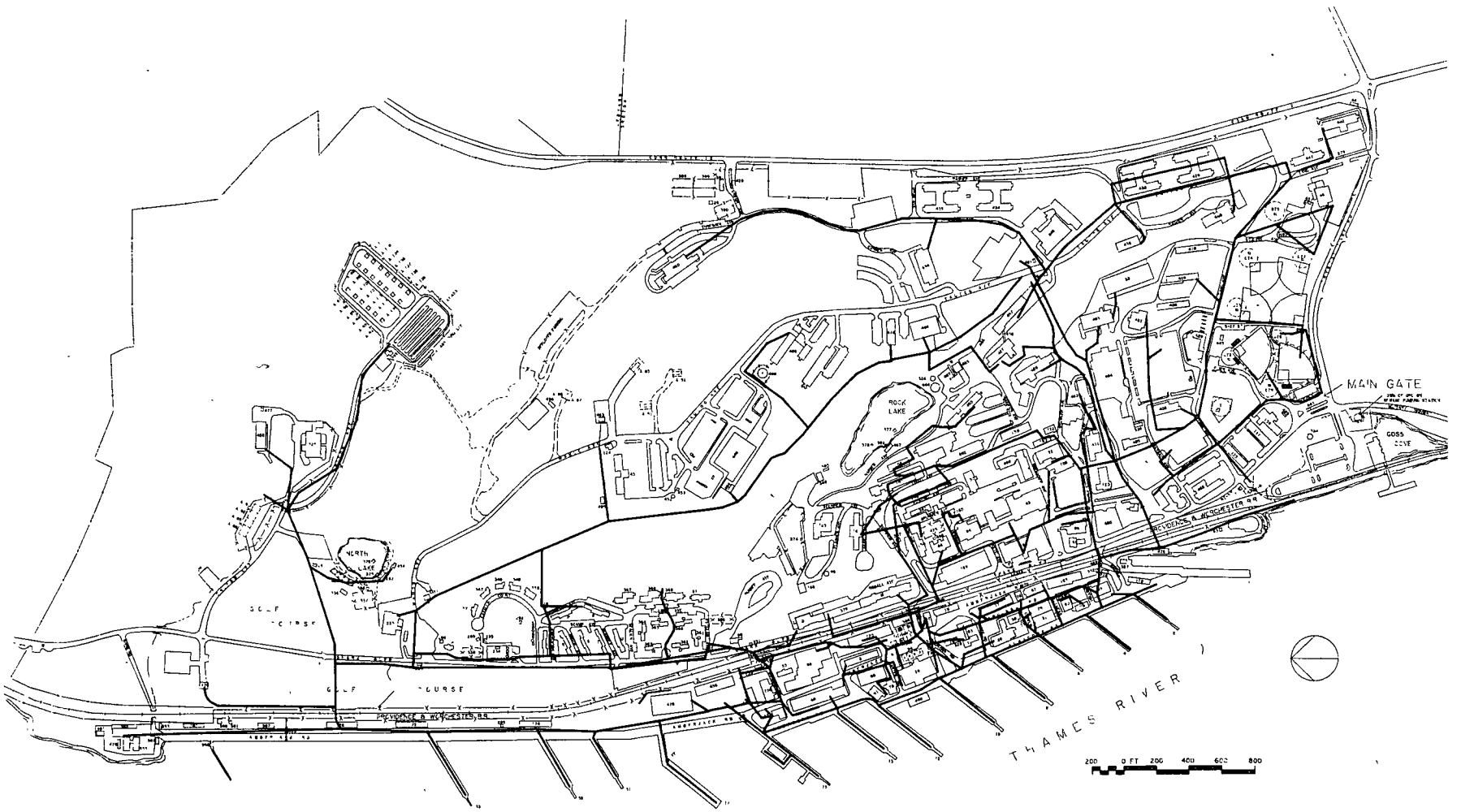
The electrical distribution system consists of a 13.8 KV loop, originating at the main substation, and encircles the Base and supplies a 13.8 KV ring bus at the main power plant. Power is transformed at the power plant to 2400 volts which is distributed to part of the Base via radial feeders. The condition of the 13 KV cable is good. However, the 13.8 KV system exhibits inadequate grounding resulting in destruction of remote control circuits, metering and power plant instrumentation. Potential difference of 200 volts between grounds have been noted in various areas. The volt distribution system is in poor condition, having suffered from electrolysis to its lead sheathing. See Plate 4-18.

From March 1978 to end of Fiscal Year 1982

- Purchased peak electric demands remained relatively constant.
- The yearly load factor, an indication of efficient electrical use, has increased to 73%, the higher the number, the more efficient the system.
- "Purchased" electric energy increased as well as "Generated" energy consumption.

The total estimated increase in demand thru FY-87 is projected at 4,800 KW + 10% - 20%, while increase in consumption will be 25,000 MWH.

Some piers do not have electrical meters. Various meters in the Central Power Plant are subject to damage by lightening surges, load disturbances and the like. The operation of the voltage regulators on the main transformers and its associated remote controls in the Central Power Plant are not working. Due to new construction and a change in class of homeported ships, the average load increases by 1991 will surpass the individual KVA rating of the two main transformers. In 1983, turbines #3 and #5 were out of service and as a result peak demand billing rose drastically. Turbines #3 and #5 have been recently overhauled and are back in service. To correct these deficiencies, a Utility Technical Study (UTS) is near completion. The UTS includes proposals for meters, need for additional grounds, and proper operations of voltage regulators. The UTS also includes an economic study of obtaining additional power from a Public Utility or from s lf generation (special project for back-pr ssure turbine is considered).



ELECTRICAL DISTRIBUTION SYSTEM

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 4-18

CATHODIC PROTECTION

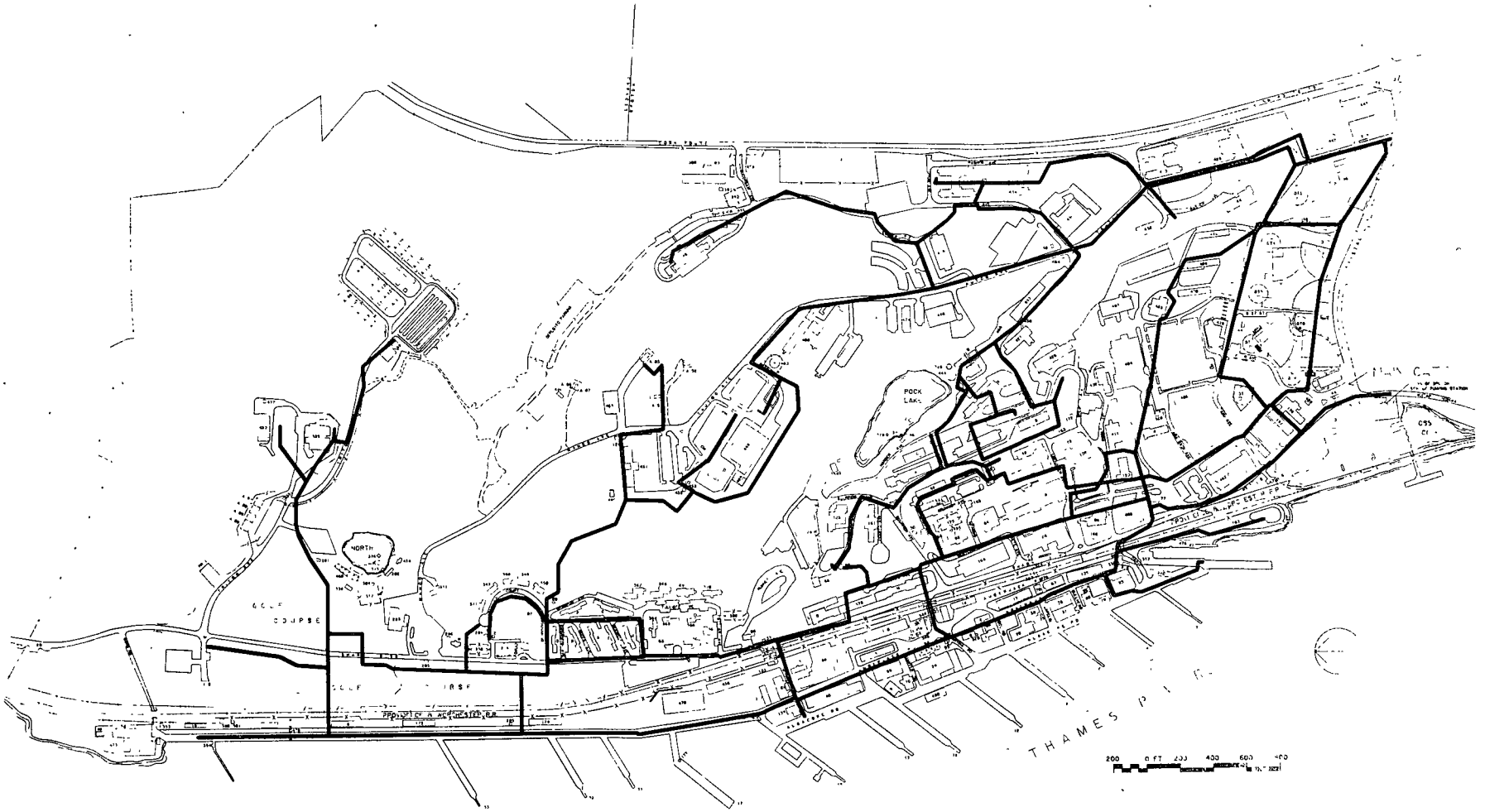
The cathodic protection systems are generally in good condition throughout the Base. The Base presently maintains five active cathodic protection systems. The active systems consist of impressed current cathodic protection systems on water tanks 99, 326, 44, 452 and also provides protection to approximately 1900 feet of quaywall. This new system was installed under special project R19-76 (Contract 77-C-0509) replacing the previous system installed in 1965.

POTABLE WATER

The potable water supply system and service mains from the city and storage tanks are considered in good condition. The Naval Submarine Base is supplied with potable water totally from the City of Groton for domestic and fire protection purposes. This water is the runoff from the Poquonnock River drainage basin and is the total source of supply for the City of Groton water system. Treatment of the potable water consists of coagulation, flocculation, and sedimentation followed by sand filtration, PH control, chlorination, and fluoridation. The SUBASE provides booster chlorination on the 12 inch water main as it enters the Base. The source is considered reliable and adequate to supply the present and future needs of the activity. See Plate 4-19.

The major reservoirs include the Ledyard Reservoir, Poheganut Reservoir, and South Lake, having a total capacity of nearly 15.7 million gallons per day. Wells to an aquifer drilled in 1981 increased capacity to 3.7 million gallons per day.

The potable water distribution system is generally in good condition. The SUBASE has an extensive water distribution system of mains ranging in size from 4 inches to 12 inches. The system is broken into two distinct areas, a low and high service area. The SUBASE maintains



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

POTABLE WATER DISTRIBUTION SYSTEM

three potable water storage tanks in the lower service area, with a total capacity of approximately 1 million gallons. The high service area maintains a 0.2 million gallon tank at the hospital. Booster chlorination is provided at Base entrance. It is not anticipated that the water requirements will change with respect to existing water demand growth rates, but a redistribution of water demand may occur about the Base, which will affect the distribution system. See Plate 4-19.

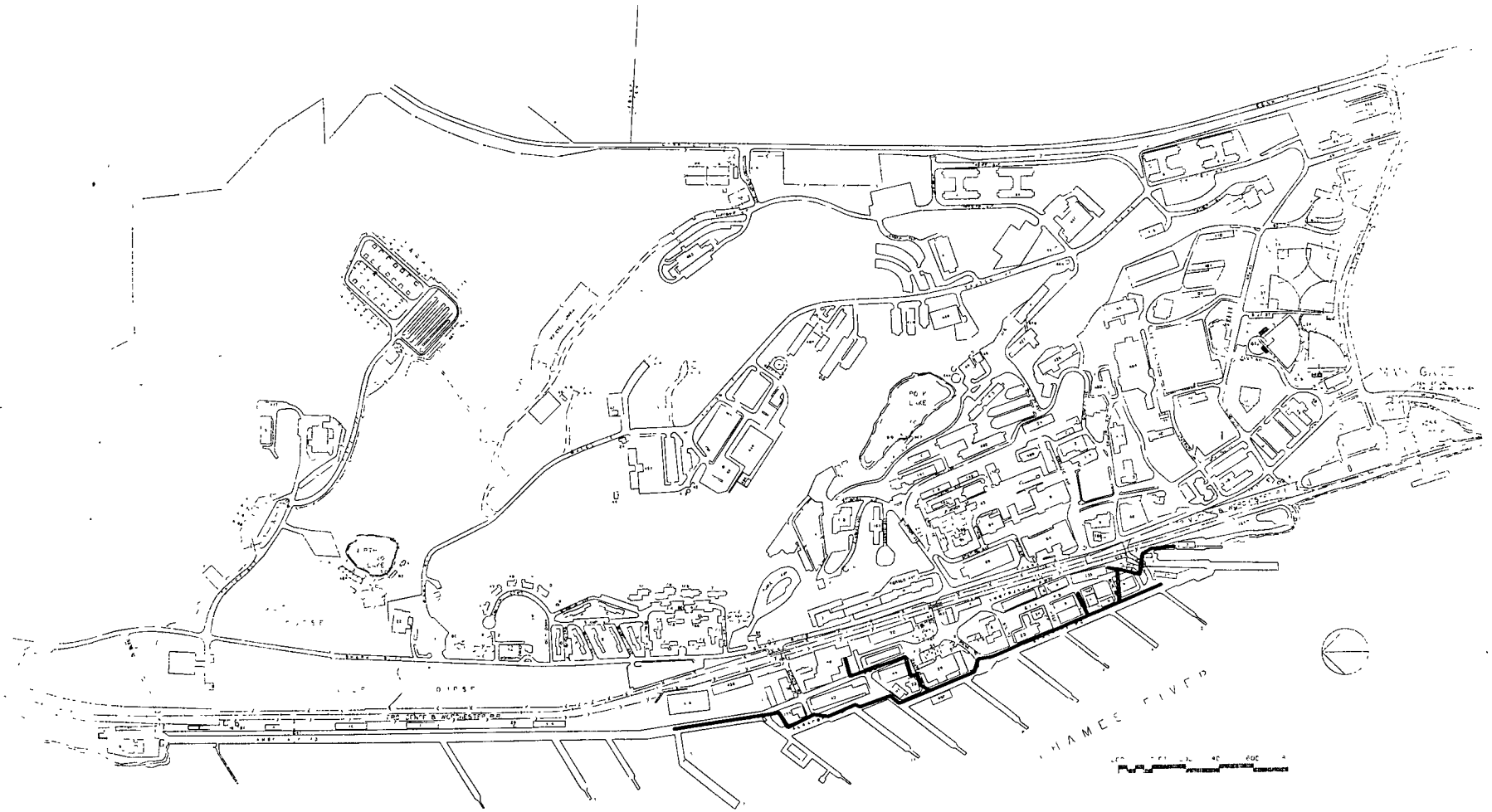
NON-POTABLE WATER

The condition of the non-potable water system varies from good to poor. The activity has two non-potable salt water systems, both originating at Building 29. The system that extends to Building 88 is a 10 inch lined cast iron pipe installed in 1962, and is generally in good condition. The second salt water distribution system was constructed in the mid 1940s and consists of 8 inch and 10 inch cast iron lines extending to Pier 2 in one direction and Pier 17 in the other. The long exposure to the corrosive environment at the waterfront suggests that the pipe may be deteriorated. A 0.2 million gallon tank at the hospital containing non-potable fresh water is maintained for fire protection. See Plate 4-20.

SANITARY SEWER

The sanitary sewer system is in fair condition, consisting of gravity collection lines and force mains. The SUBASE sewage flow is treated by the Town of Groton at their primary and secondary sewage treatment plants. The treatment plant has adequate capacity to handle and treat the sewage flows from the Town and the Navy. See Plate 4-21.

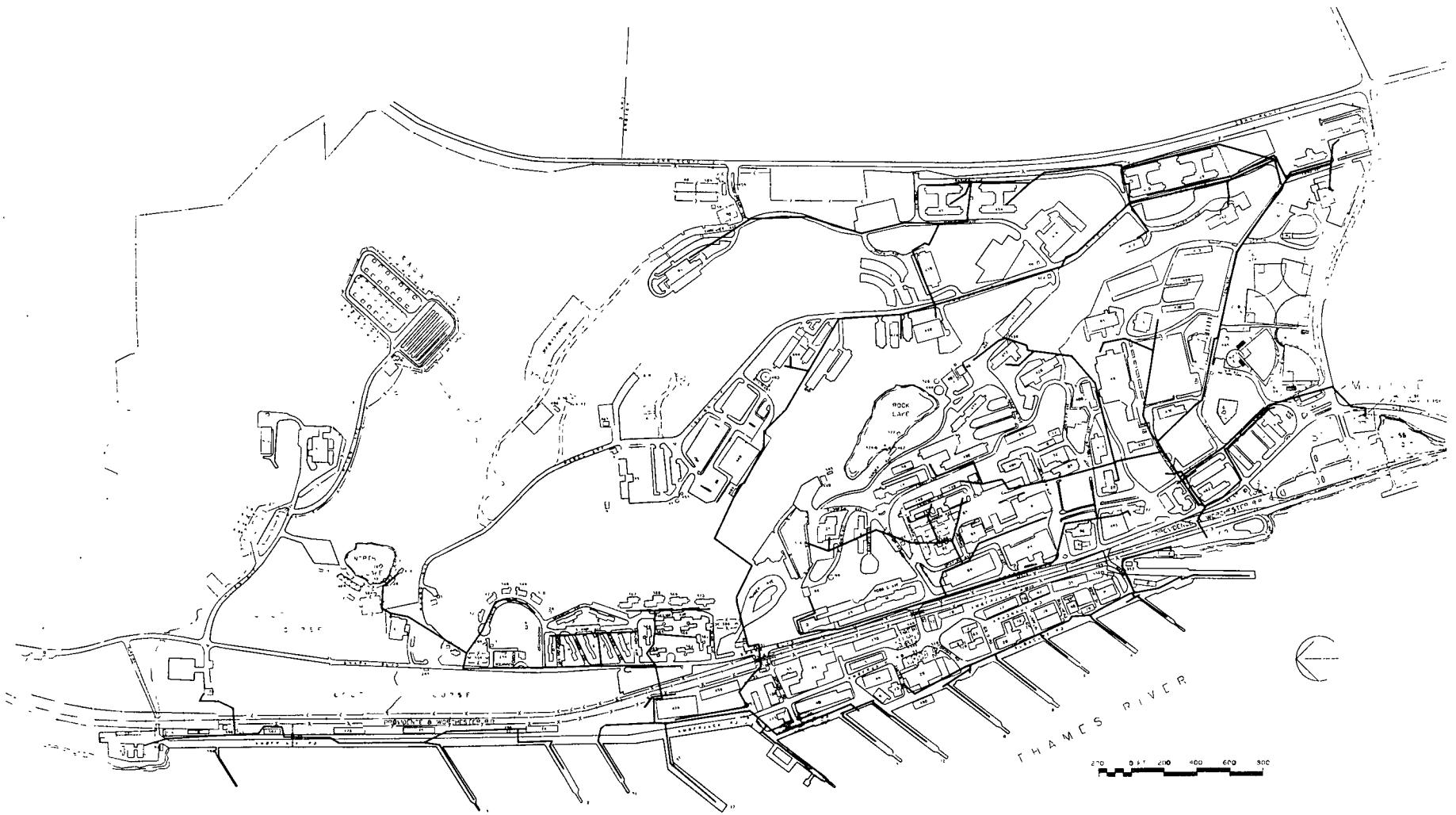
The utility systems at the Naval Submarine Base have not kept pace with demand except to provide minimum support to the existing facilities. The existing sewage system should be upgraded. In addition, it should provide improvements to existing storm sewers and new storm drains. Upon completion of P-341, the SUBASE will have adequate sewage capacity to support sewage requirements through 1990.



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

NON-POTABLE WATER DISTRIBUTION SYSTEM

PLATE 4-20



EXISTING SANITARY SEWER SYSTEM

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 4-21

COMPRESSED AIR

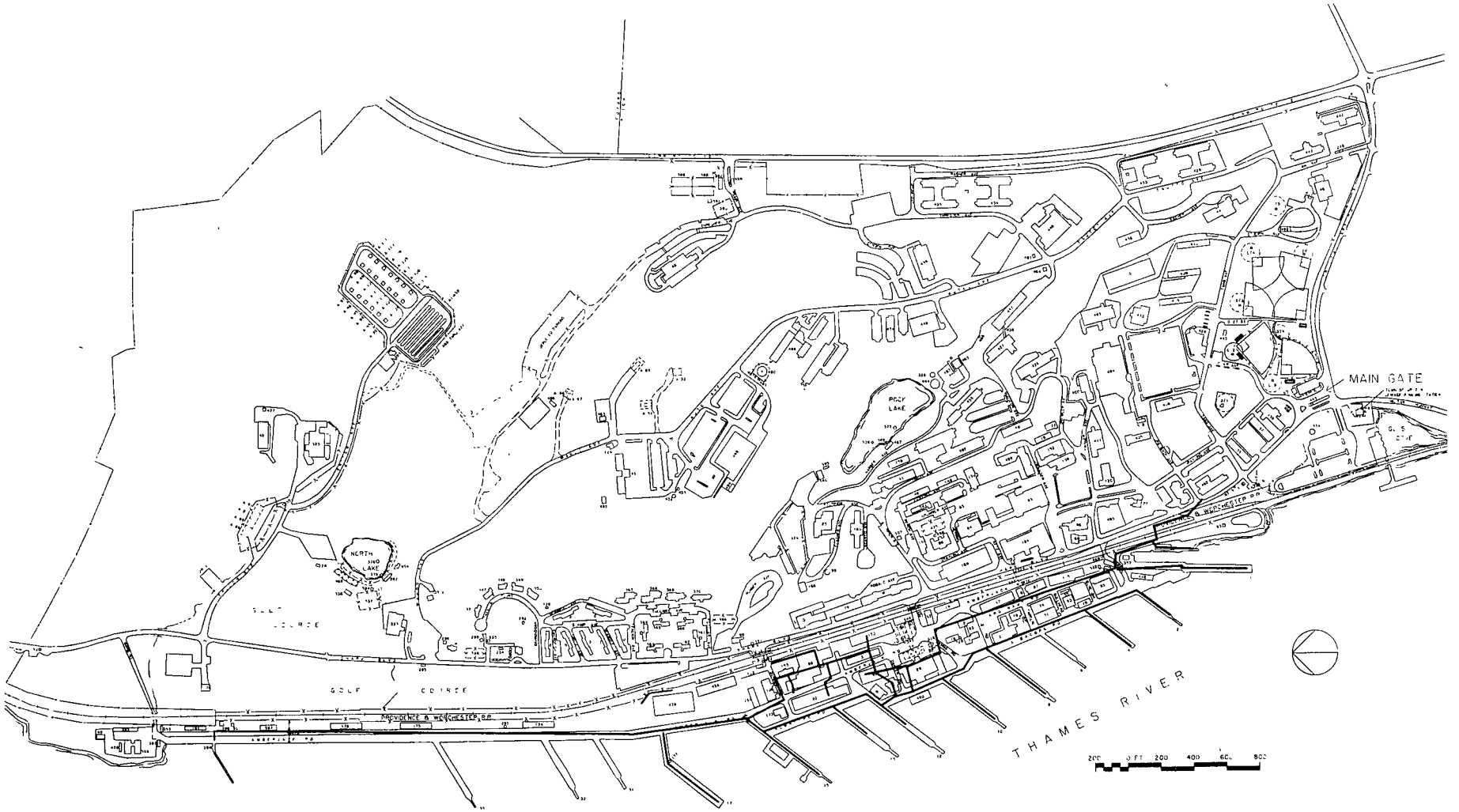
The low pressure air system is in good condition. The low pressure air system, located in the Power Plant, Building 29, consists of two Ingersoll-Rand 125 psi, 400 HP, electric drive compressors which were overhauled in January 1977. The third compressor is scheduled to be scrapped. The total capacity of the two Ingersoll-Rand units is approximately 5000 CFM. The central air receiver (225 cubic feet capacity) is located outside Building 29 and exports compressed air at 125 psi. The compressed air distribution piping is routed in the same trenches as the steam piping and, therefore, is subjected to the same unfavorable conditions as the steam piping. The compressed air distribution system is in poor condition with numerous leaks. Furthermore, compressed air piping, which is located in trenches with steam distribution piping, is submerged during high tides and rainstorms. See Plate 4-22.

DIESEL FUEL AND FUEL OIL #6

The condition of the diesel fuel and #6 fuel oil systems is good. All fuel arrives at the SUBASE by barge at pier 1 and is pumped 2/3 mile to the main tank farm (located under the baseball fields). From the main tank farm, #6 fuel oil is pumped to the "day" tank at the Power Plant 2/3 mile away.

There are seven concrete construction fuel tanks of 750,000 gallons each at the main tank farm. Due to leaks the fuel tanks are considered substandard. Four of these tanks are for diesel fuel storage and three tanks are for #6 fuel oil storage. See Table IV-7.

The capacity of the diesel fuel and #6 fuel oil handling systems is adequate. Replacement of the fuel tanks is required due to leaks.



COMPRESSED AIR SYSTEM

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 4-22

TABLE IV-5

FUEL OIL TANK FARM INVENTORY

TANK #	ABOVE/ UNDER	FUEL TYPE	CONST. TYPE C-CONCRETE	YEAR BUILT
OT 1	U	#6	C	1942
OT 2	U	#6	C	1942
OT 3	U	#6	C	1942
OT 4	U	Diesel	C	1942
OT 5	U	Waste Oil	C	1942
OT 7	U	Diesel	C	1942
OT 8	U	Diesel	C	1942
OT 9	U	Diesel	C	1942
54 A	U	#6	C	1948
54 B	U	#6	C	1948
54 C	U	Diesel	C	1948
54 D	U	Waste Oil	C	1948
54 E	U	Diesel	C	1942
54 F	U	Diesel	C	1942
54 G	U	Diesel	C	1942
54 H	U	Contaminated	C	1942
54 I *	U	Lube Oil		1943
54 J	U	Waste Oil	C	1943
54 K	U	Lube Oil	C	1954
54 L	U	Lube Oil	C	1954

* Abandoned

INDUSTRIAL WASTE

Hazardous waste is collected and stored in Building A-85, a former ammunition bunker. The existing facilities are inadequate and do not meet RCRA or NAVOSH requirements. A new hazardous waste storage facility is required.

CLASSIFIED WASTE DISPOSAL

The condition of the classified waste disposal system is good. A central shredder, operated by the Public Works Department, is located in Building 35 and is available to all tenant activities.

SOLID WASTE DISPOSAL

The solid waste disposal system is in good condition. Solid waste is collected by private contractors with disposal to the Groton Municipal Landfill. Recycling is mandatory by town ordinance 6.

The solid waste generation rate is estimated to be 10,000 tons per year for the Base and is collected and disposed of under two separate maintenance service contracts.

TELECOMMUNICATIONS

The administrative telephone service at the SUBASE New London, CT was upgraded in February 1983 to a Dimension 2000 Custom EPBX system. The entire system is owned and operated by Southern New England Telephone with the exception of carrying plant and approximately 2% of the cable distribution. Initially the system was wired for 2,800 lines and has the capability of expanding to 3,300 lines. Total lines in use as of 1 March 87 is 2,750. Condition of the system is excellent, but to accommodate future growth, line and control modules will have to be added to allow assignment of more individual extension phone numbers. The installation of conduits and manholes for outside cable expansion to accommodate all growth requirements anticipated over the next five years must be planned and forwarded in conjunction with all proposed new projects.

FIRE ALARM

The on-Base fire alarm system is the King-Fisher radio alarm type with 100 call boxes. The off-Base fire alarm system in Navy housing consists of 4 loops and 58 telegraph type fire alarm boxes connected to the Base through leased telephone aerial lines.

STREET LIGHTING

The Base street lighting system is generally in poor condition. The street lighting system consists of six main 6.6 amps 2300 volt street lighting loops and one 277 volt loop in the hospital area. Of the six main loops, three loops are controlled by photo cells, two loops are controlled manually from the power plant and one loop is controlled by a time clock.

UTILITIES TUNNELS

The waste removal equipment in the utilities tunnels is in poor condition.

FOREIGN GENERATED GARBAGE DISINFECTION

The condition of the foreign generated garbage disinfection system is good. The Activity has two dumpsters converted into foreign garbage cookers. When a vessel is coming into the Base with foreign garbage, Port Services contacts the Maintenance Division of Public Works. The State Department of Agriculture is then contacted and notified of the same. One of the foreign garbage cookers is taken out to the pier and the crew loads the cooker with all the food and garbage on board. The cooker is then hauled to Building 400 where it is connected to a steam line. This entire operation is done under the supervision of a State Agriculture Inspector.

OILY WASTE

The condition of the oily waste handling system is fair. Presently, oily waste, collected from ships and land-based facilities, is brought to Tank No. 5 in the fuel farm area. The waste oils are held in a 750,000 gallon underground tank where primary separation is effected and the separated oil is then sold to a civilian contractor. The waste water is pumped from beneath the oil layer and discharged to the sanitary sewer. A new oil water separator will be placed on this discharge line shortly. An oily waste study is underway which will evaluate the total operation with a view towards reclamation on Base.

STORM SEWER

The Base storm sewer system is in fair condition. Storm water runoff from the building areas flows by gravity sewer into the Thames River. However, the storm system is very old and is not properly sized to keep up with the increased runoff that has resulted from increased development in the building areas in recent years. FY-85 MILCON Project P-341, Utilities Improvements, includes the replacement of 4,000 LF of various drain pipes and culverts in the developed areas of the Base. This project and other miscellaneous repair projects will eliminate some drainage problems. The drainage system in the undeveloped areas in the northern and eastern parts of the Base consists of headwalls, small culverts, drainage ditches, and streams. There are no major drainage problems in these areas. See Plate 4-23.

WATER POLLUTION CONTROL

The Thames River Basin Plan (Connecticut Department of Environmental Protection, 1976) indicated 70 major point source discharges to the Thames River. These sources were of both industrial and municipal origin. However, only one industrial and four municipal discharges are responsible for the major BOD and bacterial problems in the river. In addition, combined sewer overflows are still problematic in the old Norwich area. Includ d in the major point source discharges

STORM SEWER SYSTEM

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
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are the cities of Norwich, New London and Groton sewage treatment plants and the Pfizer Drug Company in Groton. Since 1976, significant improvements have been made by the major dischargers, including upgraded sewage treatment facilities at Norwich, New London and Groton. According to a later study of the Thames River, only the combined sewer overflow problems remained as a major point source problem (New England River Basins Commission, 1979).

The Connecticut Department of Environmental Protection (DEP) has adopted water quality classifications and standards for the inland and marine waters of the state (Connecticut DEP, 1977). The existing water quality classification for the Thames River to Norwich is Class SC. Class SC waters are described as "suitable for fish, shellfish and wildlife habitat; suitable for recreational boating and industrial cooling; good aesthetic value." The future water quality classification goal for this portion of the river is Class SB. Class SB waters are described as "suitable for bathing, other recreational purposes, industrial cooling and shellfish harvesting for human consumption after depuration; excellent fish and wildlife habitat; good aesthetic value."

AIR POLLUTION CONTROL

The Connecticut Department of Environmental Protection (DEP) monitors the air quality of the state according to the two categories of federal and state air quality standards. The first is the primary standard that was established to protect human health, the secondary standard was established to protect plants and animals and to prevent economic damage. The state monitors six pollutants in four air quality control regions. The SUBASE lies within the Eastern Connecticut Air Quality Control Region (AQCR). The six pollutants monitored are: total suspended particulates, sulfur dioxide, ozone, nitrogen dioxide, carbon monoxide and lead. Of the six pollutants monitored in this region, only three are measured near the site: total suspended particulates, lead and ozone.

OIL SPILL PLAN

Oil Spill Cleanup Contingency Plan. The oil spill cleanup contingency plan for this activity, for spills which cause contamination of the Thames River, tasks the Naval Submarine Support Facility (NAVSUBSUPPFAC) with cleanup and reporting responsibility. Should an oil spill occur on the land portion of SUBASE, the Public Works Officer and Public Works Maintenance Division are to be immediately notified. Public Works Maintenance Division then assumes the responsibility for containing the spill and for cleaning it up, using if necessary, sand or chemical absorbants which can be vacuumed up for disposal. Small spills which are cleaned up using solid absorbants are disposed of. Any oil which remains in a liquid state after cleanup, as from an oil spill vacuumed off the water surface, is taken to the waste oil disposal tank OT-5.

Spill Prevention. All fuel handling at the SUBASE is done in accordance with the Submarine Base New London Fuel Operations Manual.

HAZARDOUS WASTE MANAGEMENT

In the event of a spill which cannot be readily prevented from reaching a storm sewer by the forces on hand, or where there is legitimate concern over the health and safety of the personnel involved, the SUBASE NLON Fire Department and the OOD shall be notified of the spill. The OOD will notify the Emergency Response Coordinator, the CDO, the activity Safety Officer, the Public Works Officer, and the Industrial Hygiene Officer.

The Security Officer is designated as the Emergency Response Coordinator and shall be responsible for coordinating all emergency response measures necessary to safely contain and clean up spills.

The SUBASE NLON Fire Department is responsible for the immediate response to, and containment of, an oil or hazardous material spill. In the event the spill has reached a storm sewer or watercourse, the NAVSUBSUPPFAC NLON On-Scene Spill Response Team shall be notified.

The NAVSUBSUPPFAC NLON Weapons Department shall be responsible for the cleanup of any Otto Fuel spills and the disposal of the spill residue.

SOLID WASTE MANAGEMENT

In Southeastern Connecticut, as well as in the entire State of Connecticut, the most common method of solid waste disposal is the sanitary landfill. However, landfill space is becoming filled up at a very rapid rate. According to the Connecticut Department of Environmental Protection, seven towns in the region have run out of space in their municipal landfills or the private landfills which they are using, six have space for five years or less, and only five have over five years of life remaining.

New landfill space is very difficult to find. No new landfills have been opened in Connecticut in the past five years. There are two important reasons for this. First, the Connecticut Department of Environmental Protection's water quality standards have severely limited the number of potential landfill sites, and second, if a site is found which does meet those standards, there is likely to be local opposition. These constraints apply, not only to municipal landfills, but also to commercial ones. There are currently eight large commercial landfills in the state to which municipalities are taking their waste. Two of these are used by towns in Southeastern Connecticut. These are the Adelman landfill in Bozrah and the Yaworski landfill in Canterbury. According to the Department of Environmental Protection, the Yaworski site has five years of life remaining at current use rates, and the Adelman site is filled to capacity.

It thus seems necessary that a new approach to solid waste management will be required in the region in the next few years. The town of Groton has mandatory recycling.

Topography

As a result of th surface modification that took place during the Ice Age, SUBASE'S topography is quite unique and ranges from an estuarine and marsh terrain to the hilly upland forms. Elevations at the SUBASE

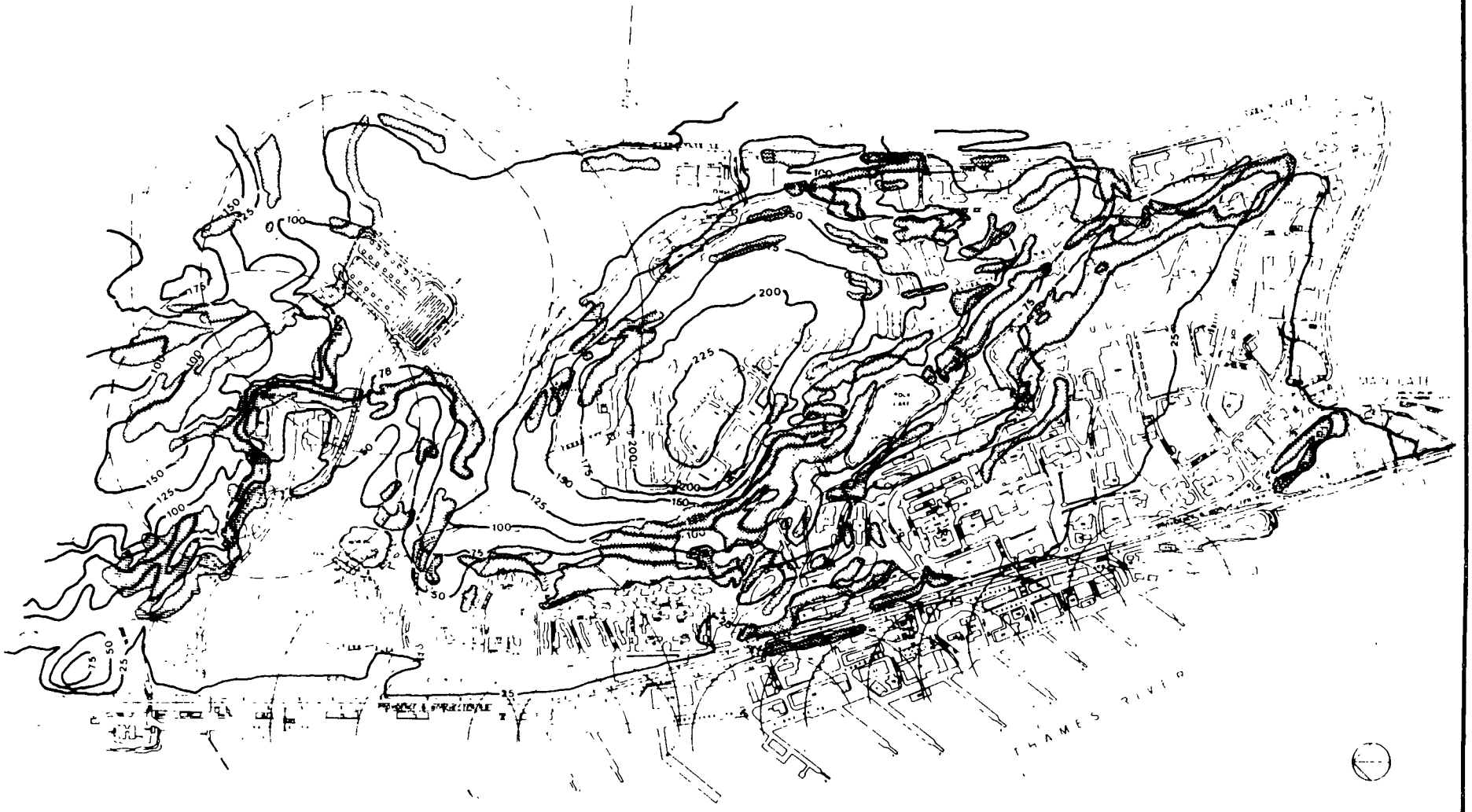
range from below the 100-year flood inundation level of 11.0 feet to a high point of 234 feet. The topographic contours of the shoreline are the result of glacial action and in more modern times, the results of extreme tidal action during severe storms.

Although the topography enchances the scenic qualities of the base, it has produced significant limitations on the usability of portions of the Base's land surface. Generally development on land that has a slope greater than 15% is not desirable for construction purposes. Development costs, such as excavation and utilities begin to escalate dramatically at this point. Much of the vacant land on Base and into surrounding towns contains these severe slope conditions. Almost all of the prime land at the Base has been utilized. This land use is evident in the development pattern that spread eastward when the SUBASE grew out from the original small complex adjacent to the Thames River.

The shortage of land suitable for construction sites has now forced construction into land with slopes greater than 15%. There is still some land available, primarily in the middle section of the upper Base, that can be used for construction sites. This land varies in slope from 10% to 30%. Slopes greater than 30% are shown on Plate 4-24.

Geology

The geology of the land in the SUBASE, New London area was greatly affected and complicated by the geologic history of the area. During the Ice Age, glaciers moved across New England gorging and scraping the land leaving open areas of flat bedrock. The glaciers brought material, called glacial till that was scraped from the earth surface. Non-stratified till deposits were left overlying the bedrock as the glacial ice melted away. Melt water streams left deposits of stratified drift, an excellent source of sand and gravel. The highest yield aquifers are located in these coarse grained sand and gravel deposits.



STEEP SLOPE 30% or more

TOPOGRAPHY

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

The SUBASE is underlain with meta-sediments and metaigneous layers which are characterized by the NE trending steeply dipping beds and make up the leg of the overturned Quaker Hill Anticline. These rocks exhibit many episodes of minor folding and faulting as well as high grade and retrograde minerologic assemblages.

The area in which the SUBASE lies consists of soils of the uplands, terraces and floodplains, all of which may be found within the SUBASE perimeter. The upland areas are characterized with soils that vary from well drained to poorly drained with slopes in many areas exceeding 15% and in some areas exceeding 30%. High construction costs are to be expected due to bedrock occurring at or near the surface in some areas. The terrace areas generally are characterized with poorly to very poorly drained soils. For urban use, these soils have severe limitations and intensive drainage and land fill measures are necessary to overcome the high water table. Construction costs in these areas are also higher due to the need for special foundations or drainage measures which must be taken. The floodplain areas have soils which vary from well drained; but due to the flood hazards which exist, these areas are limited in development potential. A portion of the developed lower Base is below the 100-year flood inundation level this necessitates that protective measures be provided for construction in these areas.

Soils

The Groton area is situated in the eastern highlands and the coastal plain of Southeastern Connecticut. The area consists of soils comprising uplands, terraces, floodplains, marshes and swamps.

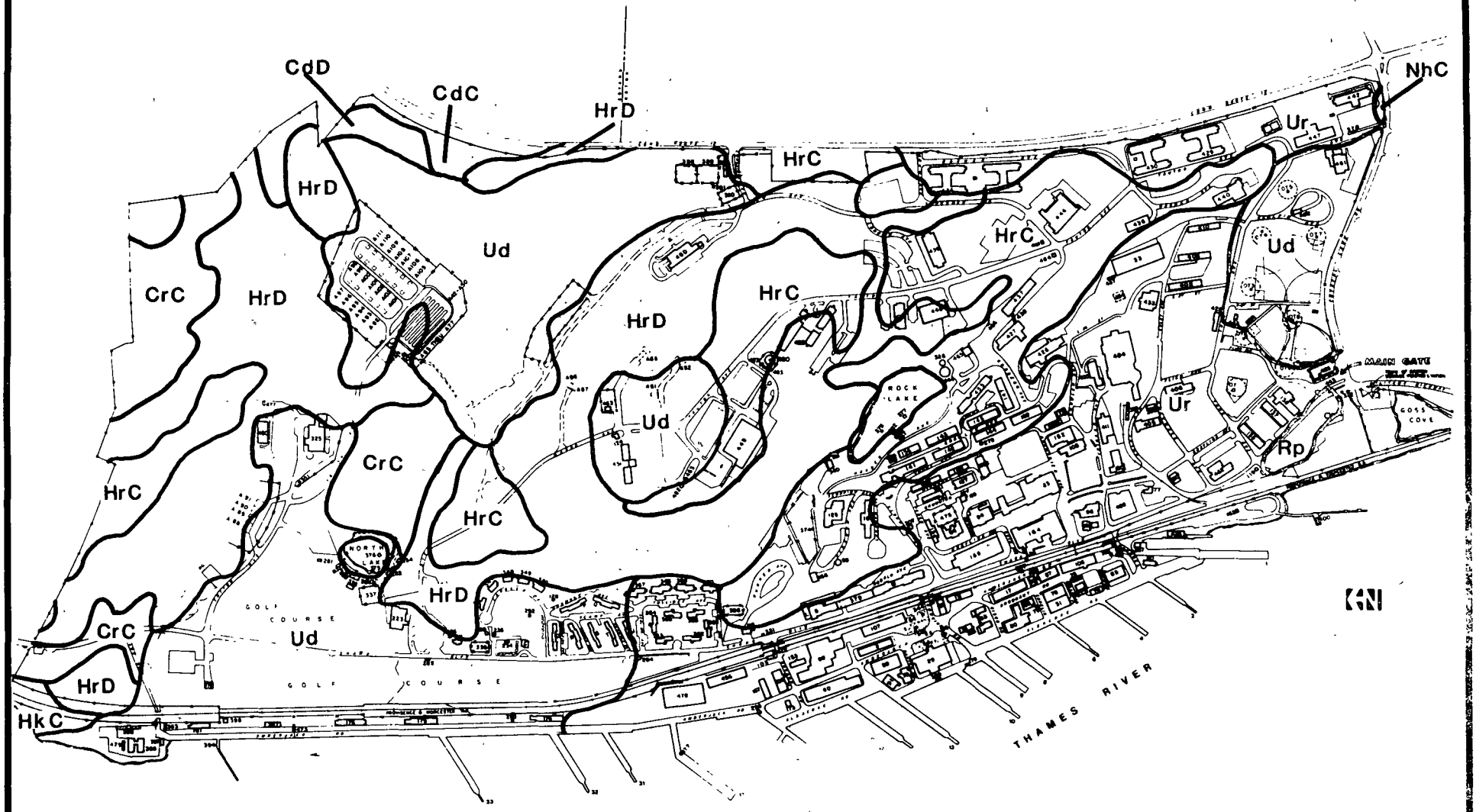
The uplands consists of materials unworked by water in recent geological time and ordinarily lying at higher elevations than the floodplains. The terraces are old alluvial plains which are usually flat or smooth bordering a river, lake or sea, seldom subject to overflow by the adjacent body of water. The floodplains are areas of the lowland adjacent to streams, rivers and oceans that are subject to flooding.

The soil types shown on Plate 4-25 more specifically detail the soil types found at the SUBASE. These soils are taken from the "Soil Survey" of the area, and represent an area on the site that consists of one or more soils for which the type is named.

In general, SUBASE soils permeability are moderate to moderately rapid. The available water capacity is moderate to low. Runoff is rapid or very rapid. The pH is strongly to moderately acidic. The hazard of erosion is severe. Onsite septic systems need careful design and installation to prevent effluent from seeping to the surface in downslope areas. Excavations require blasting in many places. The major limiting factors for development are the steep slopes, and the shallow depth to bedrock and rock outcrops. Extensive onsite investigation will be needed to locate suitable development sites.

Vegetation and Wildlife

SUBASE is a highly-developed, industrial property. The lower portions of the activity have very limited vegetative cover consisting of introduced plants with few naturally occurring species. However, a considerable amount of forested vegetation exists in the upper Base. The majority of the northern portion is covered with an upland deciduous forest. This forest is dominated by oak, beech and red maple. No endangered or threatened species of plants have been reported. The potential for one endangered species to exist on the Base was identified. This is a small woodland orchid that grows in dry, rich woods, primarily under beech trees. Other common under-story plants include dogwood, cherry, tupelo, sassafras, catbriar, grape and poison ivy.



CdC CANTON and CHARLTON, 3-15% slopes

CdD CANTON and CHARLTON, 15-35% slopes

CrC CHARLTON-HOLLIS, 3-15% slopes

HrC HOLLIS-CHARLTON ROCK, 3-15% slopes

HrD HOLLIS-CHARLTON ROCK, 15-45% slopes

HkC HINCKLEY SANDY LOAM, 3-15% slopes

NhC NARRAGANSETT SILT LOAM, 3-15% slopes

Rp ROCK OUTCROP-HOLLIS, 3-45% slopes

Ud UDORTHENTS-URBAN LAND, 0-15% slopes

Ur URBAN LAND, surface covered by pavements or structures

SOILS

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

The SUBASE contains a large wetland (80 acres) in the northeast area. It is a marsh that was artificially created by dumping dredge spoils into a stream area. Although the marsh does not exhibit a high species diversity, it does support several plants that are typical of this type of wetland.

Because of the large amount of undeveloped land on the site, the SUBASE provides excellent animal habitat. Most terrestrial animals occurring in this area of Connecticut would be found there. Common mammals such as the eastern gray squirrel, raccoon, white-tailed deer, opossum, eastern cottontail and woodchuck are present in the forested upland areas. Many species of birds, reptiles, amphibians and invertebrates are supported by the various habitats. There are no known species of threatened or endangered animals that occur on the SUBASE.

The Thames River is adjacent to the SUBASE and is an estuary in this reach. Estuaries exhibit a high species diversity and productivity and are important spawning and nursery areas for a number of marine organisms. Except for anadromous fish, few freshwater organisms live in estuaries. Most of the organisms that live here are benthic and are attached or buried in the mud. The dominant community in an estuary is usually a shellfish bed.

Marine invertebrate animals that are common in the Thames estuary include blue crabs, soft clams, hard clams, mussels, barnacles, scallops, annelids, amphipods, polychaestes, sea anemones, starfish and sponges. Lobsters occur in this reach also, but primarily south of the SUBASE area.

Numerous resident and migrant fish species inhabit the Thames River estuary. A total of at least 61 species have been recorded, of which 57 use the Long Island Sound area as spawning grounds. Data concerning the distribution and spawning behavior of finfish in the Thames River estuary indicate limited spawning in winter with comparatively increased spawning occurring in spring and summer. The reach just south of the SUBASE is known to be a nursery area for back flounder. Anadromous fish using the Thames river include sear run brown trout, American shad, rainbow smelt, white perch, striped bass,

al wife and glut herring.

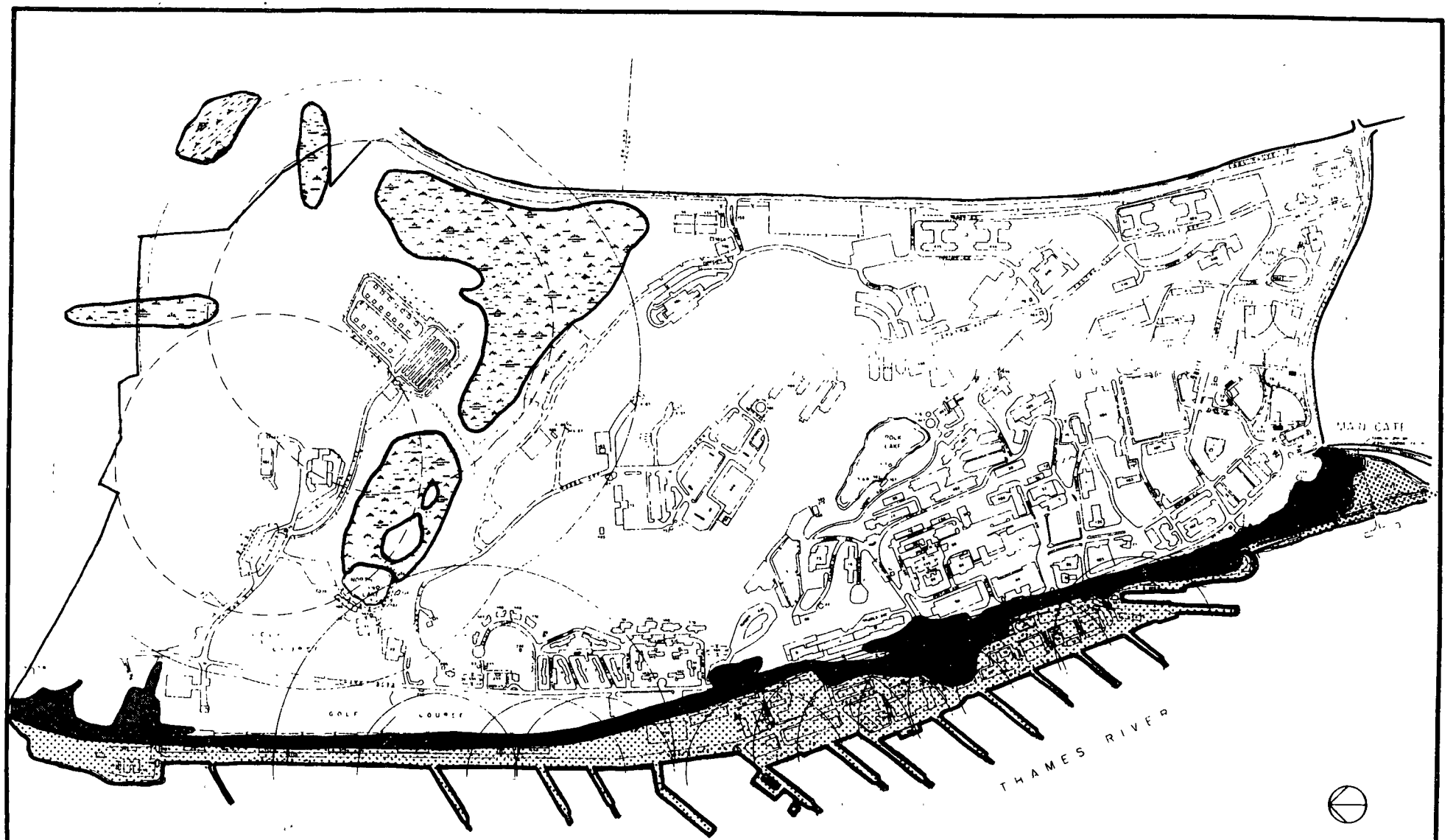
An oyster and clam bed occurs in this reach of the Thames along its western bank opposite the SUBASE. There are two major hard clam concentration areas located approximately two miles below the SUBASE on either side of the river.

Hydrology

The SUBASE is located on the east bank of the Thames River about 6.5 miles upstream of the mouth. All surface drainage from the SUBASE is westward into the Thames through an extensive stormwater collection system. There are two large wetland areas located in the northern portions of the SUBASE. These two areas are contiguous and lie in an isolated section where there is virtually no development. There is another wetland on the Navy property adjacent to the Nautilus Park-Capehart Housing development.

There is no groundwater development on the SUBASE since Groton provides all potable water from surface water supplies. However, areas north and northeast of SUBASE such as Ledyard, are dependent on groundwater for their potable water. Groundwater in the area can be obtained in stratified glacial outwash deposits, glacial till and bedrock. Depth to groundwater on SUBASE will vary depending on the source but is generally less than 10 feet below the surface. In the lower portions of the SUBASE, which are on the Thames River, groundwater is often less than five feet below the surface. The groundwater is deepest on the hills of the upper Base.

Floodplain information was made available by the Federal Emergency Management Agency (FEMA). This information indicates that most of the lower Base below the railroad trackage is located within the 100-year floodplain. The 100 year line is at 12.4 Mean Low Water (MLW) or 11.0 Ft Mean Sea Level (MSL). The 500 year line is at 15.4 Ft MLW or 14.0 Ft MSL. Floodplain areas are shown on Plate 4-26.



INLAND WETLANDS

100 YEAR FLOODPLAIN (ELEV. 11.0 FT. MSL)

500 YEAR FLOODPLAIN (ELEV. 14.0 FT. MSL)

WETLANDS AND FLOODPLAINS

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 4-26

Development Constraints

Development constraints are those natural or man-made conditions which act as restrictive factors when formulating the overall development plan for an installation. The SUBASE has many constraints and when reviewed collectively, many of these constraints encumber a substantial portion of the land, particularly in the northern section of the upper Base. Some of the constraints overlap common areas. The following factors are considered to be the SUBASE planning constraints.

See Plate 4-27 for man-made development constraints and Plate 4-32 for natural development constraints.

MAN-MADE

Boundry

The main Base area consists of one tract of land whose border is made up of four distinct sides. Three sides are inflexible while the fourth is unfavorable for expansion.

The northern boundary line abuts private land. The majority of this boundary lies within planned ESQD arcs which extend over the boundary into the private land. Any expansion to the north would have to be beyond these arcs, making the new development non-contiguous with the Base. In addition, there is virtually no existing development in this northern part of the Base. Consequently, any new development would involve the high cost of extending utilities from the more southern sections of the Base. Also, the nature of the terrain on and above the northern border makes it unfavorable for development. Taking all these constraints into consideration, it is not feasible to expand to the north.

The eastern border is formed by Connecticut Route 12 and the southern border is formed by Crystal Lake Road. Both are important traffic corridors and are therefore inflexible. Any development to the other side of these routes would have to involve activities or functions that could stand alone without interacting with other activities on the main Base.

LEGEND

SUBASE

- A Submarine Berths
- B Explosive Safety Zones
- C P&W Railroad
- D Boundry
- E Thames Riv r Devel pment

STATE PIER

- G Lease Restrictions
- H Explosive Safety Zones
- I Thames River Development
- J Configurati n

MAN-MADE DEVELOPMENT CONSTRAINTS

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 4-27

ENCROACHMENT

The following encroachment pressures and areas of concern have been identified at the Submarine Base New London. None of these issues are significantly impeding the performance of operations at this time, however, they all have a potential to hinder certain areas of the Base functions or submarine operations.

EXPLOSIVE SAFETY QUANTITY DISTANCE (ESQD) ARCS

Encroachment issues exist between the SUBASE/State Pier facilities and the privately owned areas surrounding these facilities. At its northeastern boundry the SUBASE is bordered by the Town of Ledyard. Presently, the private land bordering the Base is undeveloped, but the town plans call for future development. An encroachment issue arises here because facilities in the northern section of the Base generate Explosive Safety Quantity Distance (ESQD) arcs that extend out beyond the northern and eastern boundaries of the Base. Department of Defense criteria pertaining to these ESQD arcs state that development of land within the Navy's ESQD arcs with private commercial facilities is unacceptable. In the SUBASE's State Pier area ESQD arcs also encumber private land and property. In the Town of New London the waterfront development plans include relocating the Fishers Island Ferry and expanding the Cross Sound Ferry Operation. These activities will fall under existing ESQD arcs emanating from the sub tender AS Fulton. The ESQD arc will also encumber a small portion of land across the Thames River in the Town of Groton. A motel and a 16 slip marina exists on this land at present and the owner is planning to expand these facilities.

THAMES RIVER/HARBOR ACTIVITIES AND WATERFRONT DEVELOPMENT

1.) Due to the abundance of commercial and pleasure craft that anchor, fish and navigate in the waters at the entrance of the Thames River channel (Long Island Sound), the free movement of submarines from the SUBASE to the sea is hindered. A major problem for submarine traffic which arises due to congestion at the channel opening is the abundanc of lobst r pots that are placed in the route the submarines trav rse when heading out to and r turning from s a. The lin s

attached to the lobster pots become entangled on the submarines and cause damage.

There is also potential for a small craft to be swamped in the wake of a submarine if the small craft is too close. The failure of craft to stay out of the route of a submarine or the need for a submarine to manuever around many craft anchored in the submarine's normal route are both undesirable situations.

The river channel is a designated area where no vessels or objects are allowed to interfere with or block the passage of ships. This rule applies only to the channel, however, and does not extend to the Long Island Sound. See Security/Roads/Parking section for further information on the river security/restricted zone.

2.) Another problem experienced on the channel route between the SUBASE and the sea is the periodic malfunctioning of the Thames River railroad drawbridge that crosses between Groton and New London. The most recent mechanical problems occurred in July 1983.

The clearance under the drawbridge at mean high water (MHW) is 30 feet. All classes of submarines normally berthed at the Submarine Base, except SSN 585 Class, can pass under the drawbridge at MHW when the bridge is lowered. The SSN 585 Class submarines can pass under at Mean Low Water (MLW) with about 1 1/2 feet of clearance. There are currently five SSN 585 Class submarines at the SUBASE. Their unrestricted movement is considered hampered when the bridge is in a down position because it is too risky to pass under it with such a small amount of clearance. The blockage of several submarines and some submarine support ships on the Thames River, above the drawbridge, presents a serious problem in the event of a major mobilization.

3.) Currently, plans are being developed by the Towns of New London and Groton for future riverfront development. In the event that additional development should occur there is a potential for encroachment in the form of increased river traffic, security and safety issues in both the SUBASE and the State Pier area.

Encroachment concerns are arising in several areas where there is planned commercial, recreational or housing development. Across the Thames River from the SUBASE a marina/condominium project is proposed at Waterford. The development will consist of an 86 slip capacity marina. Half of the proposed slips will be dedicated to the proposed condo development on the adjoining upland. The balance of the slips will be rented to the general public. Clearly the concern here is the increase in waterway traffic and the subsequent conflicts and security problems that may occur. These concerns are also evident at the SUBASE's State Pier site where various development plans call for expansion of State Pier's commercial facilities and development of the adjacent areas for commercial support uses.

Municipalities and regional planners want to take advantage of all waterfront development opportunities. The amount of development will depend on the ability of the local economy to support it. If the envisioned development does occur in all or most of the designated areas in future years, much more river traffic will be expected. An important issue is how much of an impact this additional traffic, combined with the existing, will have on the Navy's submarine operations.

4.) A final issue concerning river traffic is related to the collegiate boat races held on the Thames River every June. The Navy could request the Coast Guard to monitor the placement of the buoys to ensure they are not put in the channel.

PROVIDENCE AND WORCESTER (P&W) RAILROAD

The Providence and Worcester Railroad Company owns and operates a stretch of tracks that run from Groton to Worcester, Mass. The tracks and right-of-way pass through the SUBASE and physically divide the base, forming the interior boundary between the upper and lower Base. This inflexible boundary is approximately 1.7 miles long.

The tracks and right-of-way act as a circulation barrier and cause a circuitous movement of equipment. Therefore, they are an operational constraint. As a result, all the activities and functions on the congested lower Base that require the use of large vehicles or heavy

equipment are not capable of being located on sites that are readily accessible by such equipment approaching from the Barbel Road crossing. The P&W Railroad wants to operate excursion trips to the Nautilus Memorial during normal weekday working hours. Passenger rail trips during this time would endanger the public due to weapons handling operations.

The largest tank cars used for chemical transport by P&W have a capacity of 33,500 gallons. A typical train contains no more than five cars transporting hazardous material. In the past, the Submarine Base has not been cognizant of the types of freight transported through the Base on the section of P&W track which traverses the Base. The Submarine Base fire department is now aware of the types of chemicals transported by the railroad and is preparing a plan of action to confront a hazardous material spill, leak or fire that could occur on Base property by derailment, structural or valve failure on a tank, vandalism or sabotage. The plan of action in the case of an accident would involve a general evacuation for Base personnel and adjustments to operations during the emergency situation. Also, a detailed knowledge of the methods to combat each type of chemical under all situations (spill, leak, or fire) would be required by all fire department personnel.

NAUTILUS MEMORIAL DESIGN DISTRICT

A newly zoned commercial area along Crystal Lake Road, the Nautilus Memorial Design District, could adversely impact SUBASE operations. Rush hour traffic flow will be hindered by commercial development along the Crystal Lake Road and Route 12 corridors. Initial commercial development around the Nautilus Memorial could spur further commercial growth and subsequent increases in traffic congestion throughout the Base area.

NAUTILUS MEMORIAL TRAFFIC

The NAUTILUS Memorial is not expected to generate a significant increase in traffic. However, the existing geometric layout of the Base main gate area, the intersection of Crystal Lake Road and Military Highway, and the existing traffic lane markings on the 40 foot wide Crystal Lake Road are all factors that could confuse

visitors arriving at the Memorial. Visitors who mistakenly turn into the main-gate entrance lanes or the visitor/pass parking lot of the Submarine Base interfere with the smooth flow of traffic at these locations.

Preliminary ideas for improving the confusing intersection include alterations to the design of the Base main gate area, signage, and the formation of two lanes for westbound traffic on Crystal Lake Road where it approaches the Base and Memorial entrances.

RECOMMENDATIONS

The Master Plan recommends that encroachment pressures be addressed and discussed with regard to all parties concerned, and that solutions be found that are agreeable to all parties and in the best interest of the Navy. In regard to issues and concerns discussed in the previous paragraphs, the Master Plan recommends the following actions. The Navy should stay informed of all waterfront development projects, especially those including marinas and commercial developments on the land adjacent to the Base's northern and eastern boundries. All plans that could impede the Navy's future purchase of land should be discouraged. Regarding water traffic issues, the Navy should discuss with the licensed lobstermen and charter party boat owners in the area, the potential hazards to their crafts and fishing equipment operating in the route of submarines. The importance of the unobstructed transit of submarines for national defense reasons should be emphasized. The Navy should emphasize this need through an ongoing dialogue and coordination with the Coast Guard and the Department of Environmental Protection. Good communications should also be continued with the New London Captain of the Port and the Coast Guard Bridge Administration Office in New York City. Regarding the Nautilus Memorial re-zoning, the Navy should voice its objections to any development along Crystal Lake Road that will negatively impact on traffic flow and safety, or be offensive to the high quality visual image desired for the approach and gateway to the memorial. Viable alternatives to mitigate or eliminate undesirable aspects of such development proposals should be presented to the zoning board. If the demand for weekly train excursions or regular passenger service on the P&W railroad increases due to the popularity of the Nautilus Memorial, the Navy should work with the railroad to develop a schedule that will

accommodate both the railroad's needs and the Base weapons handling requirements. If a mutual agreement cannot be made, the Navy should refuse the proposed passage of weekday trains carrying passengers through the Base. On the related issue of the P&W railroad's transport of hazardous waste through the Base, the Navy should become proficient in the methods for handling any spill, leak, or fire that may occur and also develop contingency plans in the event of a rail car accident.

Regarding the Navy encroachment on private property by ESQD arc encumbrance, the Navy should try to acquire the encumbered land or relocate its facilities to alleviate the encumbrance. In the future better communications with the various planning agencies involved might help to prevent actions unfavorable to the Navy.

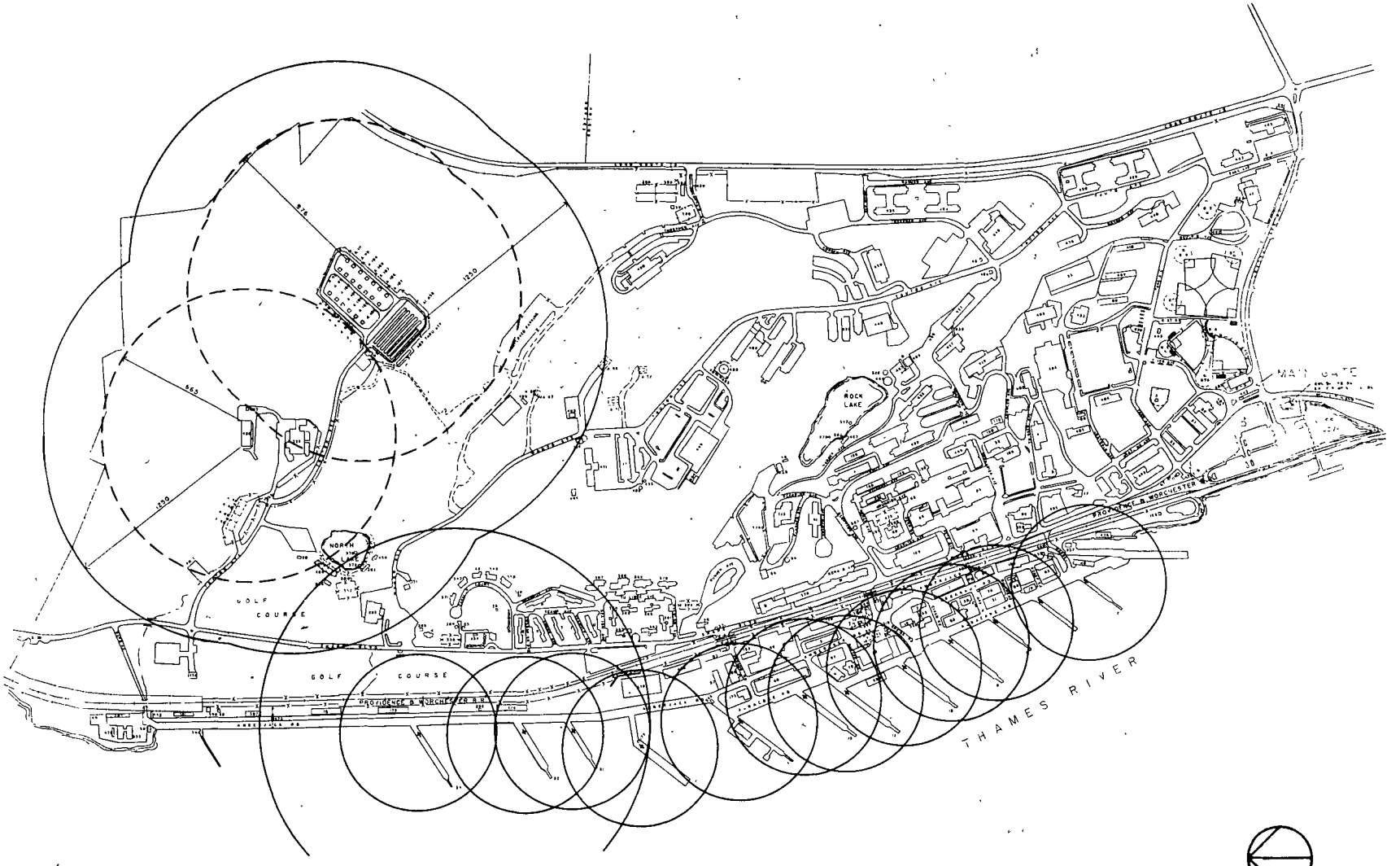
Explosive Safety Quantity Distance (ESQD) Arcs

SUBASE

The main Base area consists of 546 acres of land. Two hundred and fifty acres or 46% of this land is encumbered by the existing and planned Explosive Safety Quantity Distance (ESQD) arcs. Regulations prohibit the construction of inhabited buildings or structures within these arcs. See Plate 4-28. The SUBASE operates under an ESQD waiver, CNO waiver No. SUBASE NLON IF-79 issued by CNO on 11 April 1986. See Appendix 7F-1.

Most of the land within the arcs is located in the undeveloped northern section of the upper Base. The facilities that generate ESQD arcs and the respective radius of their arcs are as follows:

FACILITY	APPROVED ESQD ARC AT CONSTRUCTION	CURRENT ESQD ARC CRITERIA
1. High Explosive Magazines	876'	1250'
2. Keyport Magazines	630'	1250'
3. Building 450 Torpedo Shop	865'	1250'
4. Building 325 Torpedo Shop	730'	1250'
5. Pyrotechnics and small Arms Ammunition Storage	375'	375'



EXISTING E.S.Q.D. ARCS
PIER HANDLING POINT

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GR TON. CONNECTICUT

EXISTING E.S.Q.D. ARCS

PLATE 4-28

These arcs overlap at various points and collectively form a blanket over this northern area of the upper Base. Although much of the land encompassed is not suited for development due to wetlands, steep slopes, subsurface conditions, and existing recreational facilities, some land for building sites would be available if the ESQD arcs did not exist.

In addition, there are eleven berthing piers on the waterfront where the handling of submarine weapons in and out of submarines can occur. ESQD arcs with a radius of 500' are generated from these points.

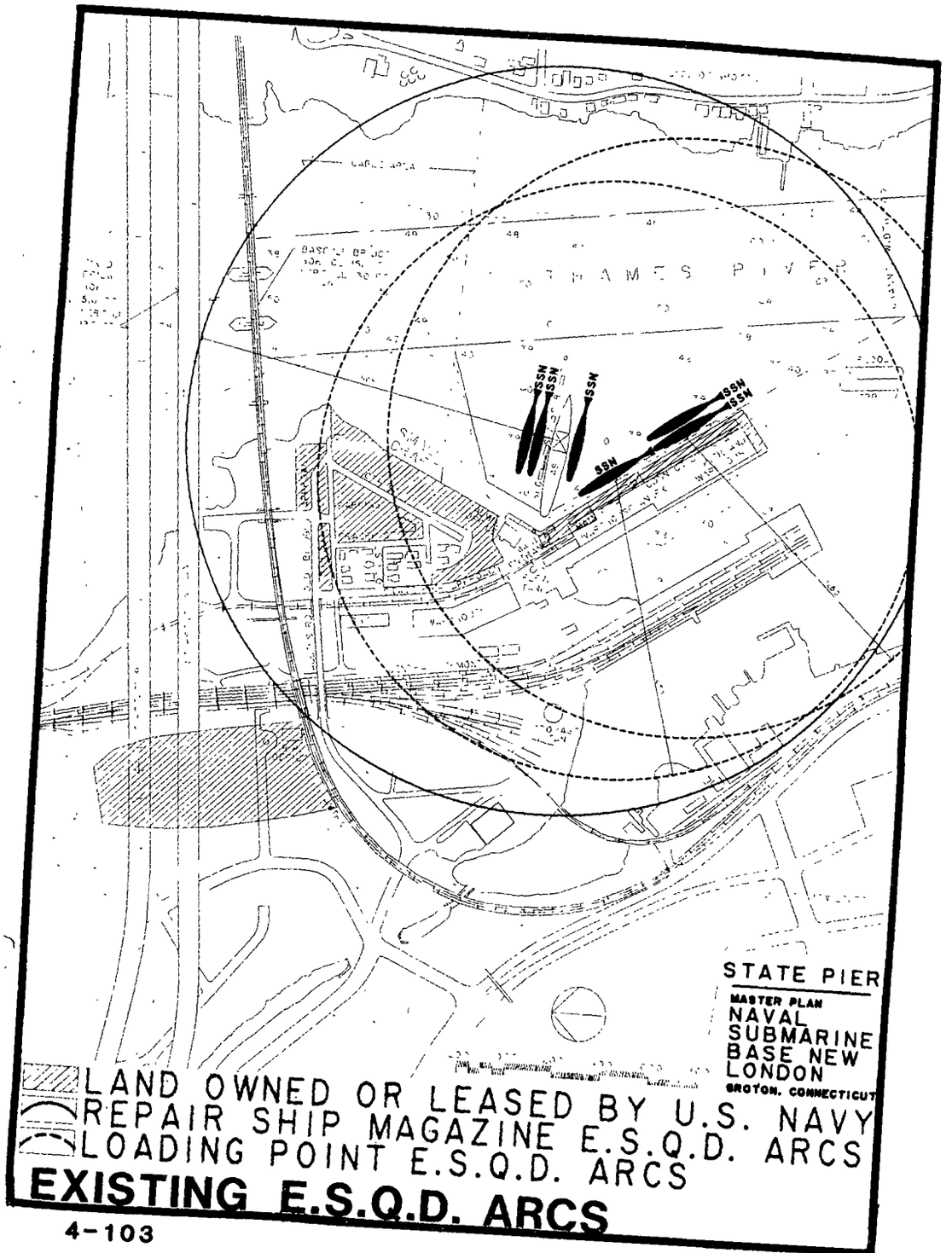
Also, there is one handling point on the quaywall between piers 32 and 33, where boats are loaded and off-loaded for transfers of weapons between the SUBASE and the State Pier based Squadron 10. An arc of 1250' radius is generated from this point on the quaywall.

Many inhabited structures lie within the ESQD arcs on the waterfront. It is through waivers of criteria that weapons can be handled in such a densely developed area. Virtually all land covered by the arcs on the waterfront is developed and has specific land uses. Therefore, the removal of arcs would not produce additional land for development.

STATE PIER

State Pier has been leased by the Navy since 1951 when a portion was leased as a site for COMSUBRON TEN. The site is located on the west shore of the Thames River in the City of New London immediately south of the AMTRACK and Interstate I-95 bridges. The leased facilities supporting the squadron include 3.4 acres of land. The total site is encumbered by an existing ESQD arc. See Plate 4-27. State Pier operates under an ESQD waiver, CNO waiver No. SUBASE New London IF-79 issued by CNO on 11 April 1986.

The 1,565 foot ESQD arc encompasses the State Pier, Central Vermont Pier, Winthrop Cove Industrial and Marine Facilities, the Block Island and Orient Point Ferry Terminals and 25 acres of industrial, commercial and residential areas in Groton and New London. The AMTRACK and I-95 bridges fall within the ESQD arc, but are outside the 60% limit for transportation facilities. See Plate 4-29.



EXISTING E.S.Q.D. ARCS

PLATE 4-29

Electromagnetic Radiation

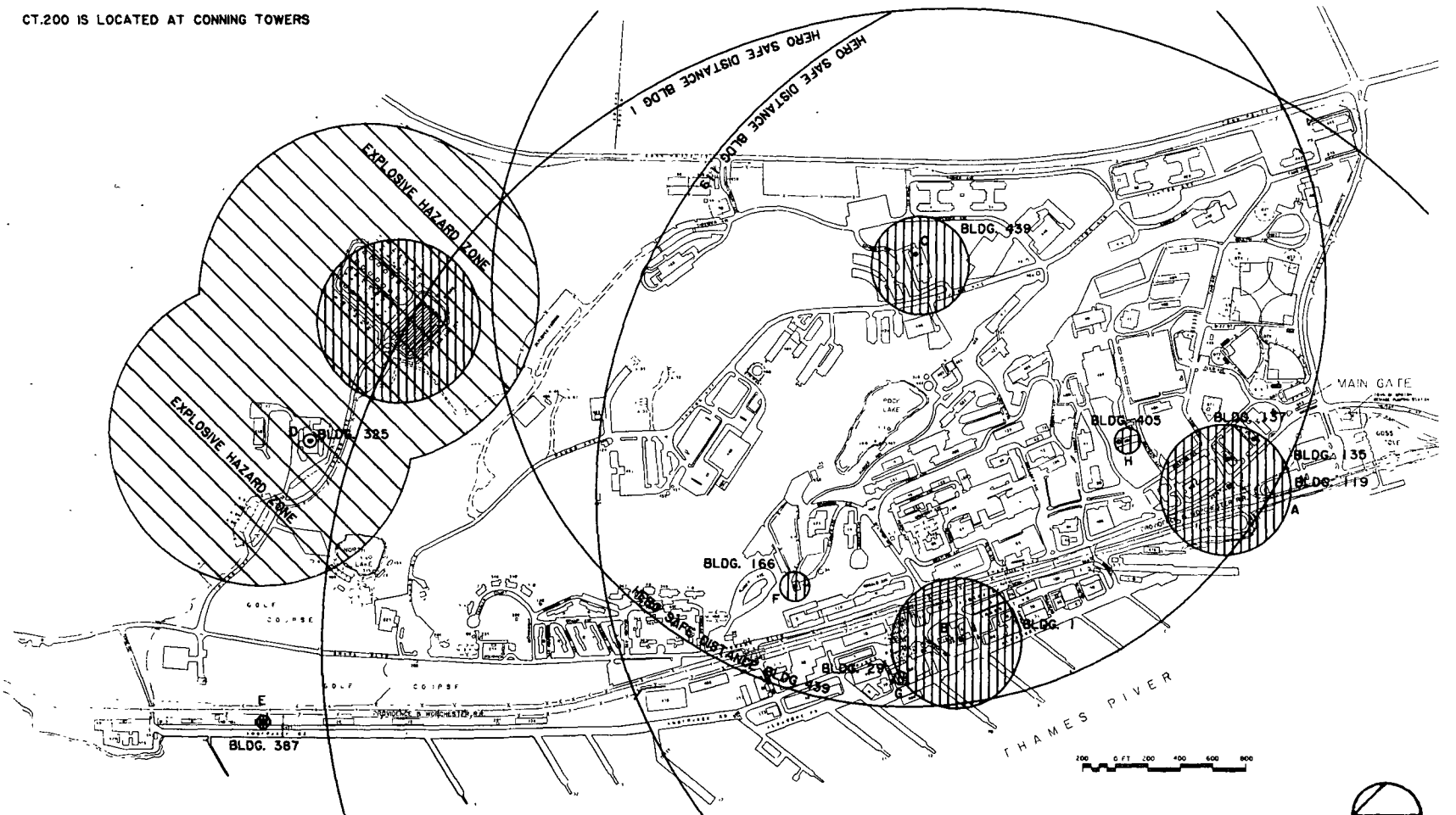
An Electromagnetic Radiation (EMR) Survey was conducted at the SUBASE and State Pier, New London, Connecticut in March 1982 by a representative of Naval Electronic Systems Engineering Center, Portsmouth, Virginia. The survey has identified the technical characteristics and physical locations of all fixed transmitters/ antennas on the SUBASE and State Pier. The raw data collected was used to calculate safe distances from radiating antennas for electro-explosive devices (EED's), personnel, and electronic equipment. The results of the survey indicate that there are no uncontrolled electromagnetic radiation (EMR) hazard zones for personnel and electronic equipment. Electromagnetic Radiation hazard zones for electro-explosive devices (EED's), which for the purpose of the Survey are limited to HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO) UNSAFE, ordnance and electric blasting caps are shown on Plates 4-30 and 4-31.

Historic Resources

TRIDENT PARK ARCHEOLOGICAL SITE

In compliance with the National Historic Preservation Act (Public Law 89-665), Executive Order 11593 (Protection and Enhancement of the Cultural Environment), Procedures for the Protection of Historic and Cultural Properties (36 CFR Part 800), and U.S. Navy policy on cultural resources protection, Northern Division, Naval Facilities Engineering Command contracted for an intensive archeological survey and evaluation of extant historic structures for purposes of National Register eligibility on the proposed Trident Park Navy family housing construction site.

A 150 foot diameter circular parcel (approximate area 17,660 sq. ft.) of the Navy property has been determined eligible for listing on the National Register based on several Paleo-Indian artifacts uncovered on that parcel; and the Navy is now proceeding with the nomination of the site to the Register. With the approval of the State Historic Pr s rvation Offic r (SHPO) and the Advisory Council on Historic Preservation, the Navy has documented the location of th site for prolong d protection and preservation.



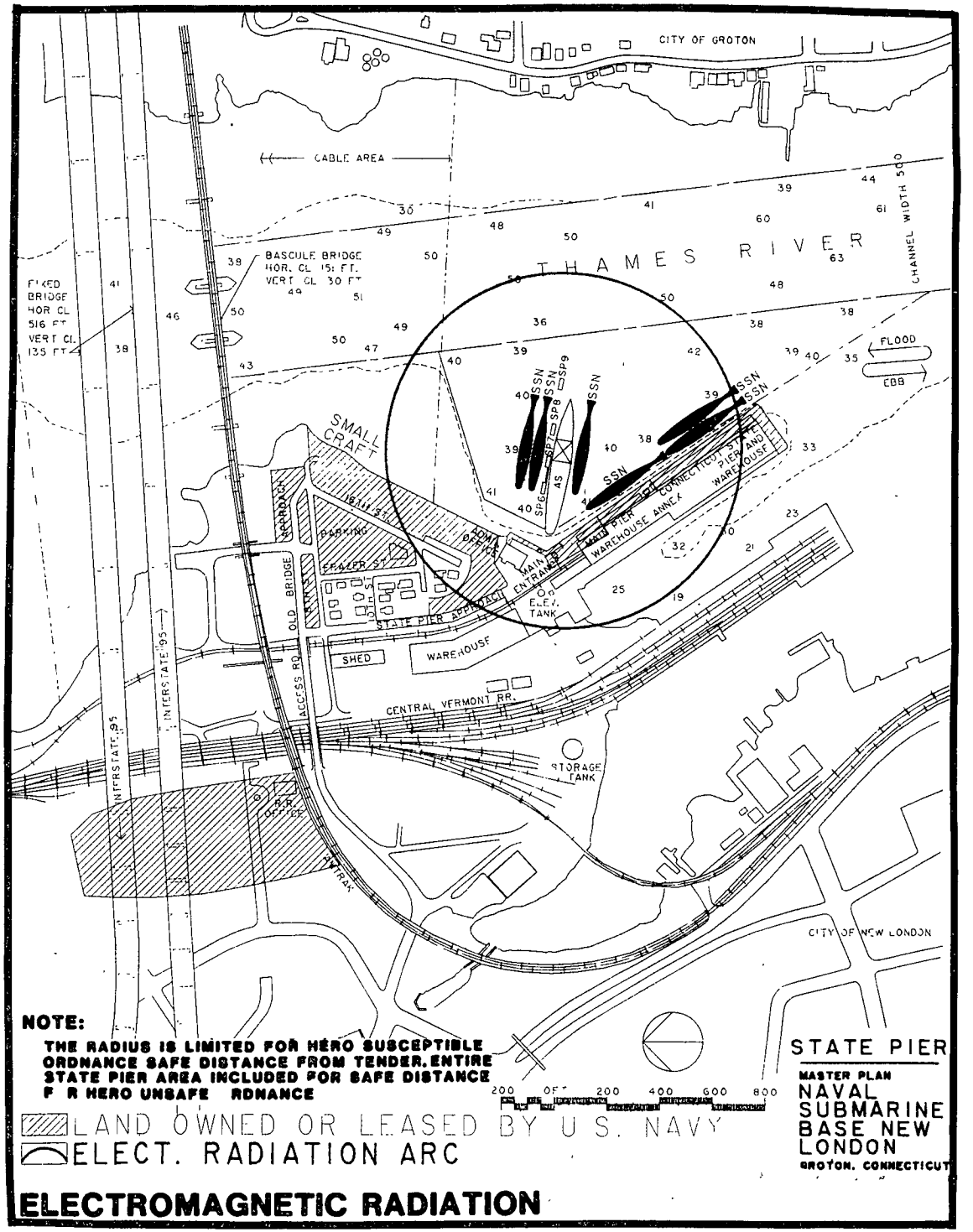
HERO UNSAFE(FAR FIELD DISTANCE)

HERO SUSCEPTIBLE(NEAR FIELD DISTANCE)

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

ELECTROMAGNETIC RADIATION

PLATE 4-30



ELECTROMAGNETIC RADIATION

PLATE 4-31

There are no other known archeological sites on the SUBASE property or area housing sites, however, official surveys of all properties have never been conducted. The Navy is presently scheduling to meet with the Connecticut SHPO to develop plans for an official survey of the SUBASE property.

ESCAPE TRAINING FACILITY

The Escape Training Facility, Building 70, has been suggested as a historic landmark. Several local historic groups are interested in preserving the tank as a local landmark and unique symbol of Naval engineering and training.

The Escape Training Tank was initially erected in 1930 to train submariners in the use of re-breathing apparatus and various emergency procedures for escaping from disabled submarines. The main structure consists of a cylindrical, insulated steel tank approximately 118 feet high and 18 feet in diameter, with a capacity of 250,000 gallons of water. An enclosed elevator shaft stands adjacent to the tank and provides access to the top cupola and various levels of the spiral stairway. A two-story masonry building attached to the base of the tank houses the chlorination system, pumps, locker rooms, offices and other mechanical equipment. The training tank is currently not used but remains filled with water to anchor the facility and prevent tank sway in high wind conditions.

An engineering evaluation conducted in June of 1980 determined the tank has exceeded its economical life expectancy and is structurally unsound. The water pressure stresses weak areas of the tank causing popped rivets, seam cracking and corrosion of the tank walls.

In 1982, the Navy notified the State Historic Preservation Office and the National Register of Historic Places that it did not consider the tank worthy of preservation. (An identical tower is preserved at the Naval Base, Pearl Harbor, Hawaii). The SUBASE wishes to demolish the facility because it is not economical to retain, the renovation costs are excessive and the facility is a serious safety hazard. The congested site, if cleared, could be put to a higher and better use for waterfront operations. The Navy has no objection to any possible relocation of the tower to the USS Nautilus Memorial and Museum in Groton, Conn cticut.

Prior to any approved demolition, proper documentation and recordation will be completed in a comprehensive historical/architectural record of the structure.

USS NAUTILUS AND SUBMARINE FORCE MUSEUM

The USS NAUTILUS, the world's first nuclear-powered submarine was decommissioned from active duty by the Navy in 1980. Later designated a National Historic Landmark, the USS NAUTILUS was commemorated and recommissioned and is now permanently berthed in the Thames River at the southern tip of SUBASE at Goss Cove. Adjacent to the USS NAUTILUS, the 12,000+ SF Submarine Force Museum, Building 571 provides space for USS NAUTILUS exhibits and the Submarine Force Library. Any plans for development impacting this landmark must be coordinated with the State Historic Preservation Office (SHPO) and the Historic Advisory Council

Cultural Base Wide Survey - It is not presently known if there are other resources at the Submarine Base, therefore a study is presently underway to survey and detail a comprehensive inventory of historic resources. The inventory shall be carried out in consultation with the Connecticut State Historic Preservation Officer and shall include a historic overview, information on facilities/properties considered historically and culturally significant, and a listing of properties to be considered for the National Register.

Security/Roads/Parking

Development at the SUBASE is constrained by factors related to security of the base, existing road networks in and around the base and the areas utilized for parking within the base.

Security acts as a constraint at the main gate. At the main gate security checks cause traffic back-ups during peak periods. These back-ups impede access to and from the base and also in the area just outside the gate.

The base road system is inadequate for rush-hour and dependent service traffic. This causes back-ups and access problems throughout the base. New construction projects in the east and northeast portions of the base have not addressed the need for roads and walkways except to provide for minimal access to the facilities. These areas have neither direct nor safe access to other areas of the base. Future development or expansion in these areas will be constrained by the inadequacies in the present base road and walkway system.

Assuming future land purchases are not made, the existing parking areas on base will become prime sites for future projects as developable sites are depleted. Any projects sited upon existing parking areas must include parking structures as part of the project if the SUBASE is not to lose net parking. Other alternatives include the construction of parking garages on base replacing parking lost to construction, or obtaining remote parking areas with shuttles to the SUBASE.

NATURAL

Steep Slope

Elevations at the SUBASE range from below the 100-year flood inundation level of 11.2 feet to a high point of 234 feet. Although the topography enhances the scenic qualities of the Base, it has produced significant limitations on the usability of portions of the Base's land surface. Generally, development on land that has a slope greater than 15% is not desirable. Development costs, such as excavation and utilities begin to escalate dramatically at this point. However, all of the prime land at the Base has been utilized. This is a result of the development pattern that spread eastward when the SUBASE grew out from the original small complex adjacent to the Thames River.

The shortage of land suitable for construction sites has forced construction onto land with slopes greater than 15%. Recently, the Hobby Shop, Building 460 was constructed on land that had slopes up to 30% before site work. There is still some land available, primarily in the middle section of the upper Base, that can be used for construction sites.

There is a limit where the steep slopes at the Base become planning constraints, because the cost of development becomes prohibitive. For this Master Plan, slopes of 30% and over are considered a planning constraint. The Base contains many areas where slopes over 30% occur. See Plate 4-32 for their location.

Wetlands

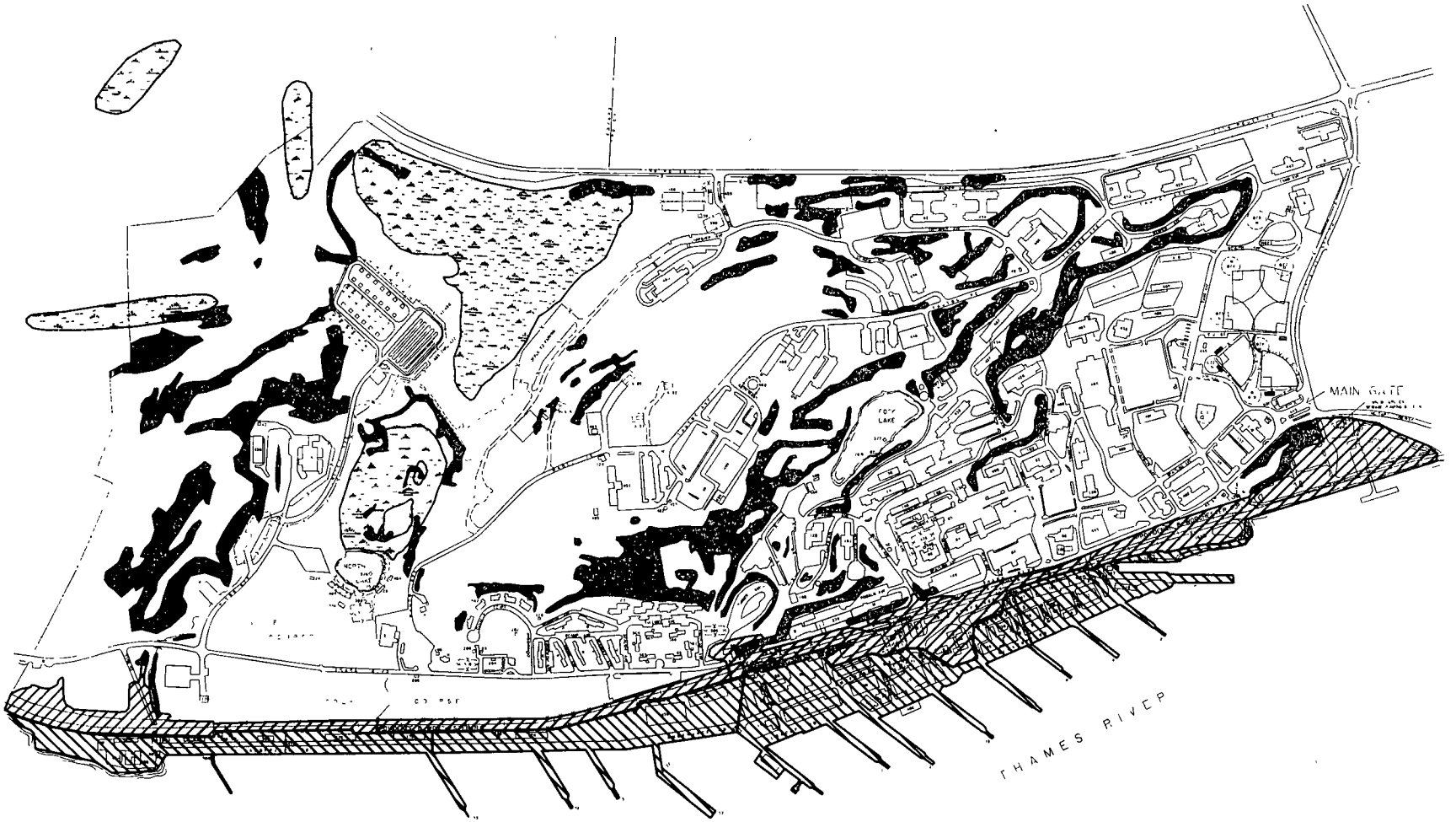
According to the 1975 Existing Conditions Map prepared by the Defense Mapping Agency Hydrographic Center, there are two large wetland areas located in the northern section of the main SUBASE property. See Plate 4-26 or 32. These two areas are contiguous and lie in this isolated section of the Base where there is virtually no development.

On 24 May 1977, Executive Order 11990, Protection of the Wetlands, was promulgated. This law orders that each executive agency, including the military departments shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) directing Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

In view of the strict regulations limiting activities on these wetlands, these areas are considered to be a planning constraint at the SUBASE. In addition there is the ESQD arc regulation that would only allow for the construction of uninhabited structures on the two main Base wetland areas because they are blanketed by arcs.

POTENTIAL AREAS FOR DEVELOPMENT

An analysis of all natural and man-made constraints at the SUBASE reveals that there are several remaining land areas which are suitable for added development, see Proposed Land Use Map in Chapter 5. The



INLANDS WETLANDS
STEEP SLOPE 30% OR MORE
100 YEAR FLOODPLAIN (ELEV. 11.2 FT.)
500 YEAR FLOODPLAIN (ELEV. 14.0 FT.)

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

NATURAL CONSTRAINT SUMMARY MAP

PLATE 4-32

majority of these remaining land areas are undeveloped and some have rock outcroppings. A large parcel of undeveloped land, east of the Naval Hospital, Building 449, is designated for training use at this time. Another small parcel of land for potential development is located near the east gate, north of tennis courts 388 and 389. This area is only suitable for recreational development due to its location and soil condition. The other areas which are also identified for potential development are suited only for limited facility expansion such as building additions, parking, etc.

Land Use Compatibility

The following Land Use Compatibility section identifies and discusses in summary all development constraints and encroachment issues. The summary is divided into man-made and natural constraints for both the SUBASE and the State Pier. This information is presented to meet the Navy's objective to protect its real estate holdings and operational capabilities. A Navy "proactive" planning approach is being stressed. This approach fosters awareness of issues, concerns, trends, and developments in communities surrounding Navy facilities and participation in analysis, decision-making and the formulation of viable solutions and recommendations. See plate 4-27 and 4-32 for constraint locations.

SUBASE Man-Made

Submarine Berths - Their location and configuration determine in advance any other development in the area because these existing facilities are too costly to relocate.

Explosive Safety Zones - Regulations prohibit the construction of inhabited buildings or structures within ESQD arc safety zones.

Providence and Worcester (P&W) Railroad - SUBASE is physically divided into upper and lower portions by 1.7 miles of track owned and operated by the Providence and Worcester Railroad. These tracks act as a development constraint in several ways. First, the tracks are a vehicular circulation barrier. Second, proposed weekday passenger s rvice could constrain weapons handling operations since the train passes through ESQD arcs. Third, th freight rail service includes the transporting of hazardous material that could possibly spill, l ak, or burn due to derailment, structural or valve failure on a tank, vandalism or sabotage.

Boundary - The acquisition of additional land for Navy expansion is difficult and expensive. Lands bordering the base on the north lack adequate utilities and have rugged terrain. Lands on the east and south are developed for commercial or residential sites. The Towns of Groton and Ledyard have proposed the re-zoning of properties abutting the Submarine Base from low-density residential property to more commercial land uses. The reclassification will likely drive property values up and may make Base expansion very costly. Currently, a need exists for adequate oil storage tanks at the SUBASE. Project P-415 will satisfy this deficiency by replacing old underground tanks with new tanks in the same location thus bringing tanks into compliance with Connecticut state regulations. Project P-384 will involve acquiring land in fee title for restrictive easement within ESQD arcs of 1,250 feet from weapons storage/operating areas. This land acquisition is necessary to eliminate a portion of the waiver requirement regarding distances to base boundaries. A portion of Project P-165 involves acquiring the land within ESQD arcs of 1,250 feet from Building 450. Master Plan project P-006 proposes acquiring additional land for playing fields at family housing.

Thames River Development - The development plans of towns and municipalities surrounding the Submarine Base propose future riverfront development. The additional development of riverfront land for water related industrial/commercial activity would result in river channel congestion, hindering submarine movement in the Thames River channel. This development would also impact security and increase the potential for personnel injury or damage to property within ESQD arcs.

A proposal has been made to add a restricted zone to the existing security zone. The existing security zone encompasses all of the berthing piers but extends only as far as the piers. The proposed restricted zone would encompass the Thames River channel and some waters on either side of the channel generally between the north shore of the SUBASE and south to the Nautilus Memorial. The restricted zone would ensure minimum risk to the general public during weapons handling and improve safe navigation of submarines to and from the berths.

Presently development plans exist or are being proposed in three areas surrounding the SUBASE. The first, called the Thames Landing Development, is a 16 acre condo/marina project located directly across from the SUBASE in the Town of Waterford. The second, named Londonderry Woods, is a 44 acre single family development located adjacent to the northeast corner of the SUBASE. The third, a 14-15 acre subdivision known as the Craig property is proposed for land east of Rt. 12.

Another river channel problem hindering submarine movement is the periodic malfunctioning of the Thames River railroad drawbridge crossing between Groton and New London. Movement of SSN 585 class submarines is considered hampered when the bridge is in a down position because of low clearance.

Nautilus Memorial - The volume of new traffic generated by the Nautilus Memorial is not foreseen as a significant problem at this time. However, the existing geometric configuration of the Base Main Gate area, and the intersection of Crystal Lake Road and Military Highway, along with the access road to the Memorial will result in congestion and circulation problems.

The Town of Groton has re-zoned land along Crystal Lake Road between Route 12 and Military Highway as a Nautilus Memorial Design District. The change re-zoned property which was primarily residential to commercial classification. The re-zoning permits any retail or service use, hotel or motel, restaurant, commercial recreation or a mix of the same uses which are consistent with the purpose and objectives of the design district. The potential congestion resulting from this development along with the added boundary constraint is an undesirable result of the development generated due to the Nautilus Memorial.

Natural

Topography - There are several locations on the Base where severe or moderate slopes would significantly increase costs for new facility construction.

Floodplain - Portions of the base are within the 100 and/or 500 year floodplains. Projects sited in these areas require special design considerations.

Soil Suitability - There are several areas of filled land that need special foundation design to support the weight of large structures.

Inland Wetlands - The two large wetland areas in the northern section of the base are a major element of the natural environment and should be preserved.

STATE PIER
Man-Made

Lease Restrictions - The State Pier in New London was constructed in 1915 and has been in continuous use since that time. The easterly half of the pier, the outer berthing face and apron, and some backland area is under a long term lease to the Navy. The lease is complex and will need to be renegotiated in 2013 when it expires.

Explosive Safety Zones - The ESQD arcs emanating from the State Pier facility encroach on the Central Vermont pier, oil and gas tanks, some industrial sites, and a few private homes. The tender located at State Pier emanates an ESQD arc at 1,565 feet. The two handling points on the pier emanate arcs of 1,250 feet each. The Amtrak Railroad bridge and sites near Interstate 95 fall between the 60% and 100% ESQD arcs.

Thames River Development - The development of towns and municipalities surrounding the State Pier can be a constraint to Navy operations. In general, the additional development of riverfront land for water related industrial/commercial activity would result in river channel congestion, hindering Navy operations in the Thames River channel. Development would also increase security risks and the potential for personal injury or damage to property. Several developments and issues are potential concerns in the State Pier area. Thames Wharf, a condominium/marina/retail development is proposed for the New London Waterfront south of State Pier. Although this development will not fall directly under State Pier ESQD arcs, it may spur other activity and growth under the arcs such as increased ferry operations and d velopment pressures. Long Pier, the railroad pier directly adjacent

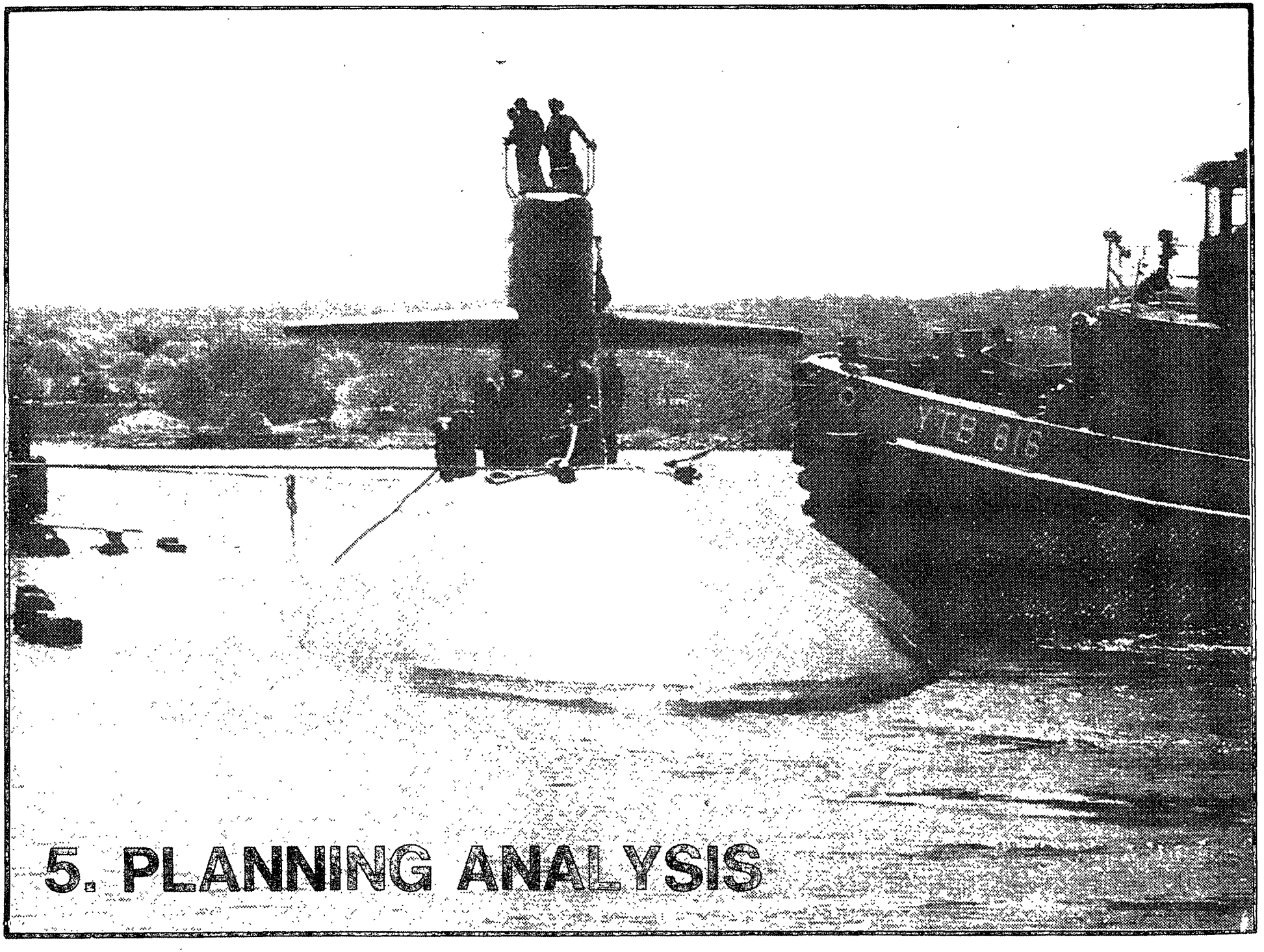
to State Pier, has been recently upgraded and developed for use as a containerized cargo shipping pier. This development will also increase activity under the State Pier ESQD arcs. On the Groton shoreline, issues include tourist attractions and the upgrade/extension of the boat motel. The boat motel, presently under an ESQD arc, and its expansion would again increase activity under the arc.

Configuration - The efficiency of operations at the State Pier is restricted by its configuration. One-sided berthing at the Pier and traffic congestion at the stern of the tender causes some difficulty in waterfront operations. During normal peacetime operations the presence of the commercial port activities adjacent to the Naval facilities is also restrictive.

Natural

Topography - The State Pier site is generally on two levels separated by a steep scarp 10 to 18 feet in height. This topographic configuration restricts free movement and limits configuration potential.

Floodplain - The majority of the State Pier site is below the 100 and 500 year flood stages of 11 and 14 feet MSL respectively. The exceptions are the areas located within Sixteenth Street, Eighth Street and the approach to State Pier. Flood control systems are nonexistent in this reach of the Thames River.



5. PLANNING ANALYSIS

PLANNING ANALYSIS

CONCEPT DEVELOPMENT

Assumptions

a. The functions performed by the Naval Submarine Base activities will remain essentially unchanged over the long term with a relatively stable workload except as noted below. Similarly, the Base loading forecast, which includes the numbers of personnel and the numbers and classes of submarines to be supported, is essentially valid.

b. The SUBASE will continue to homeport and perform repair and maintenance for submarines.

c. The submarine basic, advanced and refresher training will continue.

d. The Connecticut State Pier will continue to accommodate submarine homeporting and to provide submarine and some surface ship upkeep services.

e. The flood hazards on portions of the lower Base are an acceptable risk for many facilities and a valid alternative to providing replacement construction elsewhere.

f. Homeporting of SSN 21 submarines at the SUBASE will impact shore facility requirements in the areas of training, warehousing, intermediate maintenance and waterfront facilities improvements, and weapons storage.

g. Any future large scale expansion or ESQD arc accommodation will require the purchase of additional land.

h. All SSBN's, crews, and families will depart from the SUBASE by 1998.

i. Emphasis on the physical security of the base will remain high.

j. Community development pressure will continue to increase around the SUBASE and Connecticut State Pier.

Ideal Functional Relationships

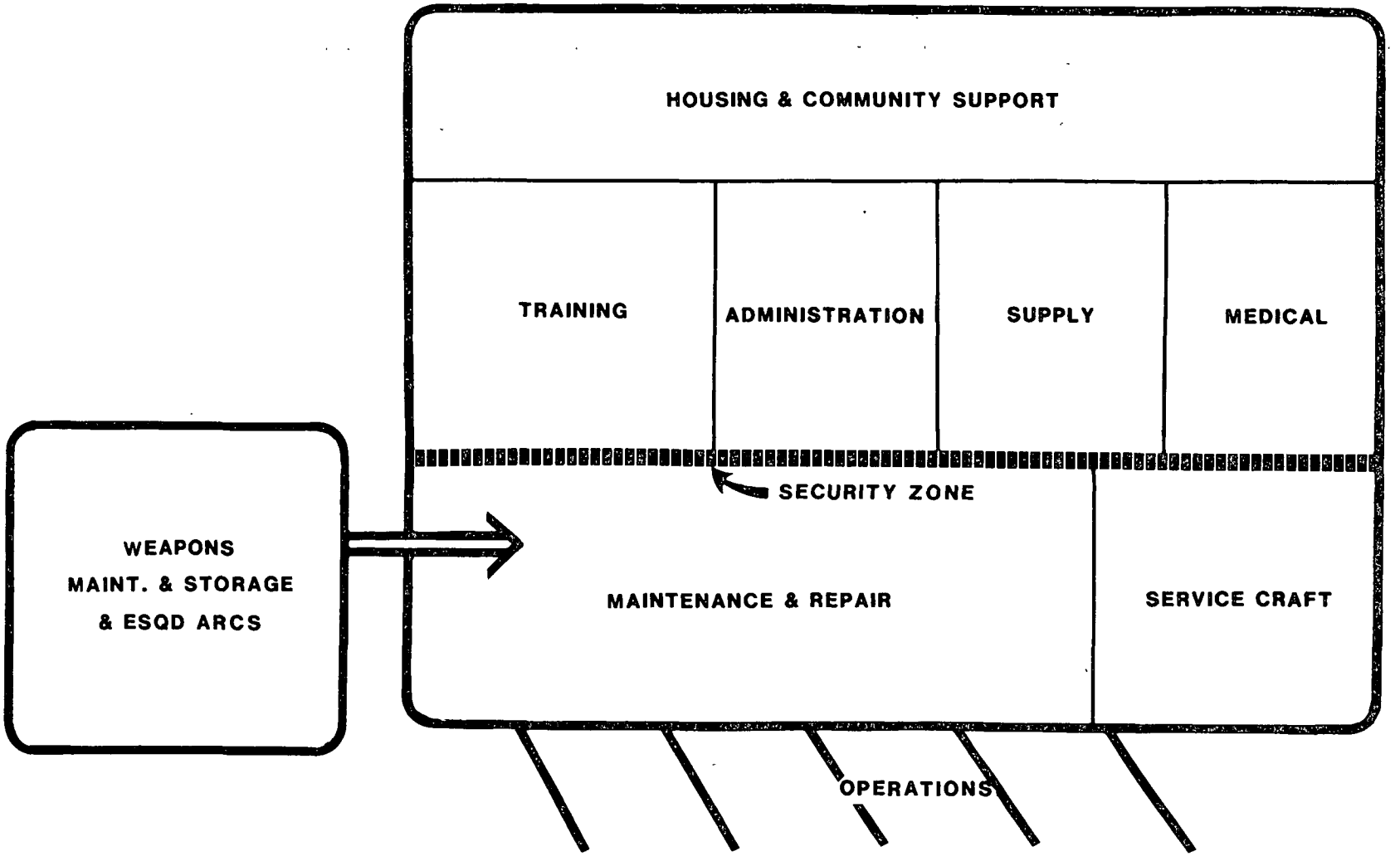
Plate 5-1 shows an ideal model for the interrelationships of the major functional areas of the Naval Submarine Base.

The Lower Base, due to its waterfront location, is intended to be utilized only for functions in direct support of the submarine fleet.

The primary functions which require waterfront locations include submarine maintenance and repair, operations, service craft, squadron administration, and weapons loading/off-loading functions. Some customer support functions for the Supply Department must remain on the waterfront for operational units and NAVSUBSUPPFAC NLON. The waterfront location of these functions enables maximum efficiency in the support of submarine operations.

Functions requiring secondary waterfront locations include the weapons maintenance and storage functions, power plant, and utilities operations. These functions require adjacency to the waterfront in order to facilitate loading and off-loading weapons and to supply the piers with utility service.

Functions which require proximity to primary and secondary waterfront locations include administration, supply, public works, bachelor housing and messing, recreation, medical care and training.



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

IDEAL FUNCTIONAL RELATIONSHIPS

PLATE 5-1

The public works function provides essential planning services, as well as, maintenance and repair of facilities. This function requires an on-base location near the facilities supported.

Facilities which are not directly linked to the support of the submarine fleet and which could be located off-base include family housing, commissary, exchange, and some recreation and support functions.

Existing Functional Relationships

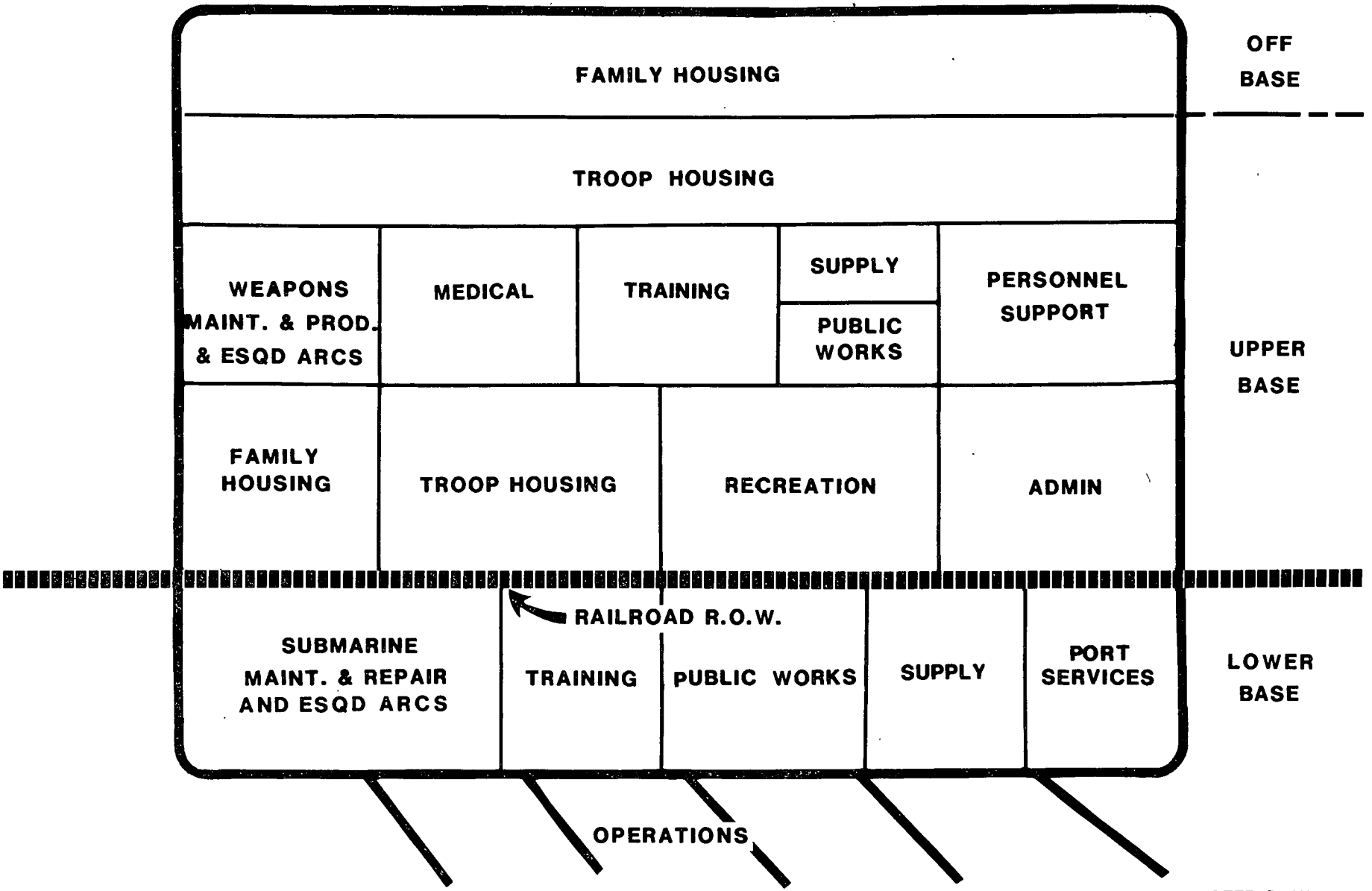
Plate 5-2 shows the existing SUBASE functional relationships.

The SUBASE is physically divided into the Upper and Lower Base. The Lower Base is congested due to the large number of functions which occupy the limited space. Most of the area is taken up by the operations and maintenance functions. Two other significant portions of the Lower Base are taken up by administrative and supply functions. Training, utilities, community facilities, and research comprise the remainder of this cramped portion of the Base. Many of these functions are incompatible with the waterfront areas' primary function of supporting submarine operations and maintenance, and would be more suitably located in another area of the Base.

The Upper Base can be viewed as being comprised of three general areas: the northern, middle and southern areas. The northern area is encumbered largely by Explosive Safety Quantity Distance (ESQD) arcs due to weapons storage magazines and operational facilities. The middle area is more developed than the northern area but contains unbuildable land due to steep slopes. Primary land uses in this area are medical, training, bachelor and family housing, and community support. The southern portion of the Upper Base is highly developed. Three land uses dominate, i.e., bachelor housing, training, and community facilities, each involving many structures and acres of land. Other functions which occupy this area are administration, supply warehouses, maintenance and production for public works, and recreational facilities.

The major differences between the ideal and existing functional relationships are as follows:

a. At the SUBASE, the northern portion of the Upper Base is largely taken up by weapons storage and the accompanying ESQD arcs. Ideally, this function would be located off the base. This would free up a large portion of the Base for higher and better use of critically short, developable land.



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

EXISTING FUNCTIONAL RELATIONSHIPS

PLATE 5-2

b. The Lower Base is comprised of many functions which are not directly related to waterfront submarine operations and maintenance. The relocation of training facilities from their current location on the Lower Base to a proposed Training Complex in the middle area of the Upper Base is addressed by existing MILCON projects.

c. Supply functions, also located in the waterfront area, would ideally be located outside the restricted Lower Base. The removal of this non-waterfront related function would alleviate traffic and congestion, and increase personnel safety.

d. At the State Pier, many operational, repair, and storage functions are carried out aboard and alongside the tender. Land-side functions, including small craft berthing, storage and vehicle parking are located in close proximity.

PROGRAM REQUIREMENTS

As the SUBASE continues to support existing and prepares to support new classes of submarines, careful study of existing functions and facilities is required. This analysis will determine the necessary projects that will allow the SUBASE to fully serve the fleet. This section will examine the current problem areas that impede efficient SUBASE operations as well as future requirements that are necessary to support the SSN 21 class of submarines. For more detailed information on SSN-21 class submarine homeporting consult the SSN-21 Site Survey Report, New London Connecticut dated December 1985. Problems that are typical of SUBASE include a scattering of functions, age and condition of buildings, topography, unnecessary circulation, congestion and inadequate utilities. The plan analyzes the following major functional areas: Operations, Training, Maintenance and Production, Supply and Storage, Medical, Administration, Housing and Community Support, and Utilities.

Operations

The major operational facilities at the SUBASE are the repair and general purpose berths, the maintenance and repair shops, the weapon systems maintenance and operational shops. The repair and general purpose berths and the maintenance and repair shops are located on the

lower base and are used in direct support of submarines. Additional capability is located at th State Pier in New London with support provided by the submarine tender Fulton. The planned development in these areas will increase berthing capability, improve and repair waterfront facilities and provide for increased flexibility and preparation for the proposed SSN 21 class submarines.

a. SUBASE

(1) Berthing

The existing and proposed berthing plans projected through 1999 are illustrated on plates 5-3 and 5-4. SUBASE current base loading figures show 38 ships homeported. Projected base loading figures show 37 ships to be homeported at SUBASE. The SSN 21 will be introduced into the fleet by approximately FY-94. In general, the new submarine will replace existing subs on a one-for-one basis. Submarine berthing piers already capable of handling the SSN 688 class of submarine will be capable of accommodating the SSN 21, but would require dredging. Piers 2, 6, 17, and 31 will require upgrading utility outlets, jib cranes, and fenders.

Several other waterfront quaywall areas that require repair are in danger of collapse. The repairs will stabilize these areas and protect support facilities in the immediate area. Some upgrading of existing utilities will be necessary to support the SSN 688 and SSN 21 submarines.

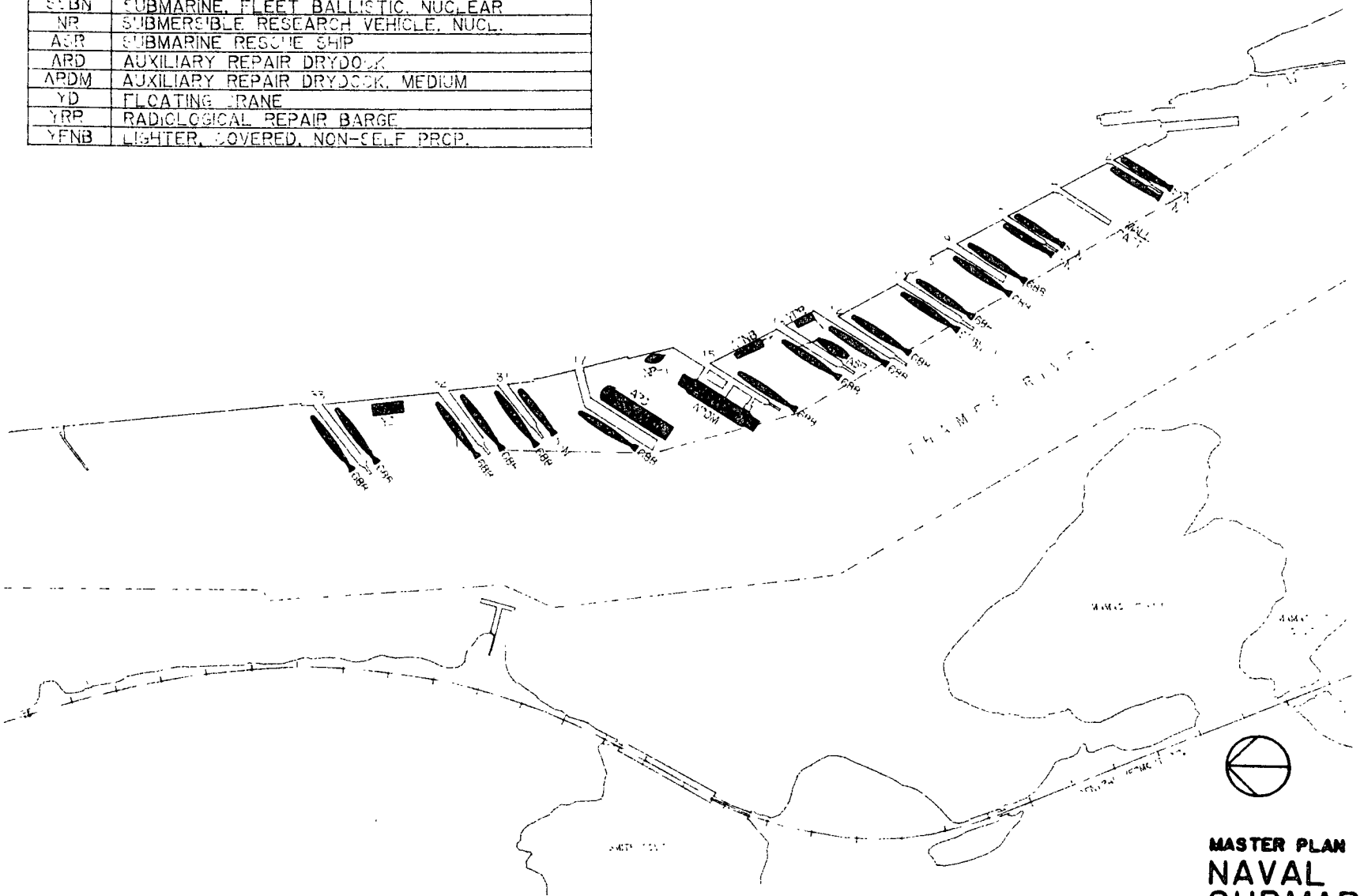
(2) Facilities

The following operational support facilities are required:

The SUBASE requires a port control facility and tower with administrative space for COMSUBGRU TWO and squadron H.Q. to replace current crowded, deteriorated, and scattered facilities.

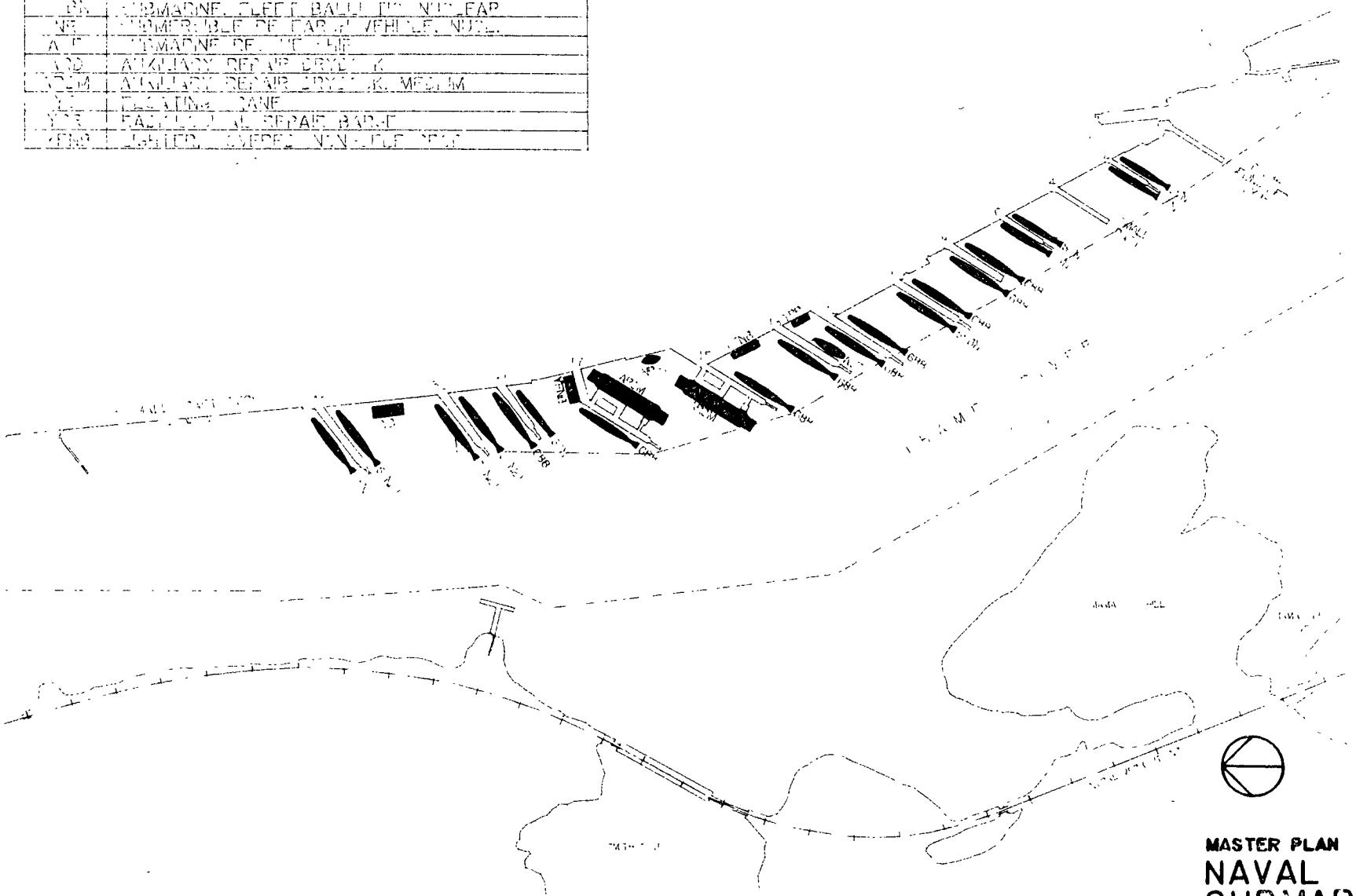
P rmanent support facilities for the NR-1, the Navy's deep sea research submarine, are required to replace th existing temporary trailers along the quaywall.

BERTHING	
CLASS	
SSN688	SUBMARINE, NUCLEAR, 688 CLASS
SSN	SUBMARINE, NUCLEAR
SSBN	SUBMARINE, FLEET BALLISTIC, NUCLEAR
NR	SUBMERSIBLE RESEARCH VEHICLE, NUCL.
ASR	SUBMARINE RESCUE SHIP
ARD	AUXILIARY REPAIR DRYDOCK
ARDM	AUXILIARY REPAIR DRYDOCK, MEDIUM
YD	FLOATING CRANE
YRR	RADIOLOGICAL REPAIR BARGE
YFNB	LIGHTER, COVERED, NON-SELF PROP.



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

EXISTING BERTHING



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PROPOSED BERTHING

PLATE 5-4

(3) Dredging

Dredging will be required both in the main channel of the Thames River and in the submarine berthing area adjoining the piers for SSN 21. The present depth of the channel is 40' below mean low water (BMLW) from deep water to Electric Boat, see Plate 4-9. Depth of the channel from Electric Boat to above pier 33 at SUBASE is 36' BMLW. Berthing areas have been dredged to a minimum of 39' BHLW. In addition, dredging is required in the State Pier area, and alongside a pier at the SUBASE for the proposed large floating drydock. Preliminary calculations show an estimated 1,600,000 CY of dredging is required. All channel dredging and appropriate berth dredging will be required by the arrival of the first SSN 21 submarine. Dredging will be required as subs and the floating drydock arrive through the 1990's.

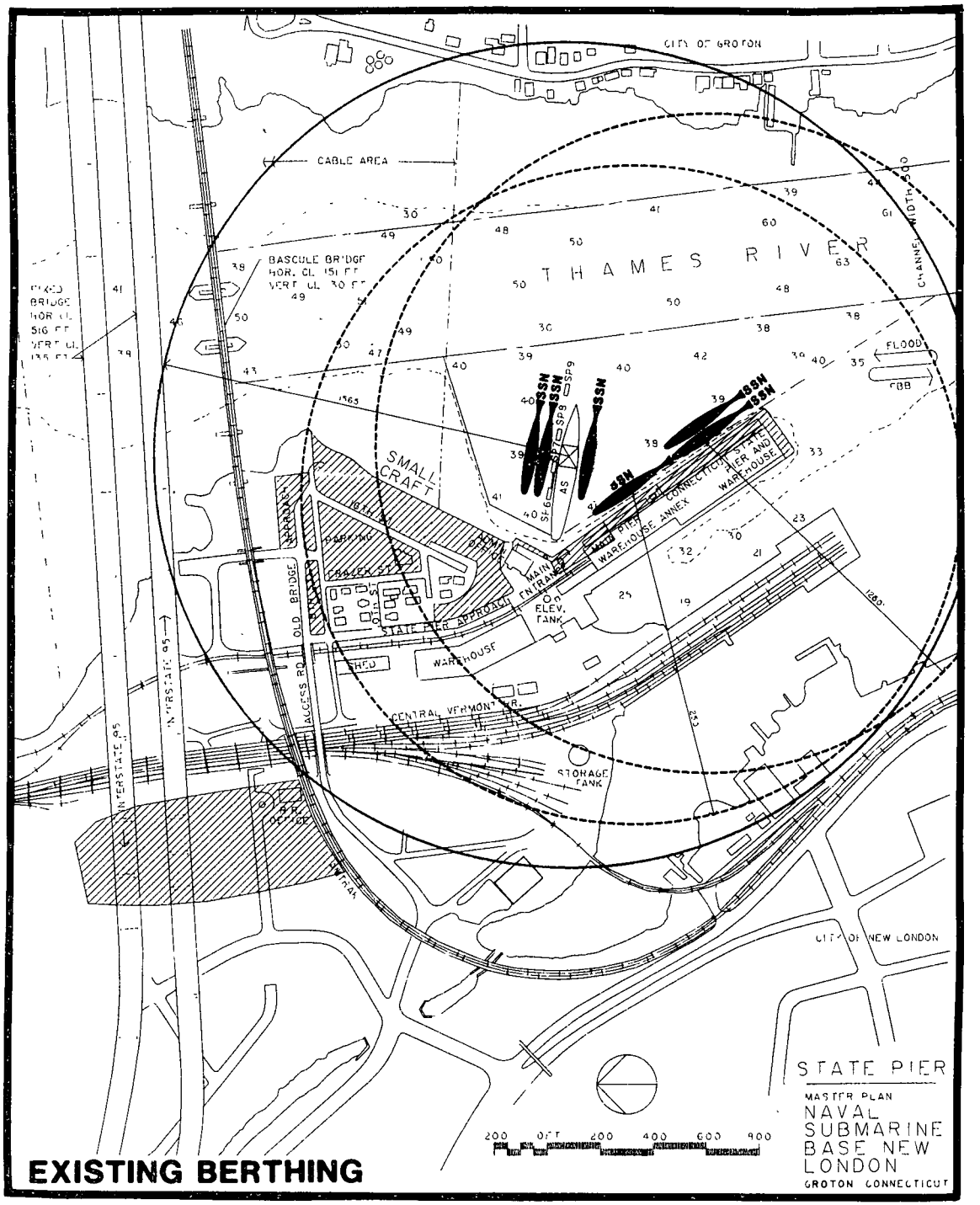
b. STATE PIER

(1) Berthing

Regarding berthing at Connecticut State Pier, the existing and proposed berthing plans are nearly identical. See Plates 5-5 and 5-6. In the Existing Berthing Plan the submarine tender (AS) is moored in the Mediterranean style just off the eastern side of State Pier. There are two SSNs nested on the northern side of the AS and one SSN on the southern side. There are two SSNs nested on the eastern end of State Pier, one SSN berthed in the middle, and small craft berthed on the western end. New quaywall construction at the facility accommodates small craft as assigned. In the Proposed Berthing Plan the only change is that the submarines projected will be 688 class. It should be noted that the Navy berthing area at the State Pier has sufficient water depth to accommodate SSN 688 and SSBN class submarines. Hence, considerable flexibility for berthing and submarine assignments exist in the New London area. It is also possible to provide two berths of sufficient length for the Trident (OHIO) class submarine although additional dredging would be required.

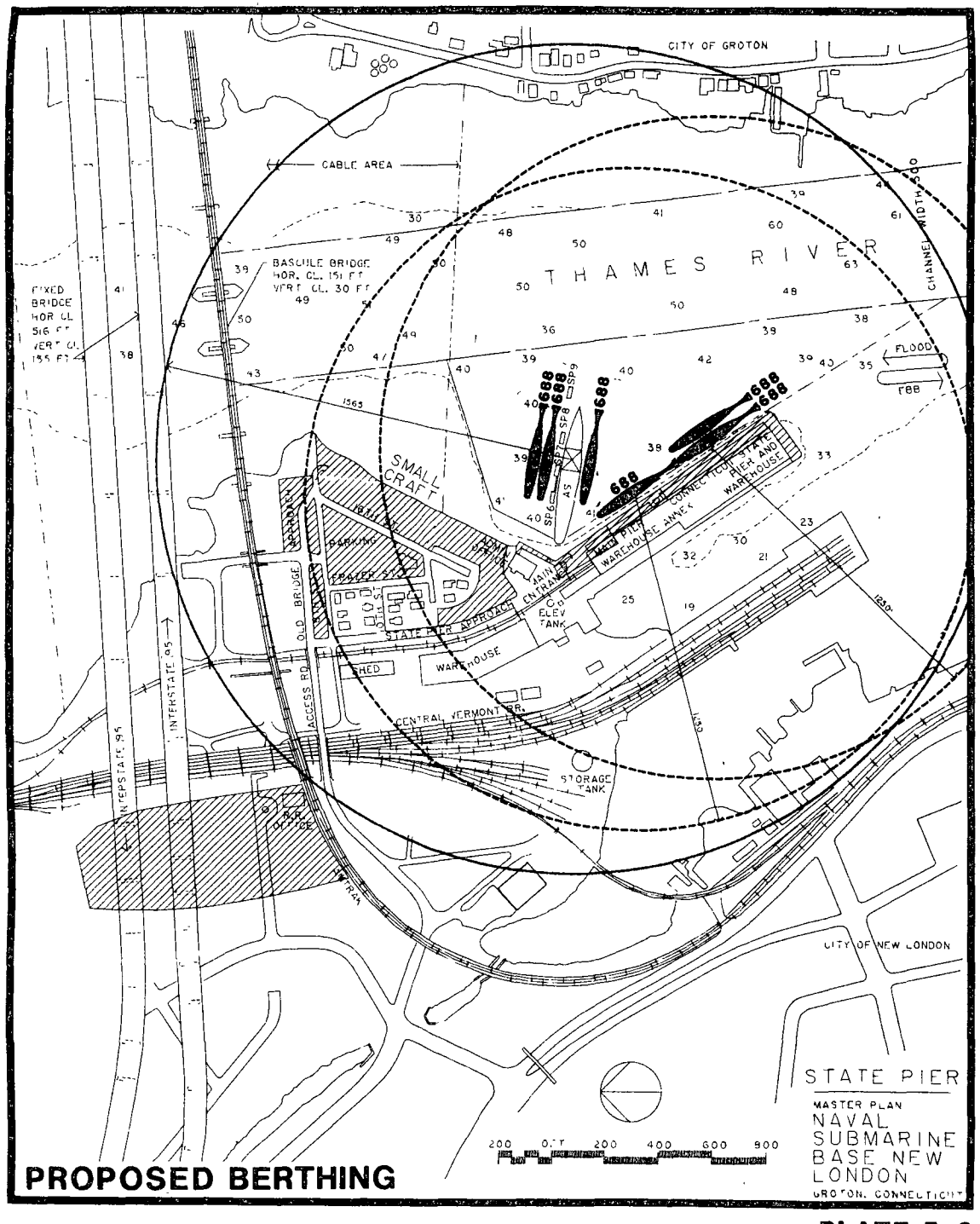
Training

The Submarine School has a growing requirement for training due to the rapid growth of "state-of-the-art" technology, and the new r quirements of the SSN 21 class submarines. Advanced engineering, conducted in Buildings 88 and 153, and combat systems training, conducted in Building 437, lack adequate space or sufficient utilities to accommodate new types of training equipment scheduled for



EXISTING BERTHING

PLATE 5-5



PROPOSED BERTHING

PLATE 5-6

installation. Training is conducted on the lower base in the midst of a congested industrial operation and within ESQD arcs. Submarine fire fighting training is conducted on a limited basis in trailers and an outdoor makeshift trainer. It is recommended that the training functions on the lower base be relocated to the academic area of the base (shown on the large training area on the Proposed Land Use Map), and that facilities be expanded to accommodate the increased SUBSCOL training program and the SSN 21 training program requirements. Training for SSN 21 crewmen should begin one to two years before delivery of the first sub. The estimated requirement to provide sufficient training space for academic and applied instruction space and operational trainers is 91,000 SF. Funding should be made available by 1991 or 1992 to have facilities in place prior to homeporting.

Maintenance and Production

a. Submarine Support Facility

In order to extend the sea operations cycle of the 688 class submarines, a six month long Depot Modernization Period will be inserted in the cycle instead of a non-refueling overhaul. These Depot Modernization Periods (DMP) will be carried out at Naval Shipyards. In conjunction with this new cycle, additional work will be performed during Selected Restricted Availability (SRA) at the intermediate maintenance facilities such as the Submarine Support Facility at SUBASE New London. By the early 1990's, the additional work will begin to appear in the Naval Submarine Support Facility (NSSF) and will gradually grow as each 688 class sub undergoes an SRA. Facility requirements for this arrangement include additional storage space and shop upgrading.

Under the proposed SSN 21 homeporting, intermediate level maintenance will be affected by implementation of a modular component concept in which whole units will be replaced instead of repairing or replacing individual spare parts. At State Pier, additional storage space will be required to maintain a supply of modules to support the submarine tender. At the Submarine Support Facility in New London, additional storage space will be required to store modules and to handle the increased shipping and receiving functions. Also, additional shop space will be required at New London to handle new materials and test or calibrate modular components.

b. Public Works

The existing public works vehicular maintenance facilities and public works shops are scattered throughout the base. The public works transportation division facilities are in four buildings located in the restricted fleet operations area on the lower base. The base maintenance and transportation facility, Building 107, maintains approximately 425+ vehicles ranging from passenger cars to weight handling equipment. Building 18 is used for storage. The transportation dispatcher and admin functions are in Building 29. Cranes and riggers are in Building 85. These Public Works transportation maintenance functions draw additional traffic and personnel to the restricted lower base causing congestion. Future workload is expected to increase. To support security and operational requirements, it is recommended that Public Works functions, with the exception of cranes and riggers, be relocated from the lower base area. It is optimal to maintain cranes and riggers in their present location on the lower base where they are utilized.

Public works shops Buildings 400, 405, and 406 are located on the upper base area adjacent to the Exchange/Commissary complex and are substandard. These public works shops should be consolidated and relocated for efficient operation.

c. Ordnance

The Naval Submarine Support Facility (NSSF) is responsible for receiving/issue, overhaul, maintenance and storage of submarine ordnance. These functions occur in two areas: loading and unloading of submarine weapons occurs at the quaywall/pier areas, while the maintenance, repair and storage of weapons occurs in the weapons shops and magazine area in the northeastern portion of the Base. These facilities are permanent construction. The weapons function will grow in physical size in both the shops and magazine areas due to new weapon systems and the projected increased requirement for SSN 21 class submarines. Another requirement concerns the issue of safety and weapons storage improvements.

Perimeter security in the northern boundary, i.e., lighting, surveillance systems, and access roads, needs improvement. Physical deficiencies in the magazine area require improvements. Settl ment of the magazines, deterioration of the headwalls and substandard doors are among the deficiencies.

Due to safety criteria involving ESQD arcs, there exists a requirement to maintain a minimum inhabited building distance requirement between weapons storage, operating, and handling areas, and base boundaries and/or existing inhabited buildings on base. Land outside base boundaries and several areas on base are encumbered by these zones and land purchases are proposed to protect these areas.

Production, maintenance and operational facilities are inadequate due to mission changes in the past several years and projected changes due to new weapons systems and SSN 21 class submarines. Production requirements for the MK 48 ADCAP and the Tomahawk and Harpoon weapon systems has placed a tremendous burden on existing facilities. The requirement is to upgrade weapons functions.

At the State Pier area weapons are occasionally transferred between the subs and the sub tender. No facility requirements have been identified.

Supply and Storage

a. Warehousing

Existing shipping and receiving functions are currently located in Buildings 17 and 105 within the restricted fleet operations area (lower base). Traffic and personnel associated with supply functions impact on security, add to the congestion in an already congested area and are located within ESQD arcs. These buildings are substandard and undersized. Supplies are often kept on the loading docks because there is no room inside the buildings. Building 31, which stores hazardous/flammable materials, lacks fire protection systems, recapture capability, and is functionally and spacially substandard.

Relocation of shipping and receiving functions from the lower base and construction of a new facility on the upper base is required.

Supply support facilities will also be affected by development of the SSN 21 class modular component concept. More space will be required for shipping and receiving functions and storage of modular units. Although the square foot space requirement can not be finalized until the measurement tons to be stored is available, a warehouse expansion of 30,000 SF is proposed. Supply Department administrative functions will be relocated from the lower base as part of this proposal.

b. Fuel Storage

Underground fuel storage tanks at New London are used to store over five million gallons of heating oil, diesel fuel, and lubricating oils. The tanks have outlived their useful life and, in some cases, are leaking, new tanks are needed.

c. Hazardous Materials

The DLA's Defense Reutilization and Marketing Office (DRMO) has a mission to handle, store, and transfer hazardous materials and wastes. Existing facilities do not conform to current criteria.

Medical

The existing clinic and dispensary facilities are scattered in several buildings requiring patients to move about reducing efficiency and raising operating costs. A consolidated clinic facility is required to provide adequate out-patient care. Increasing demand for dental care and increased dental staff requires additional dental clinic space.

Administration

Much of the existing upper base office space is crowded, inefficient, poorly ventilated or not air conditioned, and also scattered in several locations on the Base. The offices are not properly secured against vandalism or more serious actions. Some are located immediately inside the main gate. Several operational offices and personnel support services require classroom or multi-purpose space to conduct occasional classes, test military personnel, conduct seminars, sponsor courses, etc.. They must seek space, often remote from their office, to conduct the program. The source of most classrooms, the Sub School, is unable to lend rooms, as in the past, due to security and higher student loading.

Housing and Community Support

a. Bachelor Personnel Housing

There is insufficient BEQ and BOQ space at SUBASE. Buildings 161 and 159 do not meet bachelor enlisted housing criteria. Officers housed in Building M have individual rooms but share bath facilities. Maintenance and storage facilities to support the BEQ's are also inadequate.

Existing SUBASE NLON bachelor housing deficits will increase over the next several years. Proposed MILCON projects will upgrade quarters to current criteria. But in so doing, the capacity of the buildings will be reduced and thereby create additional deficits. Since the bachelor housing deficit is approximately 200 officer spaces and nearly 800 enlisted spaces, additional barracks projects are proposed for enlisted quarters and third party financing will be considered for housing bachelor officers.

b. Family Housing

The current family housing waiting lists are lengthy, due in part to the families of SSBN submariners. It is anticipated that the SSBN submarines presently attached to SUBGRU TWO will be transferred from

SUBASE NLON to another homeport by the 1990's. If this happens there will be a decreas in the waiting list to approximately 80 families.

c. Community Center

Approximately 6,400 dependent youths reside in the family housing areas of SUBASE. The community center in the Nautilus Park housing area serves these youths but lacks sufficient space. Current crowded conditions result in limited service to the community and have a detrimental effect on morale. The plan recommends construction of additional space at the Nautilus Park Community Center.

d. Child Care Center

Child care center services must be provided for approximately 165 children from the family housing areas. These children range in age from 6 weeks to pre-schoolers. The existing child care center in Dolphin Gardens (Building CT-186) is too small to accommodate this large number. The plan recommends replacing Building CT-186.

e. Fire Station

Fire protection for family housing is provided from the main fire station at the SUBASE. Response distance and time from the main fire station to family housing ranges from 1.6 miles and 4-5 minutes to 3.6 miles and 8-10 minutes. This time frame is for non-peak traffic hours. It is estimated that during peak hours, a response could take 12 minutes or greater. Responses to fire calls from family housing are increasing. This creates a fire protection shortage and under-coverage at the main base. The plan recommends construction of a one-company fire station located to serve the family housing areas.

f. Submarine Museum and Library

The Submarine Museum and Library, located in Buildings 571, 410, and 83 has insufficient space for exhibits and storage. The plan recommends an addition to Building 571 for the Submarine Museum Library and storage.

g. Special Services Center

Dealey Center, Building 164, contains the base theater, library, exchange service outlets, administrative offices and recreational services spaces. It is heavily used by base personnel, dependents and visitors yet this building does not have air-conditioning. During the summer, conditions inside can become extremely uncomfortable and detract from full use of the building. SUBASE is within the allowable air-conditioning zone and central air-conditioning is recommended to be provided for Building 164.

Utilities

The existing utility systems at the SUBASE are gradually showing signs of age and deterioration. Leaks, insulation breaks, weathering and breakdowns occasionally disrupt service to all parts of the base. To prepare for direct support of the SSN 21 class submarine, distribution lines to the drydock and submarine berths should be repaired and upgraded. Also, the addition of a proposed large floating drydock makes utility upgrade necessary.

Various areas of the SUBASE require street lighting or replacement of existing street lighting.

Existing 13.8KV electrical distribution feeders are rapidly reaching overload as a result of base wide development. The ability to provide electrical power, by rerouting service if one feeder goes down, will soon be impossible without load shedding and negative impacts on operations.

Security/Roads/Parking

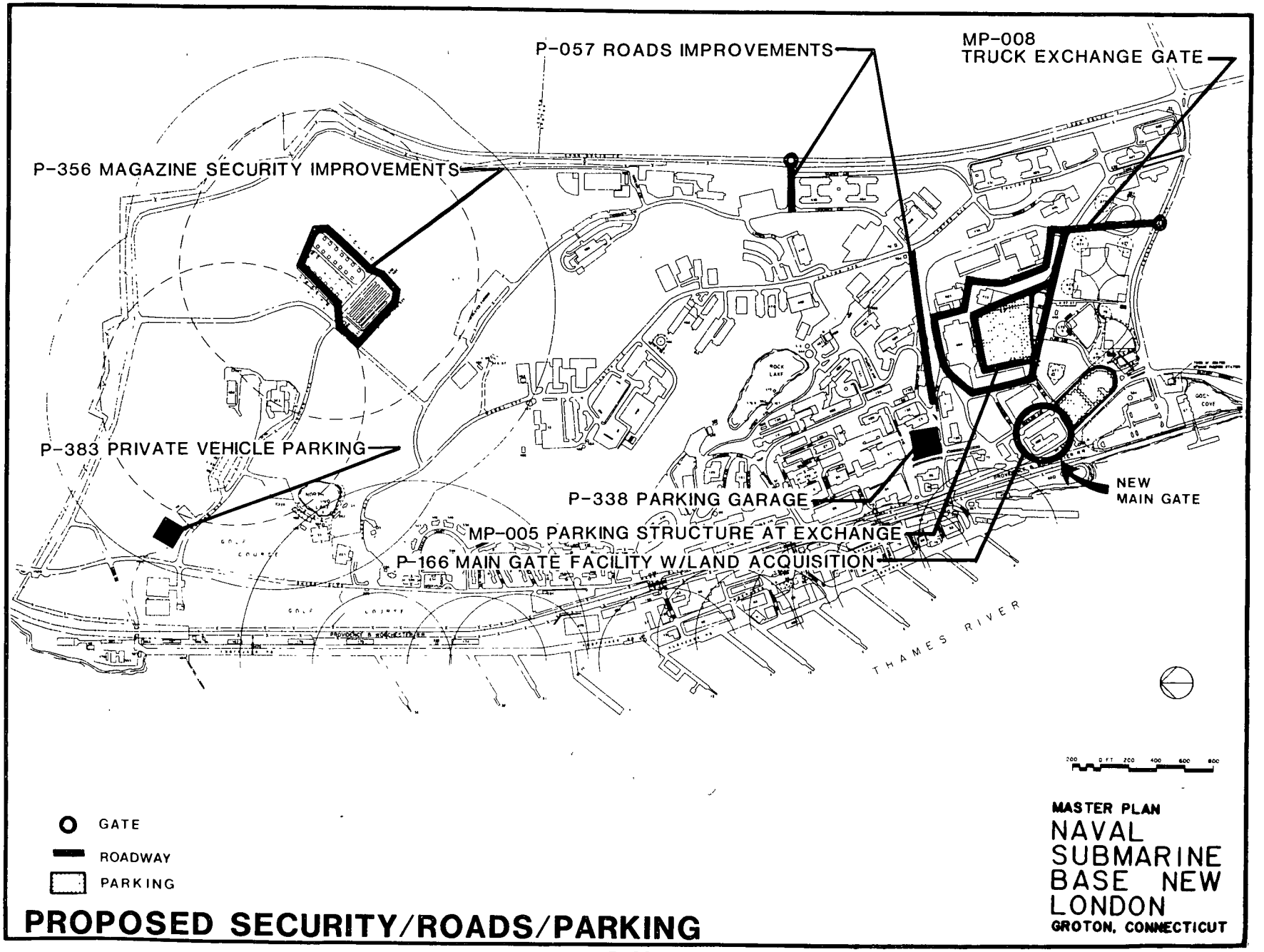
SUBASE NLON is to be the model security base. Several areas are to be upgraded. On the lower base and the waterfront, special projects will construct new security gates and guard booths at the head of piers 1, 2, 4, 6, 8, 10, 12, 13, 15, 17, 31, 32, and 33.

In addition to the existing security zone at the base waterfront that encompasses all of the berthing piers, a proposed restricted area would provide a buffer zone for the security zone by providing the Navy with jurisdiction and enforcement authority over the waters within the zone, while not prohibiting the existing commercial and recreational use of the river by the public.

Restricted/prohibited areas generally provide security for U.S. Government property and protection to the public from risks of damage or injury arising from the government's use of that area. The restricted zone would serve several useful purposes including increased submarine base surveillance capability and security, and limited interference with daily base activities and submarine maneuverability while allowing continued use of the waterway.

Security and other related improvements in the main gate area are being completed. The plan recommends moving the main gate further into the main base to Building 462. The roads at the main gate do not permit ready entrance on the Base and rush hour traffic is often backed up waiting to go on Base. This situation may be compounded when traffic to the Nautilus Memorial at Goss Cove is added. Security functions such as the DOD Police, Shore Patrol, Security Administration, military dogs, holding cells, PASS Office, and Traffic Court are scattered in various buildings. The plan recommends improving access through the Main Gate and consolidation of all security functions in a single facility at the new location of the main gate. See Plate 5-7.

The base road system is inadequate for rush-hour and dependent service traffic. New construction projects in the east and northeast portions of the Base have not addressed the need for roads and walkways except to provide for minimal access to the facilities. These areas have neither direct nor safe access to other areas of the base. The plan recommends improvements to traffic flow and pedestrian safety in the east and northeast portions of the Base. See Plate 5-7.



PROPOSED SECURITY/ROADS/PARKING

PLATE 5-7

Private vehicle parking is at a premium on Base. Provision for additional parking with shuttle bus service for lower base personnel is recommended. Se Plate 5-7.

At the State Pier area, security improvements are needed to better separate commercial shipping and naval operations. Access to the navy site is through an aging residential area and improved control of the vicinity is desired.

DEVELOPMENT CONCEPTS

The following development concepts have evolved as a result of the analysis of all data previously discussed:

1. Increase the capacity and flexibility of the SUBASE to support the fleet.

2. Remove all nonessential functions from the lower base.

3. Consolidate similar functions to increase the efficiency of their operations.

4. Relocate functions that occupy sites having a higher and better use.

5. Utilize multi-story construction for buildings whenever possible due to the shortage of buildable land.

6. Provide expansion opportunities for all major SUBASE functions and tenants.

7. Rehabilitate facilities where required.

8. Support the Base Exterior Architectural Program (BEAP).

9. Acquire property for expansion and to provide required safety zones for operations.

PROPOSED PLAN

This section represents the culmination of the Master Planning process. It discusses the proposed facility and land use along with future expansion capacity.

Facility Use

The proposed facility use discusses changes in the utilization of the SUBASE buildings and other facilities. The changes include the renovation and/or expansion of buildings for specific activities, the relocation of activities from one building to another, and the construction of new buildings or facilities. The facility use plan portrays the siting of these actions. See the Capital Improvements Plan (CIP) for descriptions of these projects.

a. Operations

As a result of projects P-080, Automotive Vehicle Maintenance Facility, P-173 and P-174, both Advanced Engineering Training Facilities, Buildings 88 and a portion of 107 (both located on the lower base) will be reassigned to the Naval Submarine support facility IMA. Building 85 will be converted for crane and rigging operations shop as part of P-080. P-394, Submarine Intermediate Maintenance Facility, will convert Building 88 to SSF functions after the Submarine School moves to the upper Base.

A new fueling pier will be provided by Project P-084, Replace Pier #1. The project will include 20,000 square feet of area with complete fuel pier services.

Various areas of the quaywall are in a deteriorated condition. Project P-382 will repair a portion of the deteriorating quaywall at Pier 15. P-413 will complete the remainder of repairs at Pier 15 and two sections north of Pier 33.

Replacement of Pier 4 is required due to its age and deteriorated structural condition. Project P-416, Replace Pier 4, has been identified for this requirement.

A magnetic silencing facility with equipment and a silencing range to monitor Navy vessels and their magnetic signatures will be provided by Project P-386, Magnetic Silencing Range.

Operational improvements to the Navy portion of State Pier will be provided by Project P-392, State Pier Improvements. This project will rehab portions of the Navy pier area, demolish the old terminal building and lean-to portion of the existing warehouse and upgrade electrical service to accommodate SSN 688 submarine. Some dredging along with additional parking, security fencing, and lighting is included.

A facility and a tower for port control will be provided by Project P-402, Port Control Facility. Administrative space will be included for COMSUBGRU TWO for port operations.

A paved helicopter landing pad will be provided by Project P-403, Helicopter Pad. A permanent facility is required, in lieu of the current practice of landing on the base softball fields.

The existing temporary buildings that support the research sub, NR-1, will be replaced by permanent facilities by Project P-406, Support Facilities for NR-1.

A new facility to consolidate both the Squadron and Group into a modern and efficient operations space will be provided by Master Plan Project MP-003, Squadron and Group Headquarters.

b. Training

Advanced engineering training will be moved off the waterfront to new, larger quarters by Projects P-173 and P-174. Located along Tautog Avenue south of the hospital, these projects will provide much needed expansion and proper utilities. Submarine firefighting training will be conducted in a new facility constructed by Project P-329. The trailers that now serve as the interim training site will be removed. Concurrence in the demolition of Building 70 is being sought from national and state historic preservation organizations. This demolition will provide much needed space on the lower base. Training on the weapons and engineering systems for the new SSN 21 class submarines will be provided by Project P-398. Project P-387, Applied

Instruction Building Renovation (Bldg. 150) will upgrade an aged and in fficient facility for NAVSUBSCOL training.

c. Maintenance and Production

(1) Public Works

Several projects are planned to correct some of the deficiencies and to support the concept of additional security. P-080 Automotive Vehicular Maintenance Facility will construct a maintenance facility containing service areas, maintenance garage, refueling shop, holding shed, a wash bay, grounds equipment shed and administrative space. Space vacated in Building 107 on the lower base will be converted for IMA functions. P-160, Public Works Shop, provides replacement facilities for the public works maintenance division shops currently located in Buildings 400, 405, and 406. The project will consolidate this function into a single facility.

(2) Ordnance

Several projects are planned to correct the deficiencies of the ordnance area and/or correct existing waivers.

P-356, Magazine Security Improvements, will provide security and operational improvements to correct physical deficiencies of existing high explosive and other weapons storage magazines. The project will realign magazines, stabilize foundations where needed, repair waterproof membranes, replace existing doors, security hasps and locks. Increased security lighting is also included. A new access road and security fencing will be provided. This project will improve weapons handling operations and security. P-384, Land Acquisition, will correct a portion of CNO Waiver SUBASE NLON 2-82. This land acquisition will eliminate the requirement for a waiver. It will not correct the distance requirement from existing inhabited structures on base. Project P-165, Weapons Facilities (1st Increment) and P-419 Weapons Facilities (2nd Increment) will provide adequate facilities with necessary land acquisition, for weapons production, maintenance and operations. These projects will make alterations and additions to Building 325, 393, and 176. A new Ordnance Operations Building and an OTTO Fuel storage tank will be constructed. Acquisition of land within the ESQD arcs from Building 450 will be provided.

d. Supply and Storage

A new shipping/receiving operation and hazardous/flammable warehouse will be constructed on the upper base by Project P-021, Fleet Support Warehouse. This project will remove shipping/receiving functions from the waterfront. Buildings 408, 409, and 410 will be cleared at the construction site. The project will significantly reduce truck congestion on the lower base while removing supply personnel from ESQD arcs.

A facility for loading/unloading and storing of hazardous materials/wastes will be constructed by DLA Project P-332, Conforming Storage Facility. The project will solve the current non-conforming hazardous storage problems at the Submarine Base. Special projects will expand office and warehouse facilities and upgrade the truck scale head.

A two-story general warehouse of 40,000 SF with 310,000 total cubic feet of storage volume will be constructed by Project P-370, Replace General Warehouse, Building 33. This project will provide relocation of supply administration and data processing functions from the congested lower base and out of the ESQD arcs.

The replacement of two existing fuel tanks which experience fuel losses will be accomplished by Project P-379, Fuel Oil Storage Facility. Tank replacement will avoid potential environmental damage which could occur if the present tanks deteriorate further. A structure to consolidate various maintenance and storage functions into one facility in support of the BEQ's will be constructed by Project P-393, BEQ Maintenance and Storage Facility.

Additional fuel oil storage tanks are required at the SUBASE to satisfy the 30 day fuel supply requirement. Safety criteria for above ground tanks requires a separation distance between above ground tanks and inhabited buildings which is not available in the congested area of the SUBASE. Project P-415, Fuel Oil Storage Tanks proposes to replace leaking underground storage tanks located on base along the north side of Crystal Lak Road.

e. Medical

P-307 will replace existing dispensary, Building 154, and consolidate other Hospital functions from Building 86. Building 86 will then be renovated for NSHS functions.

MILCON P-170 provides additional dental clinic space to satisfy increased demand and staffing.

A facility to consolidate medical research functions for future research and expansion will be provided by Master Plan Project MP-001, Medical Research Facility.

f. Administration

An adequate administrative facility for the Naval Security Group Activity (NSGA) Groton will be provided by Project P-385, Fleet Cryptologic Support Facility. The project will resolve present security and safety deficiencies.

Courtroom and office facilities for Naval Legal Service Office, Groton will be provided by Project P-410, Naval Legal Services Facility. The facility will be a two-story masonry structure. Building 96 will be demolished as part of the project.

Master Plan Project MP-002, Administrative Building, will provide sufficient administrative office space to accommodate several operational functions and personnel support services, a classroom/conference/multi-purpose center to be used as necessary and security against vandalism or more serious actions.

g. Housing and Community Support

Project P-064, Submarine Museum/Archive Storage will consolidate the submarine museum storage and exhibit workshop into one facility adjoining the Nautilus Memorial Building 571.

An addition of 13,870 SF to the community center in the Nautilus Park housing area will be constructed by Project P-081. This facility will provide space for dancing, games, meetings, minor food service and related youth activities.

Better fire protection for family housing will be provided by construction of a one company fire station by Project P-320. The station will be located near the intersection of Connecticut Route 12 and Gungywamp Road to principally serve residents of the family housing areas.

A 157 PN Bachelor Officers Quarters is proposed to be provided by third party financing. Project P-169, Bachelor Enlisted Quarters, will provide 396 additional BEQ spaces. Existing BOQ and BEQ facilities will be brought to current standards by Projects P-130 and P-185, respectively. Project P-393 will provide maintenance and storage facility support. MP-011 and MP-012 will provide additional BOQ and BEQ spaces.

Overcrowded child care facilities in the family housing areas will be corrected by Project P-352. This project will provide an addition to the child care center at the Dolphin Gardens family housing area. The addition will contain instructional, play, food preparation and dining, infant care, rest and toilet facilities for children 6 weeks of age through pre-schoolers with a target capacity of 165 children.

In order to provide comfortable conditions for the users of the theater, library, exchange service outlets and other recreational services located in Dealey Center, Building 164, Project P-378 will provide central air conditioning.

An indoor pool to replace the existing substandard pool will be provided by Project P-404, Indoor Pool.

Master Plan Project MP-004, Air Condition Buildings 434, 435, 442 and 447, would air condition these Bachelor Enlisted Quarters bringing the facilities up to current A/C standards.

Master Plan Project MP-006, Playing Fields, will provide recreational playing fields at family housing with land acquisition.

Master Plan Project MP-007, Exchange Addition, will allow the consolidation of scattered exchange functions on base into the exchange complex.

NAF Project P-182 Consolidated Mess, is proposed to provide a club facility for enlisted men and chief petty officers.

h. Utilities

The installation of a new turbine, P-391 will provide additional power plant generating capability to support base development as recommended by the current Utility Technical Survey (UTS).

A new boiler will be provided by Project P-396, Utilities Improvements (6th Increment). Implementation of this project will allow for uninterrupted utilities service if one of the older boilers fails or is shut down for routine maintenance.

At State Pier upgraded electrical servicewill be provided by P-392 to accommmodate SSN 688 submarines.

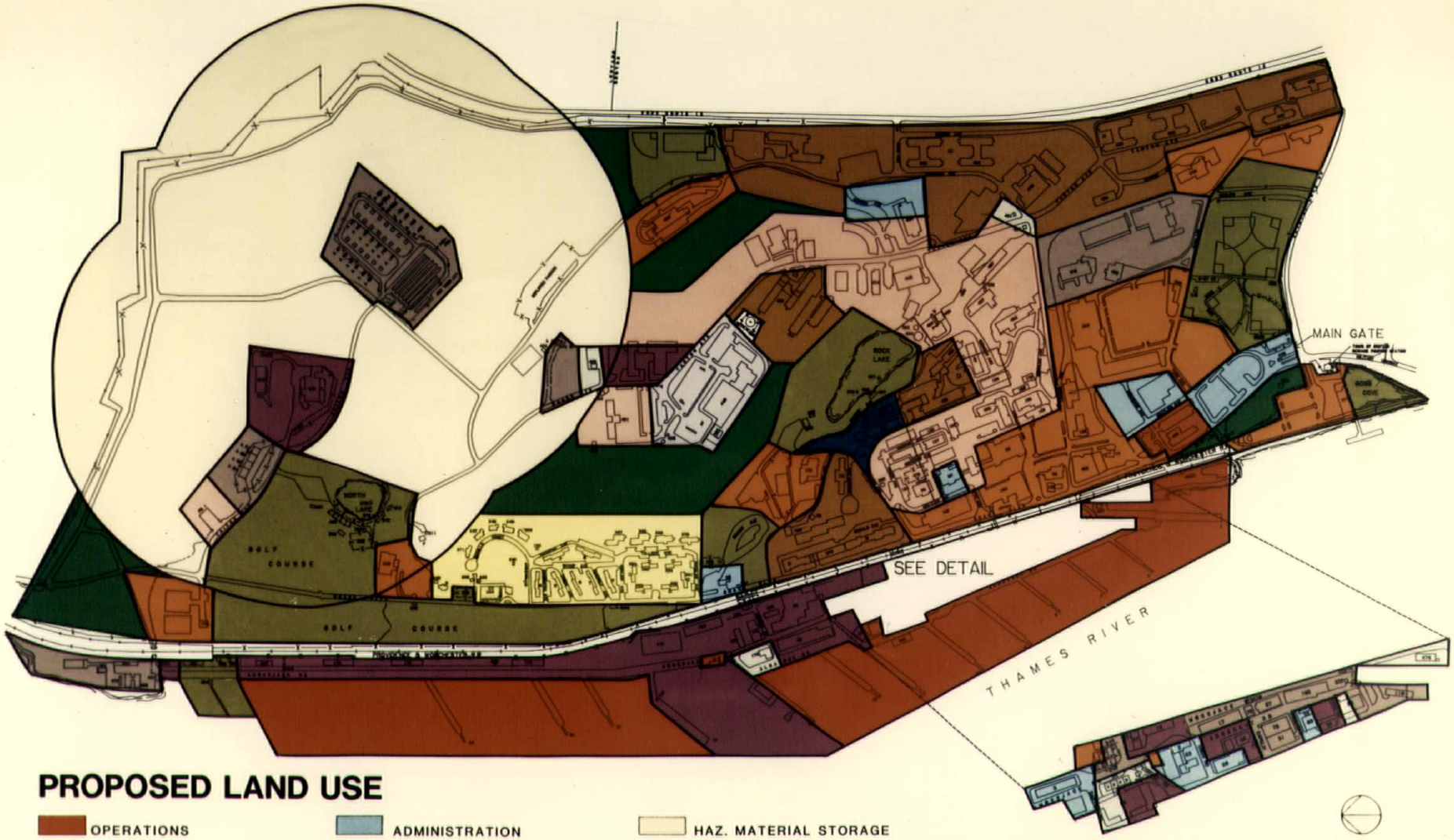
To alleviate the current sewer disposal problem in the Town of Groton, Project P-414, Sewer Outfall, will construct a new sewer outfall from Groton to the Thames River. The project would occur in cooperation with the Town of Groton.

i. Security/Roads/Parking

Improvement to various access roads and pedestrian safety will be made by Project P-057. These include construction of a connector road from Tautog Avenue to Grayling Avenue.

Improvements to the Main Gate area will be made by Project P-166. This project will reconfigure roads to improve traffic flow, improve access to the Nautilus Memorial, consolidate security functions, expand visitor parking and provide landscaping.

At the State Pier area, security fencing and lighting is proposed in project P-392, State Pier Improvements.



PROPOSED LAND USE

- OPERATIONS
- TRAINING
- MAINTENANCE & PRODUCTION
- RESEARCH & DEVELOPMENT
- SUPPLY
- ADMINISTRATION
- BACHELOR HOUSING
- MEDICAL/DENTAL
- ENVIRONMENTALLY CONSTRAINED
- COMMUNITY FACILITIES (INT.)
- HAZ. MATERIAL STORAGE
- FAMILY HOUSING
- COMMUNITY FACILITIES (EXT.)
- UTILITIES

MASTER PLAN

NAVAL SUBMARINE BASE NEW LONDON

GROTON, CONNECTICUT

. Maintenance and production will be consolidated and expanded.

. The supply land use area will shift from the secure lower base to the upper base.

. The medical functions will expand in the existing hospital area.

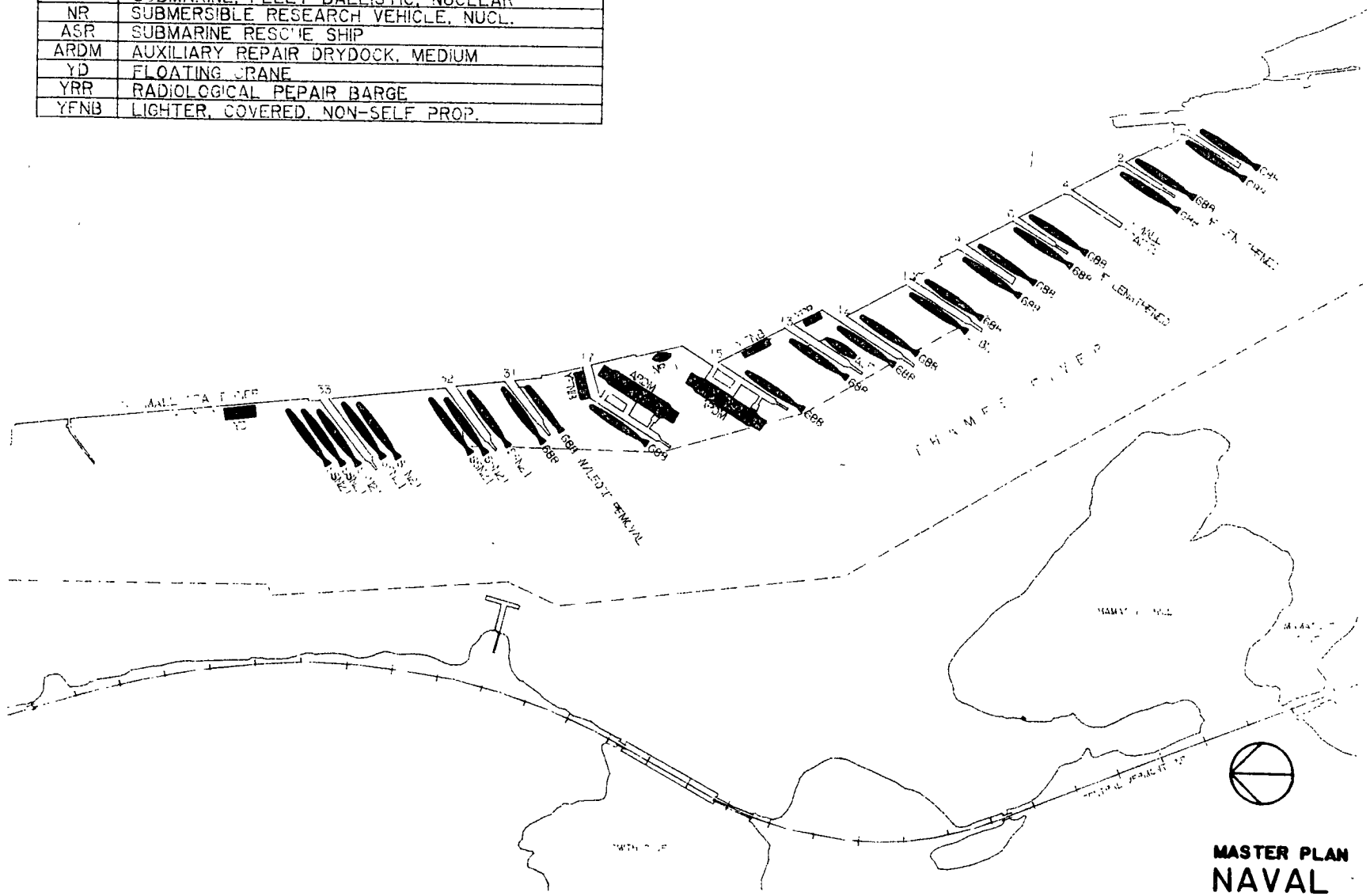
. Administrative functions will be consolidated into a new, proposed high-rise structure with parking garage located near the Main Gate. This will result in expanding existing functions and gaining additional construction sites after demolition of vacated buildings.

. Housing and community support functions will remain the same and will expand in the same areas.

. Long term expansion potential on the waterfront is shown on Plate 5-9. For example, Pier #1 is shown replaced to accommodate submarine berthing and two ARDM (or larger) floating drydocks are shown accommodated. Assuming modifications (extensions) to existing piers an ability to homeport additional submarines exists at SUBASE. Some nesting of submarines would be required under this scheme.

. Environmentally constrained land areas are those areas where constraints due to soils, topography, wetlands, etc., prohibit cost efficient construction of facilities.

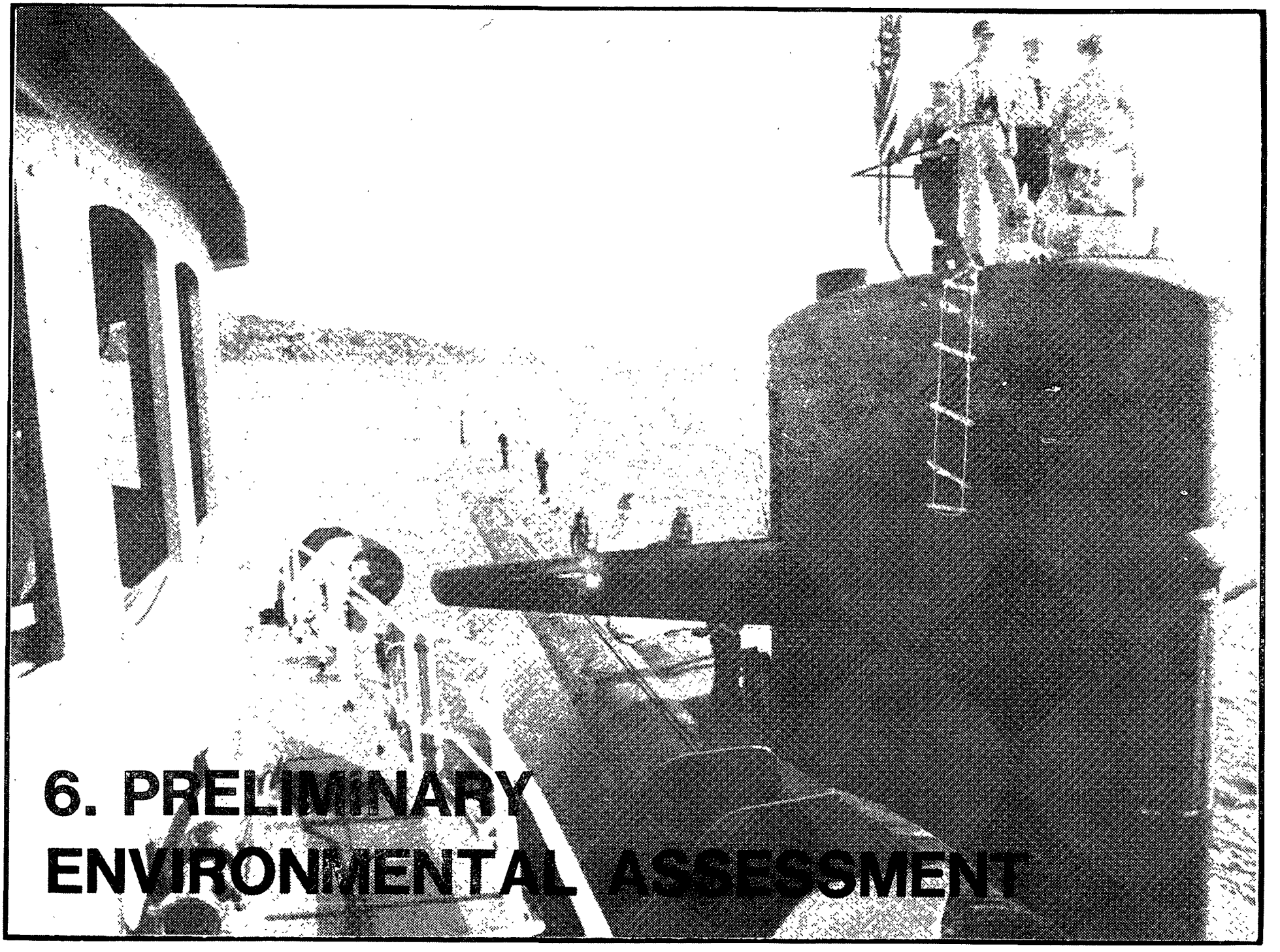
BERTHING	
CLASS	
SSN688	SUBMARINE, NUCLEAR, 688 CLASS
SSN	SUBMARINE, NUCLEAR
SSBN	SUBMARINE, FLEET BALLISTIC, NUCLEAR
NR	SUBMERSIBLE RESEARCH VEHICLE, NUCL.
ASR	SUBMARINE RESCUE SHIP
ARDM	AUXILIARY REPAIR DRYDOCK, MEDIUM
YD	FLOATING CRANE
YRR	RADIOLOGICAL REPAIR BARGE
YFNB	LIGHTER, COVERED, NON-SELF PROP.



MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROT N. C NNECTICUT

POTENTIAL BERTHING CAPABILITY

PLATE 5-9



6. PRELIMINARY ENVIRONMENTAL ASSESSMENT

PRELIMINARY ENVIRONMENTAL ASSESSMENT

Prepared by: Northern Division, Naval Facilities Engineering Command for the Naval Submarine Base, New London, in accordance with OPNAVINST 5090.1 in compliance with the National Environmental Policy Act (NEPA) of 1969. Northern Division, Naval Facilities Engineering Command may be contacted at the following address for further information.

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The purpose of this Preliminary Environmental Assessment (PEA) is to preview the potential environmental impacts to be expected from both near-term (programmed) and far-reaching (unprogrammed/Master Plan) projects discussed in this Master Plan. The PEA will also alert the Naval Submarine Base, New London, and the Navy to potential or additional investigations that may be required in order to implement the recommendations of the Master Plan.

SUMMARY

1. Description of Action. The Master Plan update is a guideline for future land use and facilities development at SUBASE New London in the mid range (five to eight years) time frame. The proposals in this plan will fulfill the most recent requirements at the activity. Most of the proposed development will have insignificant impacts on areas including immediate project sites. Therefore, those projects fall under Categorical Exclusions as defined in the NEPA and in Navy regulations implementing NEPA. Environmental Assessments (EAs) will be prepared for P-084, P-392, and P-416 due to potential impacts on listed historical resources or the aquatic environment.

2. Summary of Impacts

The PEA will discuss in detail the programmed projects in this Plan. Some projects will cause temporary, short-duration adverse environmental impacts during construction, which may affect the natural or human environment in several ways:

a. Surface geologic materials and soils may suffer some disturbance from building and demolition activities, and from paving. Heavy construction equipment compacts the soil.

b. Air quality is often temporarily deteriorated during construction from dust, fumes, odors, and smoke.

c. Construction practices often cause temporary increases in surface runoff. Soil erosion and waterway siltation are especially high where large areas are stripped bare. Less ground percolation also lowers the local groundwater table.

d. A certain amount of vegetation clearing and grubbing are common construction procedures, however, most of the Master Plan projects occur in previously developed areas and little mature vegetation is disturbed.

e. Visual qualities or site aesthetics are temporarily compromised during construction activities and noise impacts may temporarily increase.

f. Demolition often occurs before or after construction. This generates a variety of solid waste and debris which must be disposed of in an environmentally acceptable manner. Some demolition debris such as asbestos or used oils are classified as hazardous wastes, and must meet stringent disposal standards/procedures. More information on hazardous material disposal may be found in Chapter 11 of OPNAVINST 5090.1.

3. Alternatives Considered:

a. Recommended Action. Adoption and implementation of the updated Master Plan will reduce incompatible land use, reduce maintenance requirements, and promote environmental safeguards.

b. No Action. Maintaining the status quo at the SUBASE will not accommodate new mission and facility requirements, or fulfill the primary mission of the SUBASE.

c. No Further Construction. A moratorium on all new construction will adversely impact the mission capability for all of the activities at the SUBASE.

INTRODUCTION

1. Plan Description. The Plan is a major update of the existing approved Master Plan for SUBASE. The Plan provides guidelines on long-range land use and site selection for specific development for the midrange time frame. The Plan's purpose is to promote orderly development of facilities based on military requirements, current planning criteria and environmental concerns.

2. Major Planning Proposals.

Increase the SUBASE's flexibility to serve the fleet through new construction (replacement of quaywalls, fuel tanks, and weapons facilities) and utility upgrades.

Accommodate new technologies of submarine service and training through construction of new training and production facilities.

Improve morale and welfare of submarine personnel through construction of new bachelor officer and enlisted quarters and hospital expansion.

EXISTING ENVIRONMENT OF PROPOSED ACTIONS

This section deals primarily with the natural environment of the SUBASE. More detailed information can be found in Chapter 4, the Existing Conditions chapter.

1. Topography and Soils. Topography of the base is of moderate relief with a few steep slopes resulting from its glacial history. The upland soils of the base are composed of unsorted tills and soils. The soils at most construction sites are well drained and acceptable for development purposes. Those projects which call for construction in the floodplain on poorly drained soils must adhere to proper engineering techniques.

2. Groundwater and Surface Runoff. There is no groundwater development at the SUBASE and there are also no natural streams. Most drainage is internal. Water is supplied to SUBASE by reservoirs controlled by the City of Groton.

3. Wetlands and Floodplains. Inland wetlands at the SUBASE are located in four areas in the northern section of the SUBASE. Floodplain (100 year & 500 year) areas exist along the SUBASE western border on the Thames River. Any construction projects planned in a floodplain area must integrate floodplain design and have special structural design to withstand the forces of the flood waters. See text and map in Existing Conditions Chapter for more detailed information.

4. Vegetation. The vegetation of the SUBASE is similar to that of southeastern Connecticut as a whole. The dominant forest species in the upland areas is the oak. There is a large area of undisturbed woodlands on the base to the northeast of Tautog Avenue, as well as in other isolated patches. A few construction projects have been sited in some of these areas, therefore, loss of woodlands is predicted. Moist, low-lying areas of the region are forested with hemlocks. No rare or endangered plant species are known to inhabit the SUBASE area.

5. Wildlife. The lands surrounding the SUBASE provide habitat for a wide variety of common wildlife. Small mammals, amphibians, certain reptiles, and seasonal birds dwell in the area. No federally listed rare or endangered species are known to inhabit the SUBASE or the general area of southeastern Connecticut.

6. Air Quality. The SUBASE is located in the Eastern Connecticut Intrastate Air Quality Control Region. This AQCR is designated as a non-attainment area for ozone. The SUBASE is located in a Class II area under the prevention of significant deterioration requirements of the Clean Air Act. Increased personnel loadings at the base will result in more autos with resultant increased exhaust emissions.

7. Historical Resources. Building 70 (Escape Training Tank) and the Baldwin Ridge Archeological Site are the only two recognized historical properties on the SUBASE. Projects which involve these resources are subject to coordination with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation.

PROJECT DESCRIPTIONS

The majority of the projects identified in the Master Plan are not in conflict with the objectives of Federal, regional, state or local land use plans, policies or controls. This section will review the potential environmental impacts to be expected from the current MCON program for the SUBASE. Each project is evaluated according to the environmental criteria as outlined in NAVFACINST 11010.63B.

P-021 FLEET SUPPORT WAREHOUSE

This project will provide a warehouse and supply administrative space. Hazardous flammable storage and receipt control will be included. Buildings 316, 408, 409, and 410 will be demolished to provide the site for this project. The project will create only minor environmental impacts due to standard demolition and construction practices.

P-057 ROAD IMPROVEMENTS

This project consists of a connector road and gate relocation. Environmental impacts will be minor due to standard construction practices.

P-064 SUBMARINE MUSEUM/ARCHIVES STORAGE

This project will construct an addition to the east side of the Submarine Force Museum, Building 571, to allow more space for exhibits and exhibit storage. The Museum is part of the USS NAUTILUS Memorial, a National Historic Landmark. Therefore, coordination with the SHPO and the Advisory Council on Historic Preservation will be necessary. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-080 AUTOMOTIVE VEHICLE MAINTENANCE FACILITY

This project will provide a consolidated vehicle maintenance facility. It will include service areas, garage, refueling vehicle garage, wash bay and fueling station. Building 18 and Structure GT-1 will be demolished. This project will remove a source of traffic congestion from the lower base and will create only minor environmental impacts due to standard demolition and construction practices.

P-081 COMMUNITY CENTER

This project will provide an adequate facility for the 6,400 dependent youths at this activity. The new facility will be located in the Nautilus Park Housing area. Construction will include an addition to the existing community center, Building 1004. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-084 REPLACE PIER #1

This project consists of demolition of existing Pier #1, which is 400 feet long and 48 feet wide, and construction of a new reoriented submarine berthing pier. Construction will consist of concrete decking, concrete utility trenches, steel piles with concrete jackets, fender system and fittings, fuel off-loading facilities and hotel service for submarines. The major environmental impact associated with this project involves the dredging of the river bottom at the pier site. Construction will occur within a coastal zone and requires coastal zone consistency determination in accordance with

Coastal Zone Management Act Public Law 92-583. Other environmental impacts of this project are minimal and will be present only during the construction of the pier. This project will require an Environmental Assessment due to the major impacts on the aquatic environment. In addition, formal consultation with State Historic Preservation Officer (SHPO) will be necessary to determine impacts resulting from projects proximity to the State Historic Landmark (Nautilus).

P-130 BACHELOR OFFICERS QUARTERS MODERNIZATION

This project will provide alterations and modernization of Bachelor Officers Quarters 379, D, and M. The alterations will generate construction rubble and increase ambient noise and fugitive dust levels, but these should not present any significant environmental problems. Upon completion of the alterations and modernization, there should be no additional impacts on the environment. The buildings involved are within the Coastal Zone, but the project, because it is a renovation, will have no significant impact.

P-160 PUBLIC WORKS SHOPS

This project will construct a replacement facility for Buildings 400, 405, and 406. The project includes landscaping, outdoor storage, and equipment parking areas. During construction ambient noise levels and fugitive dust will increase but no significant environmental impacts are expected after the project's completion.

P-165 WEAPONS FACILITIES IMPROVEMENTS (1st INCREMENT)

This project will provide alterations to Buildings 325, and 176 to improve weapons maintenance and operations functions. A new ordnance operations building and an Otto Fuel storage tank will be built, and land within ESQD arcs will be acquired. Intergovernmental coordination will be performed during project design. Only minor environmental impacts due to standard demolition and construction practices are expected.

P-166 MAIN GATE FACILITY WITH LAND ACQUISITION

This project will relocate the main gate, and should not present any significant environmental problems.

P-169 BEQ WITH LAND ACQUISITION

This project will provide bachelor enlisted quarters for paygrades E-1 through E-6. The project includes acquisition of privately held land at the project site. Intergovernmental coordination will occur during project design.

P-170 DENTAL CLINIC ADDITION

This project will construct an addition to the south end of Building 341. The addition will provide enough operating units to meet the demand for dental services at this location. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-174 ADVANCED ENGINEERING TRAINING FACILITY (MECHANICAL)

This project provides an enlarged replacement facility for advanced engineering training on submarine mechanical systems. The project will cause the loss of 1.6 acres of woodlands. Other environmental impacts will be minor due to standard construction practices.

P-185 BEQ MODERNIZATION

This project will consist of the modernization of Buildings 161, 429 and 430 to create open bay berthing for SUBSCHOOL students. The alterations will generate construction rubble and increase ambient noise and fugitive dust levels, but this should not present any significant environmental problems. Upon completion of the alterations and modernization, there should be no additional impacts to the environment beyond those caused by the present BEQ. A portion of Building 161 is in the Coastal Zone but the project, because it is a renovation, will have no significant impact on the Coastal Zone.

P-307 DISPENSARY

This project will construct a new facility east of Building 86 to provide enough operating units to meet the demand for dental services and satisfy the established facilities requirements. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-320 FIRE STATION - POLARIS PARK

This project will provide a fire station capable of housing an engine company at the geographic location of Connecticut Route 12 and Gungywamp Road at the entrance of Polaris Park. This project will produce minimal environmental impact including slight degradation of air quality and an increase in ambient noise level during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-336 BOQ

This project will construct bachelor officers quarters for grades W-1 through O-2. Quarters "L", an inadequate BOQ, will be demolished as part of this project. The project will create only minor impacts due to standard demolition and construction practices.

P-338 PARKING GARAGE

This project will construct a multi-story, 300-car capacity parking garage south of Building 83. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-349 HOBBY SHOP/AUTO BODY REPAIR

This project will provide a hobby/auto body shop of masonry construction on concrete slab with built-up roof on metal deck and frame. The project will include two post hydraulic lifts,

self-contained spray paint booth, central vacuum and exhaust system, air compressors, fire protection sprinkler, oil-fired heating plant, exterior driveway and parking for 12 vehicles. Adverse impacts on the environment will occur only during the construction period and these will not create permanent or long lasting adverse effects.

P-350 INDOOR TENNIS COURTS

This project will improve and convert tennis courts (structures 388 and 389) at the east gate to an indoor, year round facility with locker rooms and other support services. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-351 SPECIAL SERVICES MAINTENANCE FACILITY

This project will construct a facility which includes a maintenance office, personnel support spaces and equipment and ready issue storage. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-352 CHILD CARE CENTER ADDITION

This project will construct a child care center addition to conform to all applicable State and Federal codes for child care facilities. The facility construction will be non-combustible with masonry bearing walls and steel roof framing. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-356 MAGAZINE SECURITY IMPROVEMENTS

This project will correct physical deficiencies with existing high explosive and other weapons storage magazines. Also, the project includes improvement of weapons handling operations and security. During construction fugitive dust levels and ambient noise will

increase. After completion, the project will not have any significant impact on the environment.

P-359 HEATING, VENTILATING AND AIR CONDITIONING

This project consists of modifying existing air conditioning units in nine buildings on SUBASE. The modifications include resetting dampers to reduce outside air flow, updating and modifying control systems, installing heat recovery equipment, and using cooling tower water in the chilled water system during winter, where applicable. The only alternatives are to replace the existing systems at an excessive cost or take no action and allow higher than required energy consumption. The installation will not cause any environmental impacts. As a routine maintenance and repair project, this action is categorically excluded from the necessity for further environmental analysis in accordance with OPNAVINST 6240.3E.

P-370 REPLACE GENERAL WAREHOUSE, BUILDING 33

This project will construct a general warehouse of 40,000 SF with 310,000 total cubic feet of storage volume. Also, provided in the project is the installation of a pre-engineered open storage shed for bottled gas storage and the demolition of Building 33. Implementation of this project will cause only minor environmental impacts during construction. The bottled gas storage shed must be located at an adequate distance from other structures to satisfy National Fire Protection Association (NFPA) requirements.

P-376 BOWLING ALLEY ADDITION

This project will construct an addition to the bowling alley, Building 485. The addition will provide ten additional lanes and will require the demolition and relocation of the telephone exchange, Building 77. During construction some minor environmental impacts will occur and will include disturbance of soil and an increase in ambient noise levels in the immediate area. Appropriate erosion control will be used during construction.

P-377 BOILER PLANT MODIFICATIONS

This project will provide equipment and controls in the power plant to reduce energy consumption. The project will provide for the installation of a distributed digital system for boiler plant monitoring and management control, the replacement of all existing metering with digital meters, the installation of variable speed drives on induced draft fans for boilers 1S, 1, 2, and 3, the replacement of existing combustion controls, operators, transmitters and control valves with a dedicated microprocessor based digital control system, and the construction of a central control room for operation of the steam generation and distribution system. The project will have minimal environmental impacts during construction and a long term environmental impact of reducing air emissions from the power plant by reducing fuel usage.

P-378 AIR CONDITION DEALEY CENTER

This project will provide central air conditioning systems for the balance of Building 164 which includes the theater, administration office, library, exchange service outlet, and recreational services spaces. The installation will not cause any environmental impacts. As a routine maintenance and repair project, this action is categorically excluded from the necessity for further environmental analysis in accordance with OPNAVINST 6240.3E.

P-383 PRIVATE VEHICLE PARKING

This project will provide new paved private vehicle parking along with associated lighting, drainage, and access driveways and sidewalks. The project is located outside intraline distance arcs from Buildings 325 and 450. Excavation and construction activity will disturb the soil and could lead to some erosion. Appropriate control measures will be used during construction. Other impacts will be minor and occur only during the construction period.

P-385 FLEET CRYPTOLOGIC SUPPORT FACILITY

This project provides alterations to the Sensitive Compartmented Information Facility (SCIF) for Fleet Cryptologic Direct Support.

Only minor environmental impacts due to standard construction practices are expected.

P-391 NEW TURBINE

This project will provide a new steam turbine unit for electric power generation at the Base power plant, Building 29. The installation will not cause any environmental impacts. As a routine maintenance and repair project, this action is categorically excluded from the necessity for further environmental analysis in accordance with OPNAVINST 6240.3E.

P-392 IMPROVEMENTS TO STATE PIER AND LAND ACQUISITION

This project will rehabilitate the Navy side of the pier including selective deck replacement with reinforced concrete deck planking, structural repairs as needed and upgraded electrical improvements to accommodate SSN 688 submarines. The project also includes dredging to various depths, a 12" waterline, security lighting and fencing, and demolition of the old terminal building. Dredging will disturb the river bottom and will increase suspended and settleable solids concentrations in the area during construction and at the disposal site during dumping. Construction will occur in a coastal zone and will require a coastal zone consistency determination in accordance with the Coastal Zone Management Act PL 583. An Environmental Assessment (EA) is required along with necessary Corps of Engineers permits for dredging and pier improvements.

P-393 BEQ MAINTENANCE AND STORAGE FACILITY

This project will provide an addition to Building 436 to consolidate BEQ maintenance shop, ready issue/shop stores, and general storage functions into one facility. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-394 SUBMARINE INTERMEDIATE MAINTENANCE FACILITY (5TH INCREMENT)

This project will provide alterations and modernization to Building 88 for the Submarine Intermediate Maintenance Facility. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

P-395 ADDITION TO DOLPHIN MART

This project will construct an addition to the existing Dolphin Mart Convenience Store (Building 1001). The addition will be a pre-engineered type building with concrete floor slab, insulated metal siding and roof, suspended acoustical ceiling, vinyl composition flooring, heating and air conditioning. Excavation and construction activity will disturb the soil and could lead to some erosion and siltation to the wetlands adjacent to the site. Preventive measures will be provided as required during construction. Other impacts will be minor and occur only during the construction period.

P-396 UTILITIES IMPROVEMENTS (6TH INCREMENT)

This project will enable uninterrupted utilities service which is essential for Base operations and facilities that directly support the fleet. Excavation and construction will disturb the soil and could lead to siltation. If significant erosion takes place, remedial measures will be used to halt siltation. The utility capacity increase may potentially increase air emissions from the power plant. However, steam load will drive boiler use and no significant emission increase is expected upon completion of the project since the new boiler is being installed for reliability rather than to meet increased capacity. The facilities proposed are located in the 100-year floodplain. The boiler will be built within the existing power plant above the flood elevation.

P-398 ADVANCED SSN 21 TRAINING FACILITY

This project will construct a steel frame facility with concrete floor and roof slabs on cellular metal decking to be used for training

personnel in the operation and maintenance of the new SSN-21 class submarine combat systems. Environmental impacts which will result due to implementation of this project include the loss of approximately two acres of woodland, disturbance of soils possibly leading to erosion, and short term degradation of air quality and increase in noise levels during construction. Soil preservation will be used during construction.

P-402 PORT CONTROL FACILITY

This project will construct a new building with a control tower to consolidate the pier masters and COMSUBGRU TWO operations in one facility to allow efficient operation of this military port. The project will produce minor environmental impacts which will be present only during construction.

P-404 INDOOR SWIMMING POOL

This project will provide a replacement indoor pool on the site of the existing, inadequate indoor pool. Project includes the demolition of the existing pool. During construction of this facility only minor environmental impacts including slight degradation of air quality and increased ambient noise level will occur. No long term adverse environmental effects are expected.

P-405 LIBRARY ADDITION

This project will provide a new library to replace the existing inadequate facility. Project scope has not been sufficiently developed to make an assessment of impacts on the environment.

P-406 SUPPORT FACILITIES FOR NR-1

This project provides a new building to replace existing trailers and improvements to support facilities at the NR-1 berthing. Construction along the river channel will disturb the river bottom and will increase suspended and settleable solids concentrations in the area. Construction will occur within the coastal zone and will require a coastal zone consistency determination and necessary Corps of Engineers permits. A detailed PEA will be necessary. An EA may be

required if the project includes any river channel dredging or widening of berthing faciliti s. Other environm ntal impacts will be minor and only present during construction.

P-410 NAVAL LEGAL SERVICES FACILITY

This project consists of constructing a two-story 10,688 SF office building to house Naval Legal Service Office, Groton, CT. The building will be constructed on the site occupied by Building 96 which will be demolished as part of the project. Parking for 29 vehicles will be provided. During construction ambient noise levels and fugitive dust levels in the immediate area will increase. Other environmental impacts will be minimal and will occur only during the construction period.

P-413 REPAIRS TO QUAYWALL

This project will repair three sections of deteriorating quaywall on the structured waterfront area of SUBASE NLON. The three areas affected and the repairs to be accomplished are: 1) replacement of existing concrete retaining wall section north of Pier 33 with new concrete platform on steel H-piles with rip rap slope, 2) replacement of existing steel sheet pile bulkhead north of Marina Pier with new sheet pile and concrete platform supported by rigid "A" frame of steel, 3) replacement of existing timber relieving platform and timber sheeting with a concrete relieving platform over the existing and new steel sheet pile bulkhead. All three sections include fendering, cathodic protection, street lights, storm drains and pavement. Dredging and rock excavation will be required north of Pier 33. Construction will occur within the coastal zone and will require a coastal zone consistency determination in accordance with Coastal Zone Management Act PL 95-583. An EA (August 1985) has been prepared and no significant adverse, long-term environmental effects are anticipated as result of the rehabilitation of the waterfront structures or dredging. Minor short-term impacts to water quality will occur at the dredge site in the Thames River and at the dredged material disposal site in Long Island Sound.

P-414 SEWER OUTFALL

This project will provide funding for the Navy's portion of a sewer outfall from the town of Groton Wastewater Treatment Facility to the Thames River. The Town of Groton Wastewater Treatment Facility treats approximately 1.35 MGD of wastewater generated by the Naval Submarine Base New London and associated Navy Family Housing areas. The plant provides secondary treatment with the effluent discharging to Fort Hill Brook and thence Mumford Cove. Nitrogen introduced by this discharge has caused environmental degradation of the cove. An Environmental Impact Evaluation, Town of Groton Wastewater Treatment Facility Outfall, May 1986 was prepared by the Connecticut Department of Environmental Protection for the project. This document determined there will be no long term adverse environmental impacts associated with this project.

P-415 REPLACE UNDERGROUND TANKS

This project will abandon and replace concrete leaking #2 DFM (diesel fuel marine) tanks. New cathodically protected steel tanks and underground fuel lines will be installed at the same site. Deteriorating #2 defueling lines will be repaired or replaced. New tanks and lines will meet all current State regulations. The project will be designed to prevent damage to the environment by accidental discharge of the fuels to be handled, their vapors or residues.

P-416 REPLACE PIER #4

This project will replace the existing wooden pier with a concrete structure for the berthing of small crafts. A recent study has determined the existing pier to be structurally unsound. The major environmental impact associated with this project involves dredging. Dredging will disturb the river bottom and increase suspended and settleable solids concentrations in the area during construction and at the disposal site during dumping. The construction will occur within a coastal zone and requires a coastal zone consistency determination in accordance with the Coastal Zone Management Act PL-92-583. This project will require an Environmental Assessment due to the major impacts on the aquatic environment. Other environmental impacts will be minor and occur only during construction.

P-417 ADDITION TO CHAPEL FOR RELIGIOUS EDUCATION

This project will provide additional classroom space and meeting room space to alleviate the need to rent classroom space in the community. Environmental impacts are expected to be minor with no long-term adverse effects.

P-419 WEAPONS FACILITIES IMPROVEMENTS (INCREMENT II)

This project will provide alterations and additions to Building 325 with structural, electrical, and mechanical improvements, lightning protection; and demolition of obsolete portions of existing building. Environmental impacts will be minor and exist only during construction.

MP-001 MEDICAL RESEARCH FACILITY

This project will provide a facility and laboratory in support of underwater medical research. The project will produce only minor environmental impacts including a slight degradation of air quality and an increase in ambient noise level during construction.

MP-002 ADMINISTRATIVE BUILDING

This project will provide a facility which centralizes base administrative functions into one facility. The project includes the demolition of Buildings 135, 137, and 138. Environmental impacts resulting from this project include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

MP-003 SQUADRON AND GROUP HEADQUARTERS

This project will provide administrative space to support Squadron and Group Headquarters. Minor environmental impacts including a slight degradation of air quality and an increase in ambient noise levels will occur during construction. No long term adverse effects are expected.

MP-004 AIR CONDITION BUILDINGS 434, 435, 442, 447

This project will provide central air conditioning systems for Buildings 434, 435, 442, and 447. The installation will not cause any environmental impacts. As a routine maintenance and repair project, this action is categorically excluded from the necessity for further environmental analysis in accordance with OPNAVINST 6240.3E.

MP-005 PARKING STRUCTURE AT EXCHANGE

This project will construct a multi-story parking garage to satisfy the parking requirement generated by the Exchange function. Environmental impacts will include a slight degradation of air quality and an increase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

MP-006 PLAYING FIELDS AT FAMILY HOUSING W/LAND ACQUISITION

This project will provide playing fields for use by military personnel and dependents at the family housing area. Excavation and construction activity will disturb the soil and could lead to some erosion at the site. Erosion control will be used during construction. Other impacts will be minor and occur only during the construction period.

MP-007 EXCHANGE ADDITION

This project will construct an addition to the Exchange which will enable the offering of more services to Exchange shoppers. The environmental impacts will be minor and will be present only during construction.

MP-008 TRUCK/EXCHANGE GATE

This project will provide a new gate and access roads to improve truck and shopper circulation around the Exchange. Environmental impacts will include a slight degradation of air quality and an incr ase in ambient noise levels during construction. Other impacts will be minor and no long term adverse environmental effects are expected.

MP-009 COMMUNITY CENTER PARKING

This project will provide new paved private vehicle parking along with associated lighting, access driveways and sidewalks. Excavation and construction activity will disturb the soil and could lead to some erosion. Appropriate erosion control measures will be implemented during construction. Other impacts will be minor and occur only during the construction period.

MP-010 MAGAZINES

This project will construct two new weapons storage magazines. The new magazines are required to store weapons used in the new SSN 21 class submarines. The construction of this project is expected to produce only minor environmental impacts. The explosives safety quantity distance (ESQD) arcs produced by the added explosive storage will extend beyond the Base boundary and will require the acquisition of privately held land.

MP-011 BACHELOR OFFICERS QUARTERS (BOQ)

This project will provide Bachelor Officers Quarters to alleviate the deficit remaining after implementation of all other programmed BOQ projects. Environmental impacts are expected to be minor with no long-term adverse effects.

MP-012 BACHELOR ENLISTED QUARTERS (BEQ)

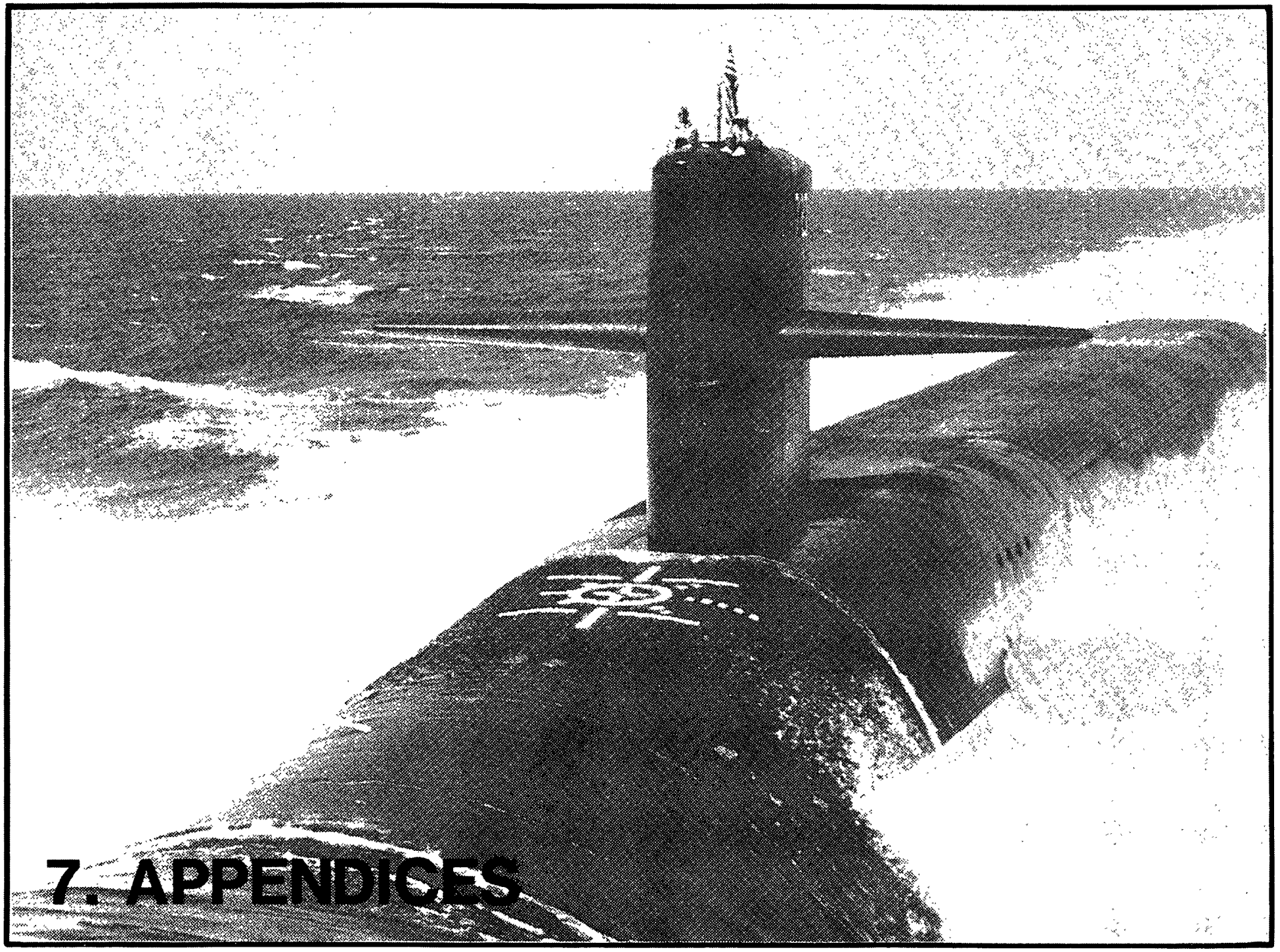
This project will provide Bachelor Enlisted Quarters to alleviate the deficit remaining after implementation of all other programmed BEQ projects. Environmental impacts are expected to be minor with no long-term adverse effects.

IMPACT OF UNPROGRAMMED AND MASTER PLAN PROJECTS

The unprogrammed projects are the valid proj cts listed on the latest Military Construction Requirements Lists (MILCON RL), Report 1360. These are pr jects submitted by the Activity, endorsed by the Master Plan, supported by the major claimants, but have not been assigned a year, nor approved for appropriation. Master Plan projects are new projects recommended as a result of the master planning effort. These projects are viable solutions to land use conflicts, some current deficiencies and new mission requirements. Similarly, these projects will cause short-term negative effects on the environment during construction but none are expected to cause any concern for long-term negative environmental consequences.

MEANS TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS

The majority of projects identified in this Master Plan are not in conflict with the objectives of federal, regional, state or local land use plans, policies, or controls.



7. APPENDICES

APPENDICES

BASE EXTERIOR ARCHITECTURE PLAN

Goal: The goal of the Base Exterior Architectural Plan (BEAP) is to provide guidance for improving the Base smartness and appearance at the Naval Submarine Base, New London. The plan is intended to supplement the Naval Submarine Base New London Master Plan and guide the location, planning, and design for future site and building exterior improvements. It also provides the Base with a prioritized list of projects for upgrading appearance and facilities where the need is the greatest. (Specific designs for street furniture, lighting, signage, and color schemes can be found in the Naval Submarine Base New London BEAP).

Objectives: The objectives for the Naval Submarine Base New London involve the following key areas:

-- improved organization of circulation and parking
-- expansion and improvement of pedestrian precincts
-- introduction of green space
-- use of a compatible and consistant vocabulary of materials
-- preservation of the natural character of the Base
-- introduction of buffers, screens and plant materials

Recommended Projects:

1) Landscaping Grayling Avenue parking lot and Tang Avenue to screen industrial area from primary street access from Main Gate ($97 K).

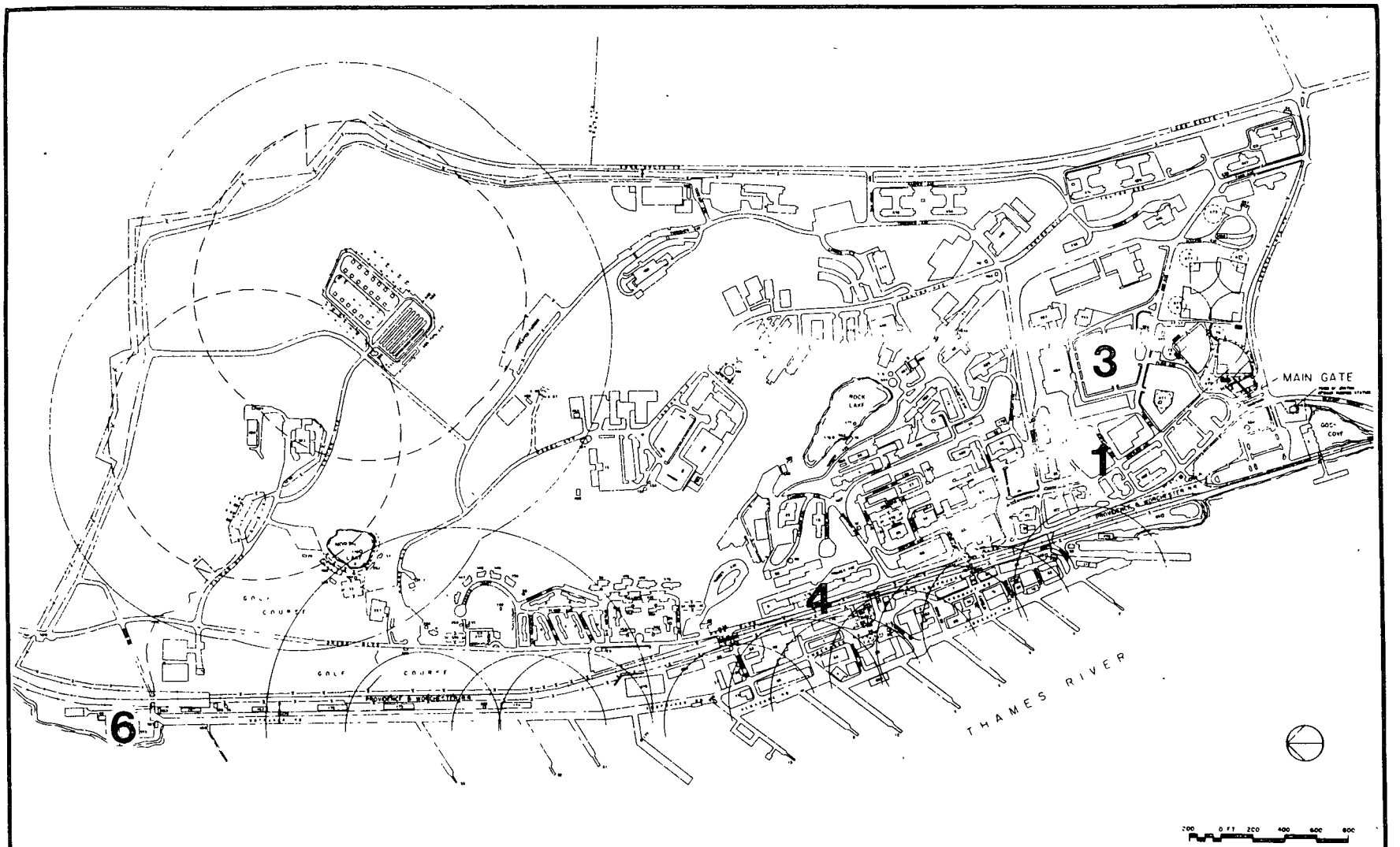
2) Landscaping of Community Center area to screen buildings and to add green areas to the parking lot ($40 K).

3) Landscaping Navy Exchange/Commissary Store parking lot ($44 K).

4) Landscaping Shark Boulevard to screen Base from the commercial development, and to screen existing BOQ's from railroad and industrial area ($64 K).

5) Landscaping Dolphin Gardens and Polaris Park housing areas to improve the entrances and to "tree line" the main streets ($52).

6) Landscaping areas surrounding the Property Disposal area from river traffic ($41).



Projects #2 and #5 are in Housing areas.

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

BASE EXTERIOR ARCHITECTURE PLAN
RECOMMENDED PROJECTS

PLATE 7A-1

MOBILIZATION STUDY

Purpose

This report describes the impacts of mobilization on the Naval Submarine Base, New London. Much of the information contained in this annex was obtained from the Activity Data Sheets (ADS) for the Naval Hospital, Groton and NAVSUBASE, NLON.

Scenario

Under total mobilization, SUBASE NLON will experience a sudden surge of activity as all efforts are concentrated on deployment of submarines and ships in port. Round the clock operations will focus on the resupply and replenishment of subs and ships capable to deploy immediately and completions of maintenance and repair on others.

There are about 54 separate commands/activities on SUBASE NLON. Almost all of the NAVFAC workload, however, will be generated by just four commands: SUBASE command, NAVSUBSCOL, the Naval Submarine Support Facility (NAVSUBSUPPFAC), and the Naval Hospital.

SUBASE NLON

The base is essentially divided into an upper section and lower (waterfront) section. The afloat commands, NAVSUBSUPPFAC, the SUBASE, Supply Department and some public works and school functions are in the congested lower base.

1. Security. Stringent security will be implemented in the lower base area and in the vicinity of ordnance, fuel storage and vital power installations. Heightened security measures will be implemented for the rest of the base. Additional fencing, intrusion detectors, security lighting, T.V. monitors and other equipment will be needed. Until new facilities are in place, SUBASE personnel will supplement security forces.

2. Fire Protection. Additions to the present system (primarily alarms and sprinklers) will be necessary. Extensive fire watches will be manned until n w faciliti s are in place.

3. Supply. Receiving and delivery functions directed to the lower base will be eliminated or greatly reduced. An upper base facility (e.g., Building 33) will be required to act as a shipping/receiving point.

4. Telecommunications. Rapid expansion in the number of lines, particularly secure lines, will be near term requirement. (Note: all base lines are leased.) Present facilities for equipment are adequate, however.

5. Power. Peak demand is not expected to increase because fewer vessels are expected to be in port. In the event of loss of offsite power, the base plant must be able to shed nonessential loads and pick up lower base/pier and security loads.

6. Other Utilities. Water, sewage, compressed air, and steam utilities will experience increased utilization but existing capacities will not be strained. Heavy maintenance and rework of underground utilities will be required where renovation of utilities has not been completed.

7. Transportation. Personal vehicle parking will be eliminated in the lower base area. Parking on the upper base will be restricted. Shuttle bus service will be used to provide on-base transportation. Additional tractors, trailers, and vans will be needed to service offsite storage locations and State Pier. Additional cranes will be needed for weapons handling and service to piers. Maintenance workload will increase due to increased utilization.

8. Housing/Real Estate. Base military population is expected to increase but not dramatically. Afloat commands are at full strength. Base population load will increase 20% or approximately 1,750 tenants. Existing barrack spaces will be doubled up and off base resources used since ther is much vacation rental housing in the area. R al estate functions will focus on acquisition for off-base

parking, storage and base operations.

9. Civilian Workforce. Permanent civilian workforce will initially increase approximately 10% as security procedures permit. Public Works Department personnel will be diverted to assist in vessel maintenance and repair whenever possible.

NAVSUBSCOL

School staff size is not expected to change significantly. Increased student thru-point will be accomplished primarily by lengthening the school week and dropping certain courses. Large increases in student population are not foreseen. On certain training devices which can only accommodate a few students at a time, the flow of students will decrease.

NAVSUBSUPPFAC

NAVSUBSUPPFAC is the largest IMA (Intermediate Maintenance Activity) north of Norfolk. Its activities in support of subs (and perhaps other vessels) are expected to increase dramatically. Round the clock operations will become routine. Certain repair/maintenance operations now done in shipyards will be done by NAVSUBSUPPFAC using floating dry docks. Additional storage and laydown areas will be required for materials and supplies. Additional weapons handling equipment and storage will be required. New equipment as it is developed will be installed in the ships and submarines when they return for replenishment. New equipment will require repair/calibration efforts. "Choke points" will develop in shops already at capacity in peacetime. Renovation of nearby buildings and transfer of non-industrial functions out of the lower base industrial area will be priority facility projects.

NAVHOSP GROTON

The Naval Hospital, Groton is part of a Naval complex that includes the New London Naval Submarine Base. Three distinct phases of mobilization activity will occur at Naval Hospital, Groton. The first phase, mostly administrative in nature, will be characterized by the simultaneous deployment of active duty personnel, their replacement with selected reserve personnel, and the preparation of the facility

for increased treatment workloads. Ther will be a drastic curtailment of services during this transitional period. It will not be alleviat d until approximately 15 days aft r mobilization (M+15) when the first battle casualties should begin arriving from the forward treatment areas. Naval Hospital, Groton is a designated primary receipt and treatment hospital. Patients will be stabilized, treated, returned to active duty or transferred to other facilities for further treatment.

The second phase will continue until M+60, during which time treatment capabilities will be expanded through augmentation by reserve and retired personnel. The simultaneous rapid expansion of support services such as food service, berthing, nursing, supplies and transportation must also occur during this phase. The present 72 beds must be expanded to 133 beds to meet current mobilization planning objectives. Should additional beds be required, local Navy medical officials will coordinate the Navy's subsequent use of first, the Veterans Administration hospital system, and second, the Civilian Military Contingency Hospital System (CMCHS). There are currently 700 beds available to the Navy within the New London/Connecticut area under exisiting agreements.

The third phase will be a long term buildup activity. The proper facilities needed to support a protracted war will require early completion. Space limitations and their correction must receive top priority. Heating, cooling, oxygen, vacuum and refrigation systems must be maintained at peak peformance so as not to reduce the hospital's capacity to treat patients. The need to expand intensive care spaces; the blood bank, with particular emphasis on refrigerated storage; and supply storage spaces will become apparent once the hospital begins its expanded treatment program to 133 beds. This expansion will also require the rapid procurement of special equipment for treatment, including monitoring equipment. Automated data processing capabilities will in all likelihood require expansion for personnel and supply inventory. The telephone system may require expansion. The morgue will require expansion.

BASE POPULATION DATA

Peacetime

Officer	Enlisted	Civilian
1,161	9,734	3,812
1,175	9,456	3,949

Facility Requirements

SUBASE NLON

1. Peacetime MILCON Requirements Also Needed in Mobilization

Project Number	Project Description	Category Code	Qty (UM)	1985 Cost(K$)	M-Day Reqd
P-386	Sub Magnet Silence	159-35	1,500SF	365	M-Day
P-382	Quaywall Repairs	154-20	250LF	3,500	M-Day
P-173	Adv Engr Trng Facility	171-35	50,866SF	6,100	M-Day
P-356	Magazine Security	421-22	18,482SF	4,400	M-Day
P-165	Weps Facil Improve	216-40	54,000SF	6,700	M-Day
P-385	Fleet Cryptolog Fac.	227-00	N/A	990	M-Day
P-394	MAINT Facil Improv	213-00	N/A	3,000	M-Day
P-021	Fleet Support Ware	441-00	N/A	5,700	M-Day
P-166	Main Gate & Land	872-00	4 AC	4,500	
P-392	State Pier Improve	151-00	N/A	7,980	M+90
P-401	Bldg Fire Protection	843-00	N/A	4,000	M+90
P-384	ESQD Land Acquisition	911-00	23 AC	750	M+90
P-329	Fire Fight Trainer	179-00	14,348SF	3,700	M+180
P-402	Port Control Facility	137-00	N/A	2,000	M+270
P-174	Adv Engr Trng Facility	171-35	55,888	7,000	M+360

Project Numb r	Project Description	Category Code	Qty (UM)	1985 Cost(K$)	M-Day Reqd
2.	Post M-Day Requirements				
MOB-001	Off Base Parking	852-00	12 AC	1,000	M-Day
MOB-002	Load Shed System	812-00	N/A	200	
MOB-003	Lower Base Security	872-00	LS	1,000	M+90
MOB-004	State Pier Acquisitions	151-00	800 FB	1,000	M+90
MOB-005	Upper Base Security	872-00	LS	1,000	M+180
MOB-006	Quaywall Repairs	154-00	750 LF	4,300	M+180
MOB-007	Damage Control Training	179-00	LS	3,000	M-180
MOB-008	Roads	851-00	LS	250	M+270
MOB-009	Drydock Shore Facility	159-00	LS	500	M+270
MOB-010	Upper Base Utilities	Var.	LS	7,000	M+360

NAVHOSP GROTON

1.	Peacetime MILCON Requirements also Needed in Mobilization				
P-307	Dispensary w/o Beds	550-10	24,315 SF	8,500	M+15
MOB-011	Classroom/Assembly	510-10	2,500 SF	250	M
2.	Post M-Day Requirements				
MOB-12	Intensive Care Unit	510-10	10 BD	200	M+30
MOB-13	Helicopter Landing Pad	111-20	1,100 SY	25	M+30
MOB-14	Misc. Medical Storage	510-77	12,000 SF	300	M+30
MOB-15	Refrig. Stor. Space	550-10	4,000 SF	400	M+60
MOB-16	Morgue Expansion	550-10	200 SF	50	M+60
MOB-17	Phys. Therapy Expan.	550-10	2,500 SF	325	M+60
MOB-18	Emerg. Vehicle Garage	143-10	3,000 SF	120	M+180

Facility Plan

SUBASE NLON

1. Facilities

Main emphasis will be mechanical and electrical systems needed to support the lower base industrial area. Trouble calls are expected to incr ase dramatically in these areas. Several buildings repair

projects will be necesary to make existing facilities suitable for operating groups whose mission responsibilities will expand upon mobilization.

2. Utilities

Telecommunications. Telecommunications traffic will increase dramatically because of the importance of this base to fleet operations. Rapid expansion in the number of lines, particularly secure lines, will be near term requirements (Note: all base lines are leased). Present facilities for equipment are adequate.

Power. Peak demand is not expected to increase because fewer vessels are expected to be in port. Emphasis will be to insure that power can be distributed to existing and new equipment and that the industrial areas and base security are not jeopardized due to power failures. In the event of loss of offsite power, the base plant must be able to shed nonessential loads and pickup lower base/pier and security loads.

Other Utilities. Water, sewage, compressed air, and steam utilities will experience increased utilization but existing capacities will be strained. Non-availability due to breakdowns or content maintenance will impact critical vessel repair/maintenance activities. Heavy maintenance and rework of underground utilities will be required where renovation of utilities has not been completed.

3. Transportation. Upon mobilization, personnel vehicle parking will be eliminated in the lower base area. Parking on the upper base will be restricted. Shuttle bus service will be used to provide on-base transportation and to minimize vehicles traveling from housing areas to/from the Exchange, etc. Additional tractors, trailers, and vans will be needed to service offsite storage locations and State Pier. Additional cranes will be needed for weapons handling and service to piers. Maintenance workload will increase due to increased utilization.

NAVHOSP GROTON

1. Facilities Maintenanc . Naval Hospital Groton is generally well maintained and is in good condition. The current program must

maintain its effectiveness and must aggressively identify and correct deficiencies to assure that this facility will be able to m et its peacetime and wartime mission.

In the event of mobilization, normal, routine maintenance cannot be allowed to decrease. Each system in the hospital will be taxed to its design limit. There will be no margin available to allow the unplanned shutdown of essential mechanical or electrical systems. It should be noted that the hospital has its own work center to perform normal maintenance and jobs of less than 16 hours in duration. Other major support is received from the Public Works Department, Naval Submarine Base, New London. Innovative maintenance techniques including scheduling maintenance during short periods of non-use will be necessary. A large inventory of spare parts will be required so that essential equipment can be readily repaired or maintained to keep outages at a minimum. If current levels of maintenance remain the same, the equipment should be able to meet the demands of mobilization.

2. Utilities. The utility systems at Naval Hospital are in good condition and should be able to withstand mobilization demands. Electricity is supplied by the Submarine Base by means of two feeds. No additional emergency power capacity should be required. There is a single source of water to the hospital. No problems are expected since the hospital is within 400 feet of the nearest water storage tower. The hospital is currently served by 338 telephone lines.

Mobilization will require a minimum of 400 lines, with 202 of these having outside capability. No increase in natural gas will be required since it only serves the laboratory. Steam is supplied by the Submarine Base via 2 independent lines. No problems in maintaining the supply of steam are expected. The medical gas systems, including vacuum, are available for 124 of the 133 beds required at mobilization. Oxygen for the remaining beds can be supplied by either portable bottles or "T" connections at the outlets. Vacuum outlets will either have to be added, or portable suction machines will be used.

3. Transportation. All vehicles currently in inventory at Naval Hospital Groton will be pressed into extended service, particularly emergency vehicles. Additional emergency equipment such as ambulances

and buses will have to be procured either through leases or direct purchase or a combination of both. The CMCHS program, wherby civilian beds are leased, can be expected to include emergency vehicles. Preventive maintenance on the vehicles will be done by either the Public Works Department at the Submarine Base or additional personnel will have to be hired by the hospital, and maintenance facilities constructed to perform these services at the hospital.

Land Use

No major changes are foreseen in current land use upon mobilization.

Peacetime Planning

Peacetime MILCON Requirements also Needed in Mobilization

SUBASE NLON

1. Provide capability for restricted off base parking.
2. Eliminate training "choke points" and make space available in lower base for shops.
3. Provide additional weapons handling facilities.
4. Provide reliable utility support to shops (industrial) area.

These projects respond to the severe parking problem and expand the base support capability in the vital industrial area. Several of the projects are considered to be M-Day requirements.

NAVHOSP GROTON

Peacetime MILCON Requirements also Needed in Mobilization: Constructed in 1974, the greatest problem facing Naval Hospital Groton is a critical shortage of space in the out-patient clinics, doctor's offices and examining rooms, the laboratory and storage. This is due to the substantial increase in out-patient care and admissions over the past several years, coupled with a significant increase in surgical procedures. Additional clinical, laboratory, emergency room, radiology and pharmacy space is required. Additional facilities will directly benefit peacetime and mobilization requirements by providing a mor efficient utilization of existing and new spaces.

The Military Medicine Department, Building 154, is in substandard condition and will not allow Naval Hospital Groton to perform its mission effectively. Building 86 which houses the Psychiatry Department and Occupational Health/Preventative Medicine Department, an adjacent structure, is in good condition. The MILCON project, P-307, Dispensary w/o beds, will build new medical spaces in Building 86, thus bringing this important facility up to modern standards. Building 154 will then be demolished making room for much needed staff and patient parking. This project is currently programmed for FY-90.

Two remaining deficiencies remain to be corrected. Classroom and meeting spaces are taxed to their limit. Additional multi-purpose classroom/assembly space should be constructed to enhance the Hospital's ability to maintain an effective staff educational program and to provide sorely needed meeting spaces. Adequate supply storage spaces are an immediate requirement and are fully supported by the current BFR.

Recommendations

It is recommended that those projects required to be in place by M-Day, be supported by the major claimants to ensure the availability of needed resources. In a national emergency requiring mobilization, any delays could be disastrous.

ACRONYMS

LIST OF ACRONYMS

A-95	An Intergovernmental Process for the Exchange of Information
ACT-UP	Air Conditioning Tune Up
AMHAZ	Ammunition and Hazardous Materials
AMTRACK	National American Passenger Service
AOB	Average on Board
APL	Allowance Parts List
AQCR	Air Quality Control Region
ARD	Auxiliary Repair Dock
ARDM	Medium Auxiliary Repair Dry Dock
AS	Submarine Tender
ASR	Submarine Rescue Ship
BEQ	Bachelor Enlisted Quarters
BESEP	Base Electronic Systems Engineering Plan
BESS	Basic Enlisted Submarine School
BFR	Basic Facilities Requirements
BOQ	Bachelor Officer Quarters
BTU	British Thermal Unit, Measure of Heat
CFH	Cubic Feet per Hour
CFM	Cubic Feet per Minute
CIA	Controlled Industrial Area
CINCLANTFLT	Commander in Chief, U.S. Atlantic Fleet
CIP	Capital Improvements Plan
CIS	Contractor Industrial Services
CMC	Commandant, Marine Corps
CMS	Classified Material Systems
CNET	Chief of Naval Education and Training
CNTECHTRA	Chief of Naval Technical Training
CNTT (CNTECHTRA)	Chief of Naval Technical Training
CNO	Chief of Naval Operations

LIST OF ACRONYMS (CONT'D)

COM	Commissioned Officers Mess
COMNAVBASE	Commander, Naval Base
COMSUBGRU TWO	Commander, Submarine Group Two
COMSUBLANT	Commander Submarine Force, U.S. Atlantic Fleet
COMSUBRON TEN	Commander Submarine Squadron Ten
COMSUBRON TWELVE	Commander Submarine Squadron Twelve
COMSUBRON TWO	Commader Submarine Squadron Two
COMTAC	Communications Tactical
CONRAIL	Consolidated Rail Corporation
CPO	Chief Petty Officer
CVR	Central Vermont Railway
DD	Destroyer
DEFCON	Defense Readiness Condition
DEP	Department of Environmental Protection
DIA	Diameter
DOD	Department of Defense
DPDO	Defense Property Disposal Office
ECIP	Energy Conservation Investment Program
EEP	Energy Engineering Program
EFD	Engineering Field Division
EE	Engineering Evaluation
EMCS	Energy Monitoring and Control System
EMR	Electromagnetic Radiation
ESO	Education Services Office
ESQD	Explosive Safety Quantity Distance
ETAP	Energy Technology Application Program
FACSO	Facility Systems Office
FBM	Fleet Ballistic Missile
FF	Frigate
fps	Feet per Second
FTS	Federal Telecommunication System
FY	Fiscal Year
GSF	Gross Square Feet

LIST OF ACRONYMS (CONT'D)

HP	Horsepower
HVAC	Heating, Ventilation and Air Conditioning
IMET	International Military Education Training
JAG	Judge Advocate General
LANTFLT	Atlantic Fleet
LCM	Landing Craft, Mechanized
LF	Lineal Feet
MAHC	Monthly Allowable Housing Cost
MARBRKS	Marine Barracks
MBTU	Million British Thermal Units
MCON	Military Construction (Navy)
MEDCOM	Medical Command
MEDRSCHDEVCOM	Medical Research and Development Command
MEQ	Married Enlisted Quarters
MILCON	Military Construction
MILCONRL	Milcon Requirements List
MK 48	Mark 48 (Torpedo)
MM Training	Machinst Mate Training
MOQ	Married Officers Quarters
MVA	Millivolt-Ampere
NAF	Non-Appropriated Funds
NAVELEXSYSENGCOM	Naval Electronics Systems Engineering Command
NAVFAC INST	Naval Facilities Engineering Command Instruction
NAVMATINS	Chief of Naval Material Instruction
NAVSEA	Naval Sea Systems Command
NAVSECGRUCOM	Naval Security Group Command
NAVSUBSUPPFAC	Naval Submarine Support Facility
NETC	Naval Education and Training Center

LIST OF ACRONYMS (CONT'D)

NEW	Net Explosive Weight
NFS	Naval Facilities System
NLON	New London
NPT	Newport
NSB	Naval Submarine Base
NSMC	Naval Submarine Medical Center
NSSF	Naval Submarine Support Facility
NUMI	Naval Underwater Medical Institute
NUSC	Naval Underwater Systems Center
O&MN	Operation & Maintenance, Navy
OOD	Officer of the Deck
OICC	Officer in Charge of Construction
OPNAVINST	Operational Navy Instruction
OSHA	Occupational Safety & Health Administration
PAO	Public Affairs Office
PAST	Public Archeological Survey Team
PEA	Preliminary Environmental Assessment
PN	Person
POL	Petroleum Oil and Lubricant
PSAD	Personnel Support Activity Detachment
PTEP	Personnel Training Evaluation Program
PWD	Public Works Department
PWLA	Public Works Lead Activity
QM	Quartermaster
RAADC	Regional Accounting and Disbursing Center
RF Shielding	Radio Frequency Shielding
ROICC	Resident Office in Charge of Construction

LIST OF ACRONYMS (CONT'D)

SCRPA	Southeastern Connecticut Regional Planning Agency
SEAT	Southeast Area Transit
SECGRUDET	Security Group Detachment
SEOC	Submarine Extended Operation Cycle
SETT	Submarine Electrical Technical Training
SFLM	Submarine Force Library & Museum
SFPS	Shore Facilities Planning System
SHPO	State Historic Preservation Officer
SNETC	Southern New England Telephone Company
SOAP	Supply Operations Assistance Programs
SRA	Selected Restricted Availabilities
SSN	Submarine Nuclear
SSBN	Submarine Nuclear, Fleet Ballistic Missile
SUBASE	Naval Submarine Base, New London, Groton, Conn
SUBASE INST	SUBASE New London Instruction
SUBMEDCEN	Submarine Medical Center
SUBMEDRSCHLAB	Submarine Medical Research Laboratory
SUBRONTWO	Submarine Squadron Two
SUBSCOL	Submarine School
SUBSUPPFAC	Submarine Support Facility
TRB	Torpedo Retriever
TWR	Torpedo Retriever, Deep Water
UEPH	Unaccompanied Enlisted Personnel Housing
UIP	Utilities Investment Plan
UOPH	Unaccompanied Officer Personnel Housing
WATS	Wide Area Telephone Service
YC	Type of Craft

LIST OF ACRONYMS (CONT'D)

YD	Floating Crane
YFNB	Covered Lighter
YRR	Radiological Repair Barge
YTB	Large Harbor Tug
YTL	Small Harbor Tug
YTM	Medium Harbor Tug

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LIST OF STRUCTURES

1. This is a complete listing of all buildings and structures on the Submarine Base that have been assigned a structure number and are included in the Real Property Inventory. This listing provides the following data:

a. Column 1 - BUILDING NUMBER. Structure or Building Number.

b. Column 2 - LOCATION. For location of a building or structure use the map supplied in the rear pocket. For location of a building or structure on the Nautilus Park, Polaris Park, Dolphin Gardens/Conning Towers housing areas, use General Development Maps, NAVFAC Drawing Nos. 1141179 and 1142281. Grid for the Trident Park housing (U.C.), Admiral Fife Recreational Facilities and Westover Family housing will be prepared and distributed when available.

c. Column 3 - CURRENT USE. Use and/or uses of building or structure.

d. Column 4 - QUANTITY. Total amount of area or volume.

e. Column 5 - UNIT OF MEASURE. Square feet (SF), Gallons (GA), Barrels (BL), Each (EA), Units (UTS), Feet of berthing (FB).

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
1	G-32	ADMINISTRATION/PORT SERVICES	8,503	SF
2	G-31	ADMINISTRATION	8,000	SF
3	F-28	ADMINISTRATION	17,040	SF
16	F-31	ADMINISTRATION/NAVY EXCHANGE	6,400	SF
17	H-32	GEN'L WHSE/MTIS BLDG/ADMIN	57,344	SF
18	G-31	GARAGES/PUBLIC WORKS/STORAGE	7,443	SF
20	G-33	ADMIN/WEIGHT TESTING/RIGGERS/SAIL LOFT/DRIVERS	21,168	SF
29	F-30	HEAT & POWER PLANT/TRANSPORTATION	49,685	SF
31	G-34	HAZARDOUS SUPPLY STORAGE	11,190	SF
33	R-36	GENERAL WAREHOUSE	30,000	SF
35	H-34	LABORATORY/SHREDDER	1,344	SF
37	G-30	FOUNDRY	5,310	SF
38	G-33	WOODWORKING SHOP	5,436	SF
40	E-27	MECHANICAL/NUCLEAR SHOPS	40,454	SF
54A	F-30	#6 FUEL OIL STORAGE - RESIDUAL	239,904	GA
54B	F-30	#6 FUEL OIL STORAGE - RESIDUAL	239,904	GA
54C	F-30	DIESEL FUEL OIL	2,733	BL

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
54D	F-30	UG OIL STORAGE-CONTAMINATED	2,733	BL
54E	G-29	UG OIL STORAGE-DIESEL	2,733	BL
54F	G-29	UG OIL STORAGE-DIESEL	2,733	BL
54G	G-29	UG OIL STORAGE-DIESEL	2,733	BL
54H	G-29	UG OIL STORAGE-CONTAMINATED	664	BL
54I	F-30	UG OIL STORAGE-LUBRICANT	34,776	GA
54J	F-30	UG OIL STORAGE-CONTAMINATED	714	BL
54K	G-30	UG OIL STORAGE-LUBRICANT	28,010	GA
54L	G-30	UG OIL STORAGE-LUBRICANT	28,010	GA
63	G-32	FOOTBRIDGE	52	SY
70	E-29	ESCAPE TRNG TANK/APPLIED INSTRUC.	9,952	SF
75	G-33	PUMP HOUSE (SEWAGE)	950	GM
76	H-33	MOVIE EXCHANGE/POOL/COMPTROLLER	5,632	SF
77	K-37	TELEPHONE EXCHANGE	2,011	SF
78	G-34	SERVMART	9,009	SF
79	H-35	BOAT SHOP/STORAGE	3,441	SF
80	H-35	ADMINISTRATION/OFFICERS MESS	9,641	SF
83	K-33	ADMIN/TRNG/STORAGE/MUSEUM/LIBRARY/ GYMNASIUM/PRINT/WHSE	120,924	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
84	J-32	ADMIN/INSTRUCTION/AUDITORIUM	39,291	SF
85	H-36	ELEC. DISTR. BLDG/OPERATIONS	8,989	SF
86	I-31	MED. LABORATORIES/CLINIC/INSTRUC.	22,693	SF
87	H-34	ADMINISTRATION/STORAGE/DATA PROC	32,152	SF
88	F-27	INSTRUCTION/TRAINING/STORAGE	78,304	SF
89	E-28	ADMIN/SHOPS	34,800	SF
91	E-29	ADMINISTRATION/INSTR/STORAGE	7,591	SF
96	J-35	REHAB CENTER	12,232	SF
98	F-24	ADMINISTRATION	2,880	SF
99	H-27	WATER STORAGE TANK - POTABLE	360,000	GA
100	J-42	SOUND SURVEY FACILITY	1	EA
103	F-25	INSTRUCTION	2,105	SF
105	H-34	WAREHOUSE/ADMIN	37,344	SF
106	E-25	STORAGE SHOPS	27,622	SF
107	G-29	SHOP/FIRE STATION	22,546	SF
108	L-34	NAVY EXCHANGE	11,566	SF
110	H-37	SHOP/STORAGE	4,744	SF
119	K-40	COMMUNICATIONS/POLICE	1,965	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
120	K-36	SWIMMING POOL	14,232	SF
124	L-21	TROUBLE DESK	847	SF
125	J-27	CPO MESS	15,590	SF
127	K-31	INSTRUCTION/STORAGE	15,021	SF
128	H-19	WATER DISTRIBUTION BUILDING	176	SF
130	K-37	PUBLIC WORKS/MEDICAL STRG	3,432	SF
135	L-40	ADMINISTRATION	15,652	SF
137	M-40	ADMIN/NAVY RELIEF/RED CROSS	19,565	SF
138	M-41	ADMIN/SECURITY COMMUNICATIONS/POLICE	27,546	SF
139	M-38	STORAGE/OUTFITTING AND SOAP BLDG.	42,441	SF
141	K-29	MEDICAL LABORATORY	27,938	SF
144	L-32	HOUSING	17,336	SF
145	M-32	HOUSING	17,331	SF
147	N-32	HOUSING	17,336	SF
148	K-30	ADMIN/MEDICAL LABS/STORAGE	19,380	SF
149	K-31	INSTRUCTION	7,448	SF
150	K-32	INSTRUCTION	27,120	SF
152	L-34	INSTRUCTION	15,619	SF
153	F-26	INSTRUCTION	5,778	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
154	I-30	DISPENSARY	10,482	SF
156	L-29	LABORATORIES/ADMINISTRATION	18,768	SF
157	E-25	OPTICAL SHOP	11,366	SF
159	M-33	HOUSING/TRAINING	23,933	SF
160	M-34	BRIG/STORAGE	11,312	SF
161	J-28	HOUSING	22,638	SF
163	J-39	SHOP	600	SF
164	I-33	ADMIN/POST OFFICE/LIBRARY/CAFETERIA/ THEATER/CREDIT UNION	80,801	SF
165	J-31	TRAINING	3,104	SF
166	H-26	DISCIPLINARY/RESTRICTED BARRACKS	6,468	SF
168	J-35	CHAPEL	4,813	SF
169	I-31	GYMNASIUM	37,808	SF
172	M-34	TRAINING/ADMINISTRATION	8,882	SF
173	D-26	ELECTRICAL DISTRIBUTION	1,131	SF
174	D-18	STORAGE/ELECTRICAL SUB STATION	6,660	SF
175	D-15	STORAGE/ADMINISTRATION	6,680	SF
176	D-12	STORAGE/ELECTRICAL SUB STATION	6,300	SF
177	C-22	HAZ/FLAM STORAGE	352	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
178	E-8	GOLF PRO SHOP	1,812	SF
179	E-31	MISC UTILITY PLANT BLDG	325	SF
181	D-8	TORPEDO SHOP	3,292	SF
223	G-14	OFFICERS CLUB	23,568	SF
234	F-17	GUEST HOUSE	330	SF
235	F-17	GARAGE	450	SF
278	U-43	SENTRY HOUSE	45	SF
279	L-32	FIRE PROT PUMPING STA	1,000	GM
281	I-12	GOLF CLUBHOUSE	600	SF
282	H-14	RECREATION PAVILION	945	SF
285	F-15	BUS STOP SHELTER	28	SF
286	F-16	GARAGE	483	SF
289	G-16	STORAGE	450	SF
292	G-18	GUEST HOUSE	372	SF
295	D-17	HAZ/FLAM STOREHOUSE	289	SF
296	D-25	VALVE HOUSE (STEAM)	104	SF
307	J-29	ELEC DISTR BLDG.	841	SF
308	M-37	MAINT/MAINT STORAGE	1,782	SF
311	H-15	GARAGE	276	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
312	M-43	BUS STOP SHELTER	130	SF
316	I-36	MAINT/HAZ/FLAM STORAGE	450	SF
318	F-30	VALVE HOUSE (STEAM)	192	SF
324	I-33	BUS STOP SHELTER	70	SF
325	M-11	TORPEDO SHOP/ARMORY	18,928	SF
326	O-30	WATER STORAGE TANK - POTABLE	200,000	GA
327	H-33	PEDESTRIAN TUNNEL	1,488	SF
328	G-31	ELEC DISTR BLDG.	120	SF
331	F-25	BUS STOP SHELTER	64	SF
332	I-35	SHLTR MISC PIPELINE FAC	182	SF
334	M-42	FLAG POLE	1	EA
336	H-12	HANDBALL COURT	2	EA
337	H-13	TENNIS COURT	2	EA
338	F-16	TENNIS COURT	1	EA
340	L-27	RECREATION PAVILION	1,664	SF
341	J-30	DENTAL CLINIC	9,880	SF
344	G-30	PUMP HOUSE (FUEL OIL)	160	SF
345	G-29	PUMP HOUSE (DIESEL OIL)	160	SF
347	H-17	FAMILY HOUSING	1,473	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
348	H-17	FAMILY HOUSING	1,473	SF
349	H-18	FAMILY HOUSING	1,473	SF
350	H-18	FAMILY HOUSING	1,473	SF
351	K-11	SENTRY HOUSE (WEAPONS)	49	SF
352	F-3	SENTRY HOUSE (NORTH GATE)	49	SF
353	D-7	WAREHOUSE	576	SF
355	C-6	STORAGE-OUTLEASED TO DEFENSE PROPERTY DISPOSAL OFFICE	8,280	SF
357	I-36	TO BE DEMOLISHED	960	SF
361	G-23	FAMILY HOUSING	5,778	SF
362	F-23	FAMILY HOUSING	5,778	SF
363	F-22	FAMILY HOUSING	5,778	SF
364	G-22	FAMILY HOUSING	5,778	SF
365	G-22	FAMILY HOUSING	5,778	SF
366	G-23	FAMILY HOUSING	5,778	SF
367	H-21	FAMILY HOUSING	5,778	SF
368	H-22	FAMILY HOUSING	5,778	SF
369	H-22	FAMILY HOUSING	5,778	SF
370	H-23	FAMILY HOUSING	5,778	SF
371	G-16	FAMILY HOUSING	1,895	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
374	J-26	PUBLIC TOILET	187	SF
375	H-13	NORTH LAKE SWIMMING AREA DOCK	1	EA
379	H-28	BACHELOR OFFICERS' QUARTERS	27,708	SF
382	M-29	ROCK LAKE SWIMMING AREA DOCK	1	EA
384	H-13	CHLORINATOR PUMP HOUSE	1	EA
385	D-6	WEIGHING FACILITY	88	SF
386	G-24	TENNIS COURT	1	SF
387	D-10	ORDNANCE OPERATIONS BLDG	4,000	SF
388	T-23	TENNIS COURTS	2	EA
389	T-23	TENNIS COURTS	2	EA
390	T-24	TENNIS COURTS	2	EA
391	T-24	PUBLIC TOILETS	418	SF
392	T-24	HANDBALL COURTS	996	SF
393	O-14	ORDNANCE OPERATIONS	597	SF
394	C-9	BOATHOUSE	580	SF
395	L-27	ROCK LAKE SNACK STAND	450	SF
397	D-7	ADMINISTRATION	960	SF
398	D-9	MARINA (CLUBHOUSE)	400	SF
400	N-35	MAINTENANCE/STORAGE/HAZ/FLAM	24,328	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
405	M-37	MAINTENANCE/ADMINISTRATION	14,135	SF
406	N-38	MAINTENANCE/STORAGE	13,205	SF
408	Q-38	DRY PROVISION WAREHOUSE	8,000	SF
409	R-38	DRY PROVISION WAREHOUSE	8,000	SF
410	S-38	DRY PROVISION WAREHOUSE	8,000	SF
411	L-35	STORAGE/ADMINISTRATION/SHOPS	12,644	SF
426	O-33	INSTRUCTION/AUDITORIUM	41,161	SF
427	O-32	INSTRUCTION/STORAGE	44,431	SF
428	P-39	SERVICE STATION	2,930	SF
429	U-38	BACHELOR ENLISTED HOUSING	62,239	SF
430	U-37	BACHELOR ENLISTED HOUSING	62,238	SF
433	P-37	COLD STORAGE WAREHOUSE	11,307	SF
434	T-32	BACHELOR ENLISTED HOUSING	66,363	SF
435	T-30	BACHELOR ENLISTED HOUSING	66,363	SF
436	S-36	BOWLING ALLEY	8,886	SF
437	Q-33	INSTRUCTION/AUDITORIUM	51,790	SF
438	P-33	FOOTBRIDGE	57	SF
439	R-30	ADMINISTRATION/INSTRUCTION	48,136	SF
440	S-39	ENLISTED MESS	19,722	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
441	W-43	SUBASE SIGN/FLAG POLE	1	EA
442	V-43	BACHELOR ENLISTED HOUSING	35,068	SF
443	N-42	SENTRY BOOTH (MAIN GATE)	70	SF
444	N-31	WATER STORAGE TANK - POTABLE	500,000	GA
445	P-39	RECREATION PAVILION	1,008	SF
446	S-34	ENLISTED DINING FACILITY	27,440	SF
447	U-42	BACHELOR ENLISTED HOUSING	53,625	SF
448	N-32	TRAINING/SHIP & MARINE EQUIPMENT	54,628	SF
449	L-24	HOSPITAL/EXCHANGE RETAIL STORE	127,153	SF
450	M-10	TORPEDO SHOP	11,120	SF
451	M-37	ADMINISTRATION/SHOP	19,200	SF
452	K-23	POTABLE WATER STORAGE TANK-ELEV	200,000	GA
453	K-23	POTABLE WATER PUMP HOUSE	672	SF
454	I-14	BATHHOUSE (NORTH LAKE)	957	SF
455	N-31	BACHELOR ENLISTED HOUSING	71,874	SF
456	E-24	MAINTENANCE SHOPS	35,183	SF
457	Q-36	VEHICLE WASH PLATFORM	144	SF
458	L-29	ANIMAL SUITE	480	SF
459	T-24	SENTRY BOOTH (EAST GATE, RT. 12)	65	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
460	R-23	HOBBY SHOP/TEMPORARY NURSERY	22,692	SF
461	T-42	SPEC. SERVICES ISSUE/PKG. STORE	11,415	SF
462	K-39	MARINE BARRACKS	19,609	SF
463	M-20	ELECTRICAL SUBSTATION	N/A	N/A
464	R-34	ELECTRICAL SUBSTATION	N/A	N/A
465	O-31	INSTRUCTION/TRAINING	5,760	SF
466	P-32	VALVE HOUSE	210	SF
467	M-29	BATHHOUSE (ROCK LAKE)	1,579	SF
468	H-12	PAVILION (NORTH LAKE)	5,576	SF
469	I-36	SENTRY BOOTH (GATE 2)	28	SF
470	H-33	SENTRY BOOTH (PEDESTRIAN TUNNEL)	28	SF
471	G-30	SENTRY BOOTH (GATE 6)	28	SF
472	F-25	SENTRY BOOTH (GATE 8)	28	SF
473	D-11	SENTRY BOOTH (GATE 10)	28	SF
474	P-29	INSTRUCTION/AUDITORIUM	38,023	SF
475	J-30	TENNIS COURT	1	EA
476	I-37	HOSE STORAGE FACILITY	4,000	SF
477	N-10	DRUM STORAGE	300	SF
478	D-22	SHOPS/ADMINISTRATION	33,100	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
479	C-6	GENERAL WAREHOUSE - OUTLEASED	1,140	SF
480	O-25	POTABLE WATER TANK - ELEVATED	750,000	GA
481	R-34	PUMPING STATION	540	SF
482	S-41	TANK TRUCK LOADING STATION	1	OL
483	O-25	WATER TANK SERVICE BUILDING	252	SF
484	O-36	NAVY EXCHANGE/COMMISSARY	120,378	SF
485	J-36	BOWLING ALLEY/SNACK STAND	22,800	SF
486	N-42	PASS BOOTH (MAIN GATE)	30	SF
487	O-25	TRANSCEIVER BUILDING	65	SF
488	O-26	BACHELOR ENLISTED HOUSING	106,015	SF
489	M-41	MAIN GATE SIGN	1	EA
490	---	SALT WATER INTAKE/PUMPING STATION	N/A	N/A
491	D-5	GENERAL STORAGE OUTLEASED	970	SF
492	M-31	BACHELOR ENLISTED HOUSING	152,477	SF
1001	LL-54	CHAPEL (NAUTILUS PARK)	8,788	SF
1002	II-54	SERVICE STATION (NAUTILUS PARK)	216	SF
1003	JJ-54	CREDIT UNION (NAUTILUS PARK)	13,800	SF
1004	NN-55	COMMUNITY BUILDING (NAUTILUS PARK)	4,672	SF
1005	II54	CONVENIENCE STORE	6,655	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
A1	P-14	FUSE/DETONATOR MAGAZINE	54	SF
A2 thru A50	P-15	HIGH EXPLOSIVE MAGAZINE	54 SF	EA
A51	N-22	MEDICAL STORAGE	1,500	SF
A52	O-23	MEDICAL STORAGE	1,000	SF
A65 thru A77	P-15	HIGH EXPLOSIVE MAGAZINE	54 SF	EA
A85	O-21	HAZARDOUS MATERIAL STORAGE	1,500	SF
A86	N-19	GROUNDS EQUIPMENT STORAGE	672	SF
A87	N-19	PUBLIC WORKS STORAGE	672	SF
A88 thru A91	J-10	PYROTECHNIC/AMMUNITION STORAGE	650 SF	EA
A92 thru A111	P-13	HIGH EXPLOSIVE MAGAZINE	624 SF	EA
CH774	---	BASKETBALL COURT	1	EA
CH876	---	BASKETBALL COURT	1	EA
CH876	---	BASKETBALL COURT	5,160	SF
CH901	GG-68	COMMUNITY CENTER	960	SF
CH903	YY-52	LAUNDROMAT	960	SF
CH1 thru CH875	FF-66	SEWAGE PUMPING STATION SHEDS	120	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
CT137	X-76	SEWAGE PUMPING STATION	256	SF
CT164	Z-74	SEWAGE PUMPING STATION	5,235	SF
CT186	Y-69	CHILD CARE CENTER	1,152	SF
CT192	Y-68	TO BE DEMOLISHED	1,152	SF
CT193	Y-68	TO BE DEMOLISHED	1,152	SF
CT194	Y-68	TO BE DEMOLISHED	480	SF
CT199	Z-67	MAINTENANCE/STORAGE	4,710	SF
CT200	Z-67	THRIFT SHOP	1,152	SF
CT300 thru CT379	GG-76	FAMILY HOUSING	156	UTS
CT380	Y-71	NAVY LODGE	28,600	SF
DG1 thru DG46	V-68	FAMILY HOUSING AND GARAGES	400	UTS
DG47	Y-65	PUMP HOUSE	475	SF
GT1	G-29	GAS TANK/FILLING STATION	1	OL
OT1	N-40	FUEL STORAGE TANK - RESIDUAL	747,828	GA
OT2	O-40	#6 FUEL OIL STORAGE TANK	747,828	GA
OT3	Q-40	#6 FUEL OIL STORAGE TANK	747,605	GA

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
OT4	R-40	DIESEL FUEL STORAGE TANK	17,839	BL
OT5	T-41	CONTAMINATED FUEL STORAGE	17,813	BL
OT7	R-42	DIESEL FUEL STORAGE TANK	17,795	BL
OT8	P-41	DIESEL FUEL STORAGE TANK	17,840	BL
OT9	N-41	DIESEL FUEL STORAGE TANK	17,825	BL
Pier 1	I-40	FUELING PIER	800	FB
Pier 2	G-38	BERTHING PIER	720	FB
Pier 4	F-36	BERTHING SMALL & SERVICE CRAFT	700	FB
Pier 6	F-35	BERTHING PIER	720	FB
Pier 8	E-33	BERTHING PIER	700	FB
Pier10	E-32	BERTHING PIER	904	FB
Pier12	D-30	BERTHING PIER	1,003	FB
Pier13	D-29	BERTHING PIER	904	FB
Pier15	C-27	BERTHING AND REPAIR PIER	1,123	FB
Pier17	B-23	REPAIR PIER	850	FB
Pier31	L-27	BERTHING PIER	720	FB
Pier32	C-19	BERTHING PIER	840	FB
Pi r33	C-15	BERTHING PIER	900	FB

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
PP-1 thru PP-57	---	FAMILY HOUSING	300	UTS
PP-58 thru PP-139	---	CARPORTS	61,870	SF
PP-140	---	BASKETBALL COURT	1	EA
PR1	I-8	SMALL ARMS	1	EA
QTRS C	F-18	FLAG QUARTERS	5,914	SF
QTRS D	G-27	BACHELOR OFFICERS HOUSING	16,984	SF
QTRS A	F-16	COMMANDING OFFICERS QUARTERS	3,297	SF
QTRS B	H-15	SECURITY OFFICERS QUARTERS	3,160	SF
QTRS L	G-26	BACHELOR OFFICERS & RESERVE ENLISTED HOUSING	22,960	SF
QTRS M	H-28	BACHELOR OFFICERS HOUSING	50,832	SF
QTRS O	F-18	FAMILY HOUSING	9,126	SF
QTRS P	G-19	FAMILY HOUSING	9,126	SF
QTRS Q	G-20	FAMILY HOUSING	9,126	SF
QTRS R	F-19	FAMILY HOUSING	9,126	SF
QTRS S	F-20	FAMILY HOUSING	9,126	SF
QTRS T	F-20	FAMILY HOUSING	9,126	SF
QTRS U	F-21	FAMILY HOUSING	9,126	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
RT 3	K-40	ANTENNA TOWER	1	EA
RT 5	L-39	ANTENNA TOWER	1	EA
SBD1	O-42	SOFTBALL FIELD (LIGHTED)	1	EA
SBD2	O-41	SOFTBALL FIELD (LIGHTED)	1	EA
SBD3	Q-42	SOFTBALL FIELD (LIGHTED)	1	EA
SBD4	Q-41	SOFTBALL FIELD (LIGHTED)	1	EA
SBD5	R-42	SOFTBALL FIELD (LIGHTED)	1	EA
SBD6	R-41	SOFTBALL FIELD (LIGHTED)	1	EA
SBD7	P-23	SOFTBALL FIELD (LIGHTED)	1	EA
SP4	----	GARBAGE HOUSE (STATE PIER) (TO BE DEMOLISHED)	284	SF
SP5	----	SENTRY HOUSE (STATE PIER)	30	SF
SP6	----	MOORING PLATFORM (STATE PIER)	1	EA
SP7	----	MOORING PLATFORM (STATE PIER)	1	EA
SP8	----	MOORING PLATFORM (STATE PIER)	1	EA
SP9	----	MOORING PLATFORM (STATE PIER)	1	EA
SP10	----	RECREATION BUILDING STATE PIER	5,592	SF
SP11	----	SQUADRON 10 HEADQUARTERS	10,400	SF
N/A	----	GENERAL WAREHOUSE (LEASED STATE PIER)	8,019	SF

FAC NO.	LOC.	CURRENT USE	QUANTITY	UM
N/A	----	TERMINAL BLDG. (LEASED STATE PIER)	3,950	SF
WRPGR3	K-40	RADIO ANTENNA SYSTEM-BLDG 119	6	EA
N/A	----	DEPLOYED PARKING LOT	N/A	N/A

CNO WAIVER NO. SUBASE NLON 1G-79

CNO Waiver No. SUBASE NLON 1G-79 reissued by CNO ltr Ser 411F/6U396294 of 10 December 1986 authorizes handling of ammunition and explosives as deviations from the quantity distance requirements of NAVSEA Op-5, Volume 1 (4th Rev.)

Deviations currently authorized under CNO Waiver No. SUBASE New London 1G-79 are as follows:

Handling Location (Notes 6 and 11)	Authorized NEW by Explosives Class(Note 1)			
State Pier	1.1	1.2	1.3	1.4
USS FULTON (or assigned tender) and SSN/SSBN in State Pier Area 2, 8, and 9	4,000 (4)	4,000	4,000	No Limit NL
SUBASE NLON (Note 7)				
Pier 2	1500(3)	1500	1500	NL
Pier 4 (10)		P	1500	NL
Pier 6	1500(3)	1500	1500	NL
Pier 8	1500(3)	1500	1500	NL
Pier 10	1500(3)	1500	1500	NL
Pier 12	1500(3)	1500	1500	NL
Pier 13	1500(3)	1500	1500	NL
Pier 15	1500(3)	1500	1500	NL
Pier 17	1500(3)	1500	1500	NL
Pier 31	1500(3)	1500	1500	NL
Pier 32	1500(3)	1500	1500	NL
Pier 33	1500(3)	1500	1500	NL
Quaywall (5)	4000(4)	4000	4000	NL

P = Prohibited
NL = No Limit

NOTES:

(1) Net Explosive Weight (NEW) is to be completed in accordance with paragraph 5-3.2.3A and Table 5-3C of NAVSEA OP5 Vol.1, 4th Rev and paragraph 2e of enclosure (1) of OPNAVINST 8023.21C. Explosive weights for munitions shall be obtained from NAVSEA OP 5, Vol. 2. For Class 1.1, the authorization is for handling only submarine-launched tactical weapons and components thereof, except as provided for in Note 7 below. For Class 1.2, only Category (04) ammunition may be handled within the provisions of this waiver.

(2) The forward starboard cargo hatch of the tender shall be utilized to the maximum extent practicable for all munitions transfers.

(3) This explosive limit covers transfers of torpedoes or warheads between FULTON or a submarine and SUBASE by boat only. Direct transfer of weapons between FULTON and an SSN/SSBN in the State Pier area is also authorized. This is a Defense Readiness Condition (DEFCON) V limit. When DEFCON IV or a higher readiness condition is imposed, the handling limit may be increased as required to meet readiness requirements.

(4) The handling limit stated for the quaywall is for DEFCON V. Under DEFCON IV or a higher readiness condition, the handling limit may be increased as required to meet readiness requirements.

(5) The only authorized handling point for transfer of weapons over the quaywall is at the northern end of the reinforced bulkhead, 380 feet north of Pier 32.

(6) If weapons are handled at more than one pier simultaneously, a minimum distance of 210 feet shall be maintained at all times; between each group of weapons, except that a separation distance of 285 feet is required from the quaywall handling point when it is in use.

(7) The established explosive limits are intended for support to submarines only. However, at the discretion of COMSUBGRU TWO, ammunition may be handled for other ships, provided it is similar in nature and hazard arc to the types and quantities permitted to be handled for submarines. Under no circumstances may gun ammunition of a Category/Class more hazardous (04) 1.2 be handled at New London.

(8) Under DEFCON V, there shall be no more than two warshot torpedoes in each torpedo maintenance space at any given time on board the assigned submarine tender. Further, ready-for-issue warshot torpedoes shall not be stowed in maintenance spaces or in an adjacent space on the same deck.

(9) In DEFCONs V and IV, the assigned submarine tender may maintain on board a maximum of 60,000 pounds NEW (or equivalent) of Class 1.1 conventional munitions, unless departing for sea within 24 hours, during which period additional NEW may be on-loaded up to the authorized ship allowance. In DEFCONs III or II, CINCLANTFLT shall determine the NEW required to be on board the tender, and shall inform CNO (OP-41) in regard to any change in the on-board NEW.

(10) The handling of Classes 1.3 and 1.4 ammunition on Piers 4, 8, and 9 will be controlled under the same explosives safety regulations with respect to fire hazards applicable to other piers where ammunition handling is authorized, and shall be performed at least 50 feet from operating vehicles or machines on the pier.

(11) This waiver recognizes the following ESQD arcs:

(a) 500 feet from the nearest in shore handling point on each of the authorized piers.

(b) 1250 feet from the quaywall handling point and from any SSN/SSBN in the State Pier area receiving or transfering 4000 pounds NEW.

(c) 1565 feet from all boundaries of the weapons storage/workshop area on board the assigned submarine tend r.

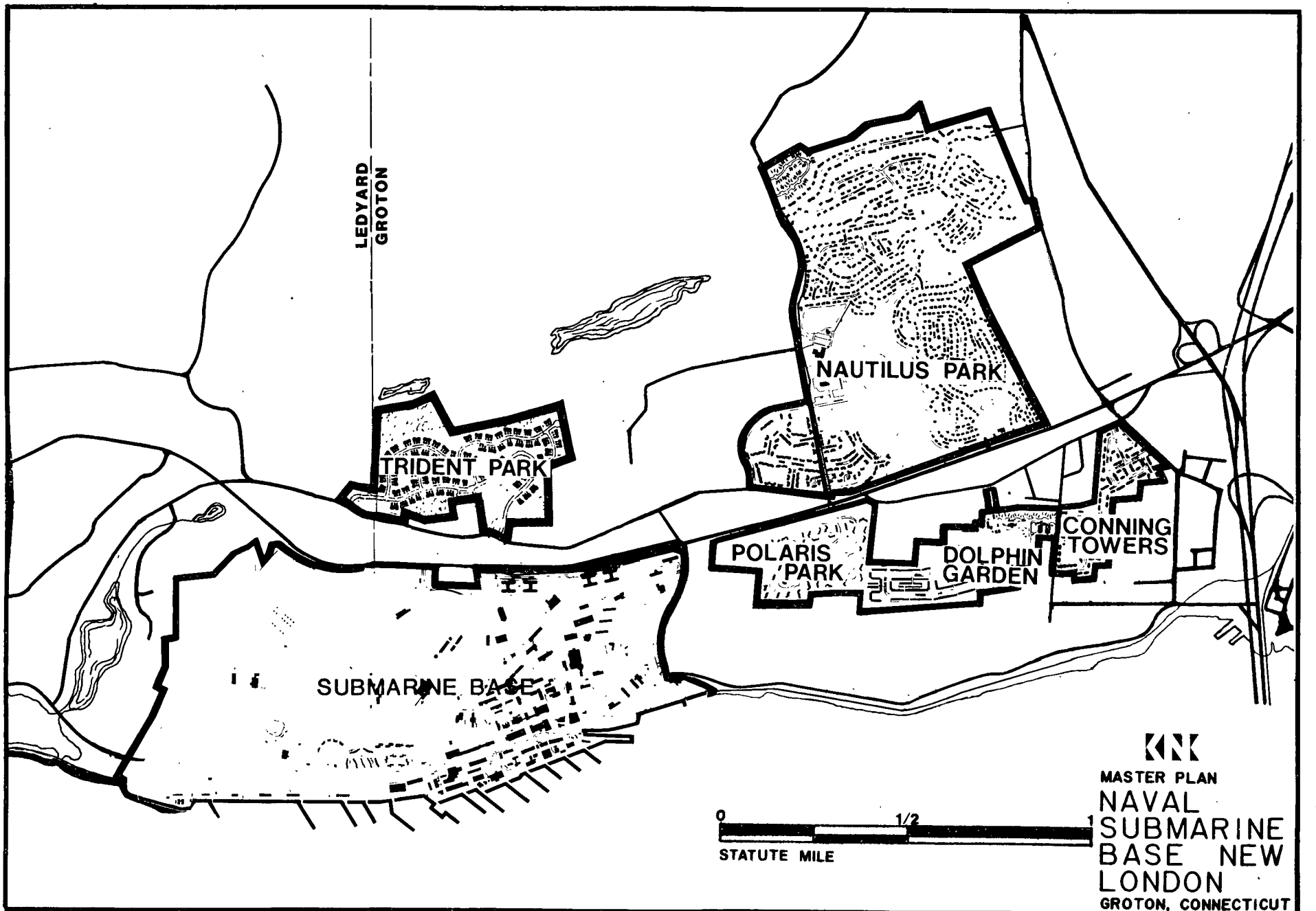
(d) 500 feet from any SSN/SSBN receiving/transferring not more than 1500 pounds NEW of submarine-launched tactical weapons in the State Pier area.

CNO WAIVER NO. 2-82

CNO Waiver No. SUBASE NLON 2-82 is renewed and authorizes deviations from the minimum inhabited building distance (1250 feet) required by NAVSEA OP 5, Vol. 1 (4th Revision) between weapons storage and operating areas and base boundaries and/or existing inhabited buildings on base. This waiver is based on standards in existence at the time that these facilities were planned and/or site approval was obtained.

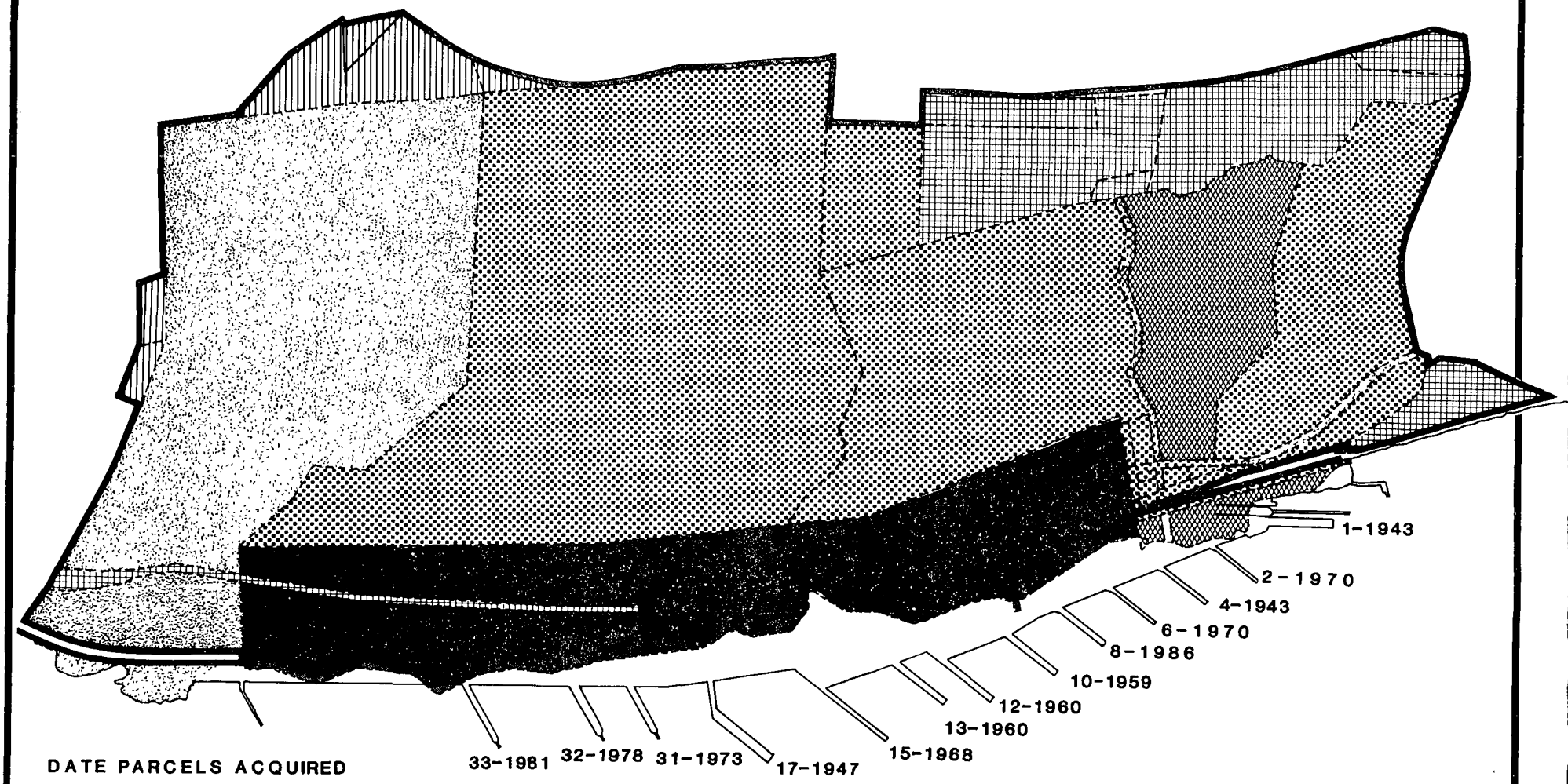
CNO WAIVER NO. 1-82

CNO Waiver No. SUBASE NLON 1-82 is renewed and authorizes deviations from Table 5-8 of OPNAVINST 8023.21C to permit privately-owned vehicles to be parked at less than intraline distance from Buildings 325 and 450 and at less than intraline distance outside the security fence for the magazine area. Privately-owned vehicles shall not be parked within 50 feet of Buildings 325 and 450.



INSTALLATION MAP - NAVAL SUBMARINE BASE NEW LONDON GROTON, CT.

PLATE 7G-1



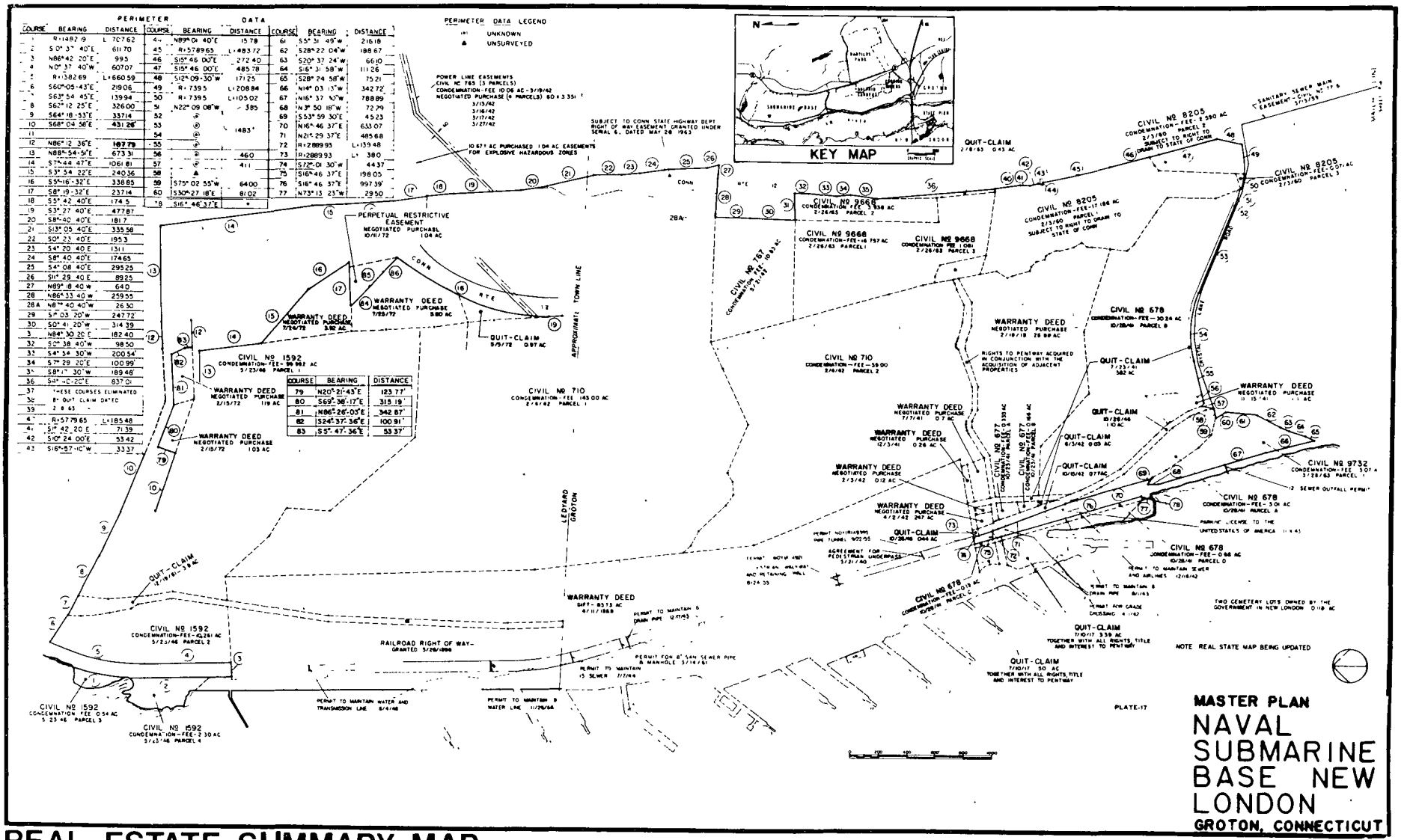
DATE PARCELS ACQUIRED

- 1868
- 1917-1918
- 1941-1942
- 1946
- 1959-1963
- 1972

NOTE: ABOVE FIGURES REPRESENT PIER NOS. AND DATE PIER CONSTRUCTED.

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

LAND DEVELOPMENT MAP



REAL ESTATE SUMMARY MAP

MAIN BASE

PLATE 7G-3

PERIMETER DATA

COURSE	BEARING	DISTANCE
1	N70°-21-36"W	403 25'
2	N21°-59'-29"E	246 35'
3	N70°-26-16"W	388 67'
4	N12°-55'-20"E	278 29
5	N70°-39-00"W	413 46
6	N08°-58-00"E	579 40'
7	N73°-12'-00"W	162 90'
8	N14°-13'-00"E	496 66'
9	N12°-03'-35"E	1247 31'
10	S65°-45-00"E	35 00'
11	S65°-45-00"E	39 27
12	S71°-15'-00"E	244 89'
13	N12°-54-01"E	301 47'
14	N10°-58'-44"E	551 01
15	N75°-07-27"W	116 75
16	S15°-15'-00"W	255 51'
17	S13°-57'-00"W	258 89
18	S17°-30'-00"W	261 82'
19	S69°-42'-00"E	343 50'
20	S17°-46-30"W	416 60'
21	S72°-13'-30"E	275 00
22	S17°-46-30"W	470 00
23	S72°-13-30"E	50 00'
24	S17°-46'-30"W	90 00'
25	S72°-13-30 E	182 00
26	S11°-03'-46"W	89 92'
27	S82°-23'-02"E	152 00'
28	R=1031.80 Δ=90°-45'-00" L=175 50'	℄ DESCRIPTION
29	N87°-51'-58"E	67 ±
30	S07°-36'-58"W	480 00'
31	N73°-51'-01"W	18 00'
32	S15°-38'-59"W	525 51'
33	S14°-40-23"W	235 91'
34	S09°-55-05"W	39 96'
35	S00°-01-11"W	249 08'
36	S27°-47'-53"E	37 84'
37	S70°-23'-07"E	645 23'
38	S69°-25'-18"E	464 90'
39	S12°-25'-12"E	276 60'
40	S58°-46-23"W	274 95'
41	S58°-26-23"W	628 20'
42	N06°-06-10"W	141 28
43	S81°-06'-31"W	204 00'
44	N12°-11'-09"E	354 52'
45	N70°-38'-34"W	222 02'
46	N12°-32'-56"E	367 12'
47	N70°-53'-39"W	292 38'
48	N70°-13'-55"W	710 39'
49	N09°-03'-00"W	207 93'
50	N71°-37'-56"W	194 76'
51	N05°-09'-54"E	221 70'
52	S85°-24'-17"E	95 73'
53	S82°-00-10"E	50 00'
54	N07°-59'-50"E	292 15'
55	S70°-21'-36"E	934 14'

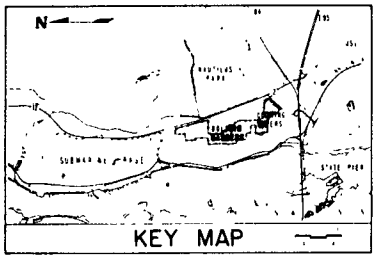
COURSE	BEARING	DISTANCE
56	N12°-55'-08"E	249 87'
57	N14°-59'-35"E	330 38'
58	N14°-15'-44"E	155 05'
59	S69°-57'-59"E	159 81'
60	S70°-09'-29"E	106 31'
61	S70°-17'-33"E	149 73'
62	S69°-17'-02"E	56 43'
63	N16°-03'-44"E	456 24'
64	N13°-57'-19"E	121 47'
65	N18°-55'-41"E	95 24'
66	S72°-35'-17"E	82 64
67	S69°-00'-50"E	292 47'
68	S71°-09'-44"E	43 05'
69	S01°-45'-33"W	162 17'
70	S11°-12'-07"E	51 00
71	S00°-07'-15"W	475 66'
72	S00°-06'-52"W	491 66'
73	R=17,249' Δ=01°-35-56" L=481.50	
74	R=17,249' Δ=01°-36'-47 L=485.59	
75	S21°-36'-39"W	199 62'
76	N71°-04'-17"W	580 56'
77	N70°-30'-31"W	222 92'
78	N70°-46'-28"W	160 99'

NOTES

1 PERIMETER DATA - CONNING TOWERS FROM MAP PREPARED BY MORTON S FINE & ASSOC DATED NOV 1, 1963

2 PERIMETER DATA - DOLPHIN GARDENS FROM MAP PREPARED BY CHANDLER & PALMER ENGINEERS DATED DEC 19, 1955 INCLUDING LAST REVISION DATED APRIL 19, 1956 ALL BEARINGS ADJUSTED TO AGREE WITH MAP PREPARED BY MORTON S FINE & ASSOC DATED NOV 1 1963

3 PERIMETER DATA - CIVIL NO 14771 FROM MAP PREPARED BY FREDERICK N WHITTEMORE JR LAND SURVEYOR DATED NOV 22, 1967 ALL BEARINGS ADJUSTED TO AGREE WITH MAP PREPARED BY MORTON S FINE & ASSOC DATED NOV 1, 1963



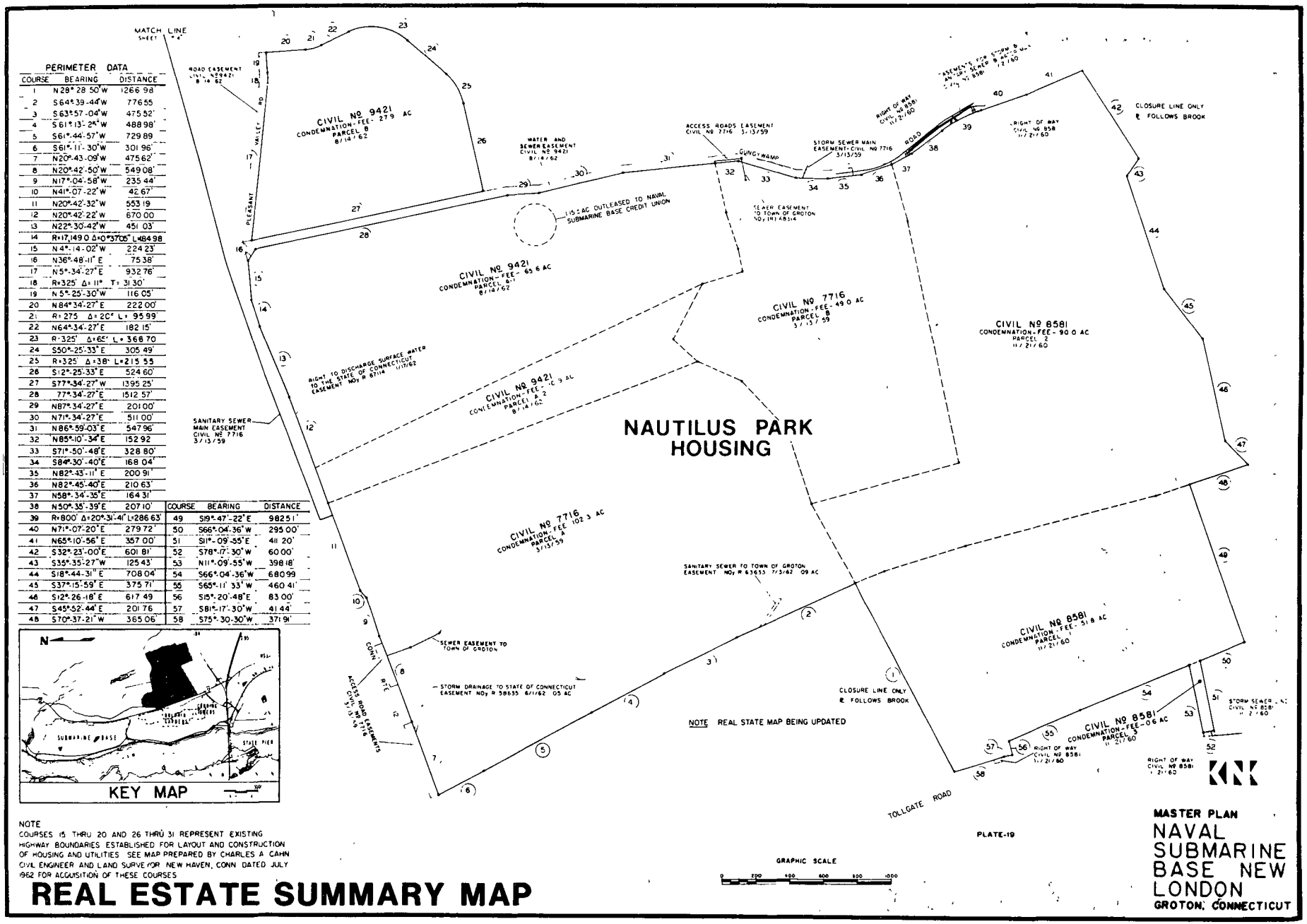
POLARIS PARK, DOLPHIN GARDENS, & CONNING TOWERS HOUSING

POLARIS PARK
CIVIL NO 14771
ROUTE 12
CRYSTAL LAKE RD
SANITARY SEWER EASEMENT 2/13/72
MATCH LINE "A"
TRANSFER FROM HHFA 3.5 AC (FEE)
ORIGINALLY ACQUIRED BY NAVY DEED 3/2/141 3/22/4
SUBJECT TO A POLE LINE RIGHT TO THE EASTERN CONN POWER CO
TRANSFER FROM HHFA 0.14 AC (FEE)
TRANSFER FROM HHFA 12± AC (FEE)
TRANSFER FROM HHFA SEWER EASEMENT
ORIGINALLY ACQUIRED BY FWA BY CONDEMNATION CIVIL NO 621-6/23/41 PARCEL II
PLEASANT ALLEY
ROAD
CIVIL NO 7842
CONDEMNATION - FEE - 1.32 AC
PARCEL B 5/29/59
TRANSFER FROM HHFA 1755 AC (FEE)
ORIGINALLY ACQUIRED BY FWA BY CONDEMNATION CIVIL NO 579-4/13/41
CONNING TOWERS
TRANSFER FROM HHFA 2.18 AC (FEE)
ORIGINALLY ACQUIRED BY FWA BY CONDEMNATION CIVIL NO 52-6 23 - PARCEL I
TRANSFER FROM HHFA 14.087 AC (FEE)
ORIGINALLY ACQUIRED BY FWA BY CONDEMNATION CIVIL NO 656-8/26/41
SUBJECT TO PUBLIC RIGHT OF WAY TO TOWN OF GROTON - 8/21/63
QUIT-CLAIM 8/27/63 - 0.31 AC
CHRISSOT ST
CIVIL NO 14771
CONDEMNATION - FEE - 51.56 AC
12/6/71
SUBJECT TO DRAINAGE EASEMENTS & 15 RIGHT OF WAY ALONG SOUTH PROPERTY LINE TO TOWN OF GROTON
POLARIS PARK
CIVIL NO 4957
CONDEMNATION - FEE - 37.6 AC
PARCEL A 6/15/54
SUBJECT TO PUBLIC UTILITY EASEMENT AND RIGHTS TO DRAIN TO STATE OF CONNECTICUT
DOLPHIN GARDENS
TRANSFER FROM HHFA 0.523 AC (FEE)
ORIGINALLY ACQUIRED BY FWA BY CONDEMNATION CIVIL NO 656 8/26/41
SEWER & WATER EASEMENT 8/27/63
CIVIL NO 7842
CONDEMNATION - FEE - 0.77 AC
PARCEL C 5/29/59
NOV (R) 60770 4/24/76 WATER MAIN & DRAINAGE LINE EASEMENT
TRANSFER FROM HHFA 3 EASEMENTS - WATER & SEWER (MARKED I-II-III)
ORIGINALLY ACQUIRED BY FWA BY CONDEMNATION CIVIL NO 820 8/17/42
THAMES RIVER
GRAPHIC SCALE
0 200 400 600 800 1000
PLATE-18

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

REAL ESTATE SUMMARY MAP

PLATE 7G-4



PERIMETER DATA

COURSE	BEARING	DISTANCE
1	N 28° 28' 50" W	1266 98'
2	S 64° 39' 44" W	776 55
3	S 63° 57' 04" W	475 52'
4	S 61° 13' 24" W	488 98'
5	S 61° 44' 57" W	729 89
6	S 61° 11' 30" W	301 96'
7	N 20° 43' 09" W	475 62'
8	N 20° 42' 50" W	549 08'
9	N 17° 04' 58" W	235 44'
10	N 41° 07' 22" W	42 67'
11	N 20° 42' 32" W	553 19
12	N 20° 42' 22" W	670 00
13	N 22° 30' 42" W	451 03'
14	R=17,149 0 Δ=0°37'06" L=184 98	
15	N 4° 14' 02" W	224 23'
16	N 36° 48' 11" E	75 38'
17	N 5° 34' 27" E	932 76'
18	R=325' Δ=11° T=31 30'	
19	N 5° 25' 30" W	116 05'
20	N 84° 34' 27" E	222 00'
21	R=275 Δ=20° L=95 99'	
22	N 64° 34' 27" E	182 15'
23	R=325' Δ=65° L=366 70	
24	S 50° 25' 33" E	305 49'
25	R=325' Δ=38° L=215 55	
26	S 12° 25' 33" E	524 60'
27	S 77° 34' 27" W	1395 25'
28	77° 34' 27" E	1512 57'
29	N 87° 34' 27" E	201 00'
30	N 71° 34' 27" E	511 00'
31	N 86° 59' 03" E	547 96'
32	N 85° 10' 34" E	152 92
33	S 71° 50' 48" E	328 80'
34	S 84° 30' 40" E	168 04'
35	N 82° 43' 11" E	200 91'
36	N 82° 45' 40" E	210 63'
37	N 58° 34' 35" E	164 31'
38	N 50° 35' 39" E	207 10'
39	R=800' Δ=20° 31' 41" L=286 63'	
40	N 71° 07' 20" E	279 72'
41	N 65° 10' 56" E	357 00'
42	S 32° 23' 00" E	601 81'
43	S 35° 35' 27" W	125 43'
44	S 18° 44' 31" E	708 04'
45	S 37° 15' 59" E	375 71'
46	S 12° 26' 18" E	617 49
47	S 45° 52' 44" E	201 76
48	S 70° 37' 21" W	365 06'

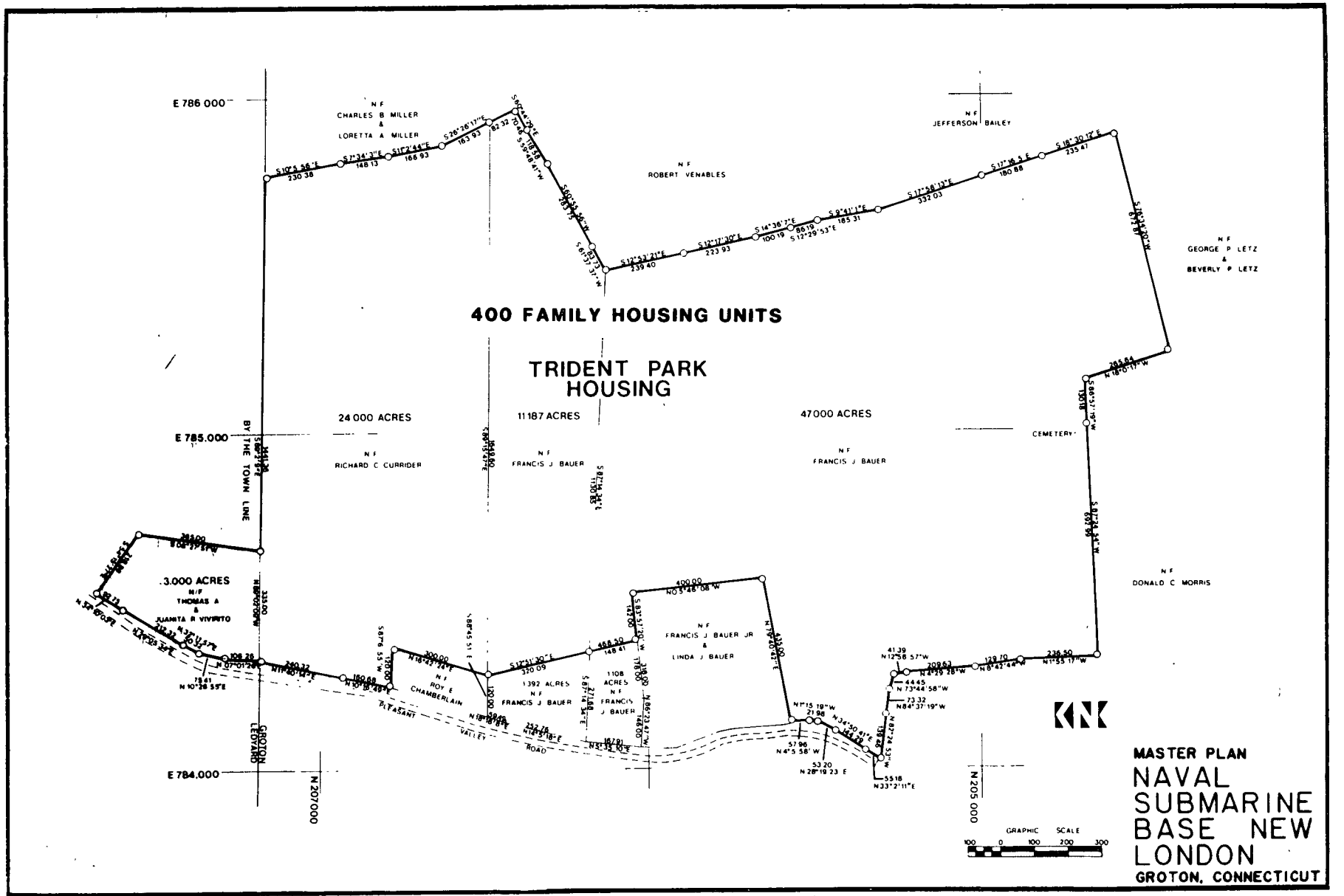
COURSE	BEARING	DISTANCE
49	S 19° 47' 22" E	982 51'
50	S 66° 04' 36" W	295 00'
51	S 11° 09' 55" E	411 20'
52	S 78° 17' 30" W	60 00'
53	N 11° 09' 55" W	398 18'
54	S 66° 04' 36" W	680 99
55	S 65° 11' 33" W	460 41'
56	S 15° 20' 48" E	83 00'
57	S 81° 17' 30" W	41 44'
58	S 75° 30' 30" W	371 91'

NOTE
COURSES 15 THRU 20 AND 26 THRU 31 REPRESENT EXISTING HIGHWAY BOUNDARIES ESTABLISHED FOR LAYOUT AND CONSTRUCTION OF HOUSING AND UTILITIES SEE MAP PREPARED BY CHARLES A CAHN CIVIL ENGINEER AND LAND SURVEYOR NEW HAVEN, CONN DATED JULY 1962 FOR ACQUISITION OF THESE COURSES

REAL ESTATE SUMMARY MAP

MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 7G-5



REAL ESTATE SUMMARY MAP

PLATE 7G-6

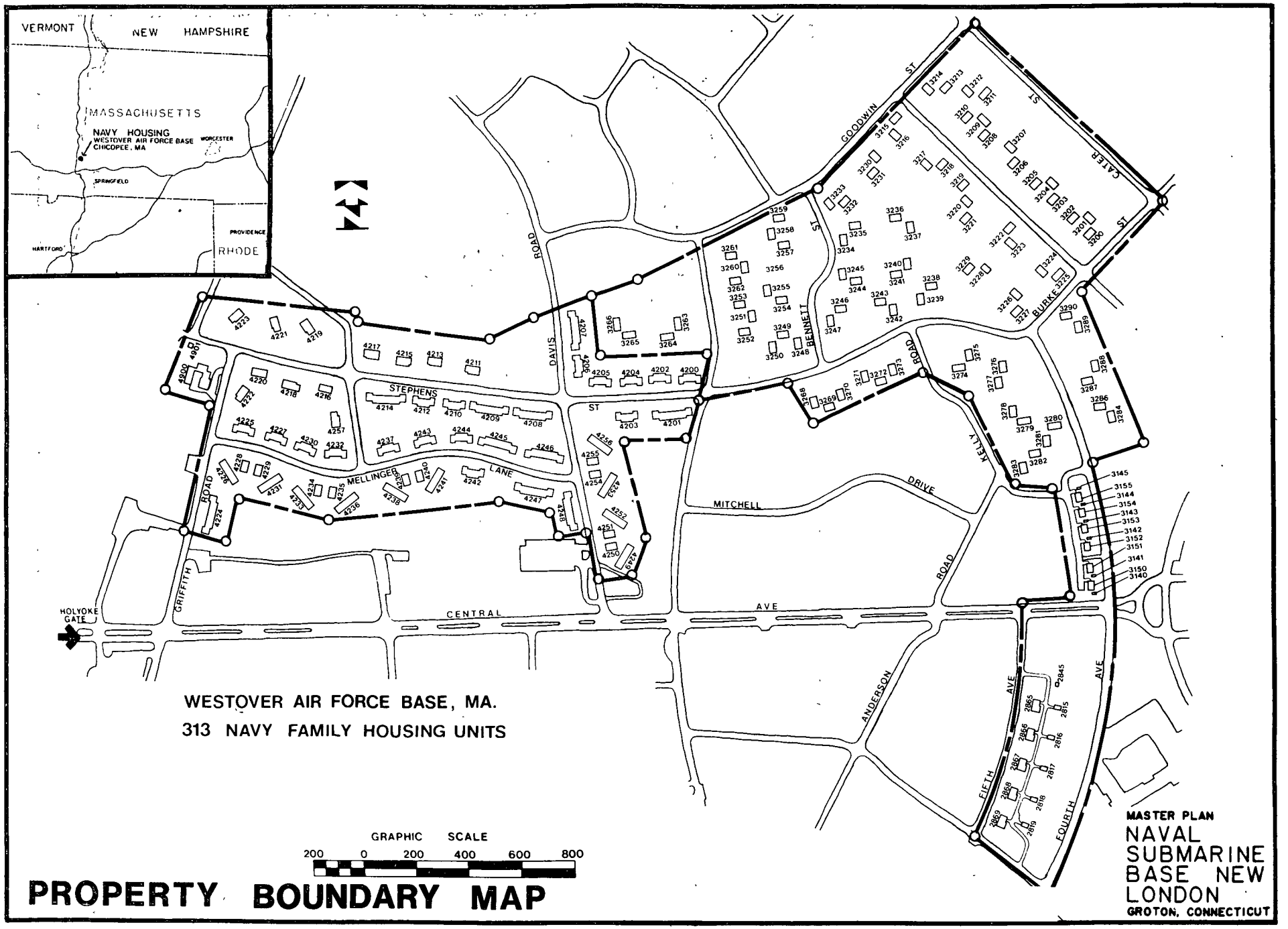

VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
NAVY HOUSING
WESTOVER AIR FORCE BASE
CHICOPEE, MA
WORCESTER
SPRINGFIELD
HARTFORD
PROVIDENCE
RHODE
HOLYOKE GATE
GRIFFITH ROAD
CENTRAL AVE
STEPHENS ST
MELLINGER LANE
DAVIS ROAD
GOODWIN ST
BENNETT ST
BURKE ST
CALER ST
MITCHELL DRIVE
KELLY ROAD
ANDERSON ROAD
FIFTH AVE
FOURTH AVE
WESTOVER AIR FORCE BASE, MA.
313 NAVY FAMILY HOUSING UNITS
GRAPHIC SCALE
200 0 200 400 600 800
PROPERTY BOUNDARY MAP
MASTER PLAN
NAVAL SUBMARINE BASE NEW LONDON
GROTON, CONNECTICUT

PLATE 7G-7

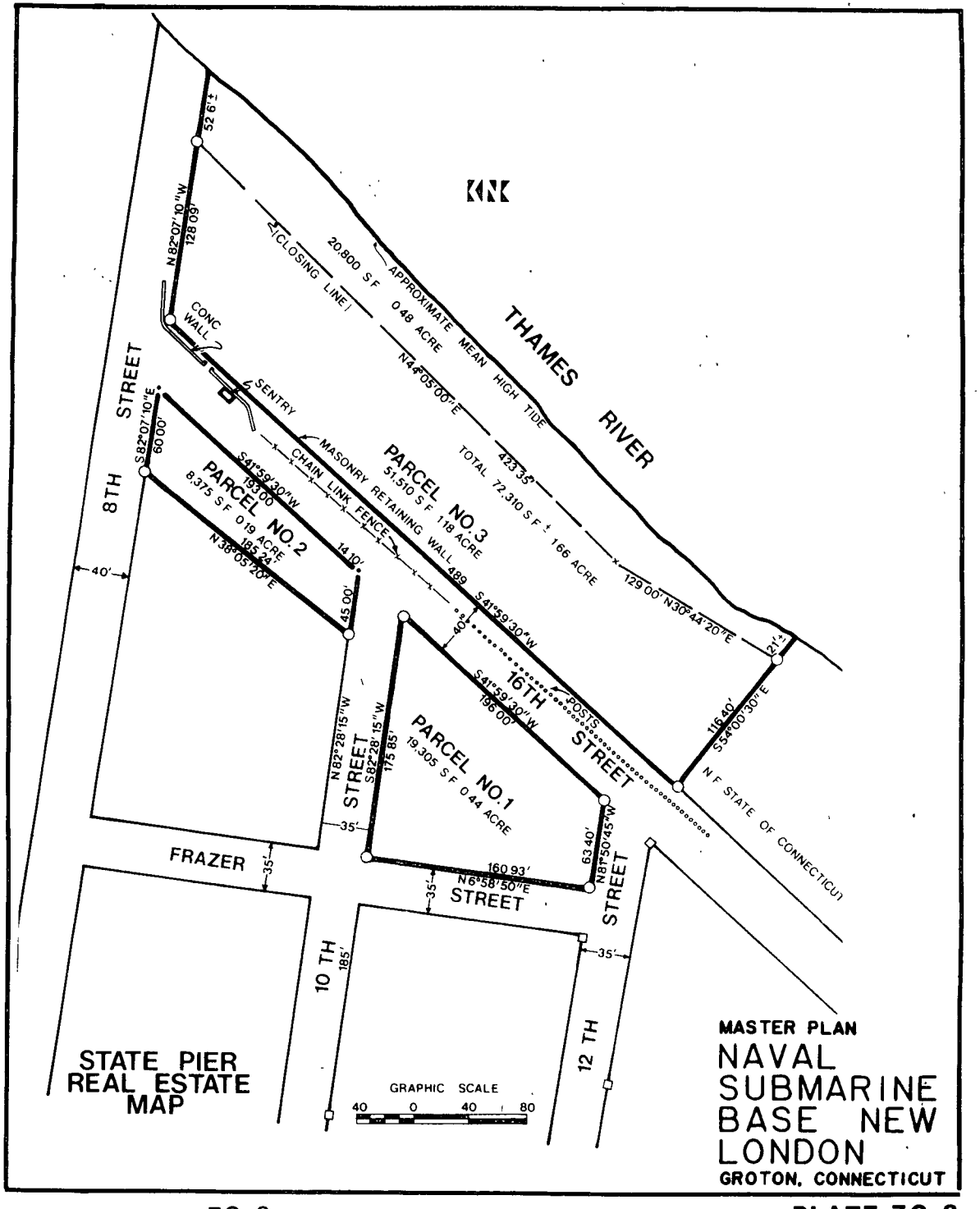

THAMES RIVER
APPROXIMATE MEAN HIGH TIDE
20,800 S F 0 48 ACRE
(CLOSING LINE)
N44°05'00"E
423 35'
TOTAL 72,310 S F ± 1 66 ACRE
129 00' N30°44'20"E
21'±
116 40'
S54°00'30"E
N F STATE OF CONNECTICUT
52 6'±
N 82°07'10"W
128 09'
CONC WALL
SENTRY
MASONRY RETAINING WALL
CHAIN LINK FENCE
PARCEL NO.3
51,510 S F 1 18 ACRE
489
S41°59'30"W
40'
16TH STREET
POSTS
S41°59'30"W
196 00'
PARCEL NO.1
19,305 S F 0 44 ACRE
63 40'
N81°50'45"W
160 93'
N6°58'50"E
STREET
S82°28'15"W
175 85'
N 82°28'15"W
STREET
S41°59'30"W
193 00
PARCEL NO.2
8,375 S F 0 19 ACRE
185 24'
N38°05'20"E
14 10'
45 00'
S82°07'10"E
60 00'
8TH STREET
40'
35'
FRAZER
10 TH
185'
12 TH
STREET
STATE PIER
REAL ESTATE
MAP
GRAPHIC SCALE
40 0 40 80
MASTER PLAN
NAVAL
SUBMARINE
BASE NEW
LONDON
GROTON, CONNECTICUT

PLATE 7G-8

PERIMETER DATA

COURSE	BEARING	DISTANCE (FEET)	DISTANCE (METERS)
1	S 74° 55' 15" E	319 16	97 28
2	S 18 04 15 E	430 86	131 33
3	S 17 57 46 E	246 10	75 01
4	S 18 22 45 E	342 97	104 54
5	S 82 37 15 W	140 63	42 86
6	S 20 35 15 E	178 22	54 32
7	S 75 16 47 W R = 3899 8'	CH = 475.12 ARC L = 475 41	144 82 144 90
8	S 71 47 15 W	363 8±	110 9±
9	S 71 47 15 W	998 89	304 46
10	N 37 10 30 E	218 81	66 69
11	N 53 07 45 E	147 96	45 10
12	N 51 30 00 E	115 36	35 22
13	N 28 45 00 E	283.35	86 37
14	N 25 11 00 E	206.28	62 87
15	N 9 00 30 E	248.57	75 76
16	N 4 14 30 W	163.01	49.69
17	N 4 28 30 W	176 42	53 77
18	N 6 56 00 W	37 26	11 36
19	S 80 29 00 W	113 98	34 74
20	N 10 57 00 W	150 22	45 79
21	N 9 11 15 W	241.20	73 52
22	N 86 42 45 W	72 05	21 96
23	S 62 54 15 W	38.06	11 60
24	N 56 38 15 W	41 80	12.74
25	N 73 19 15 W	36 45	11 11
26	N 35 26 45 W	53 81	16.40
27	N 81 29 35 E	582 56	177 57
28	S 3 48 10 W	93 12	28 38
29	S 85 28 10 E	30 68	9.35
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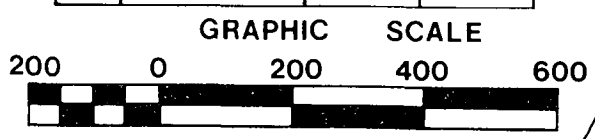
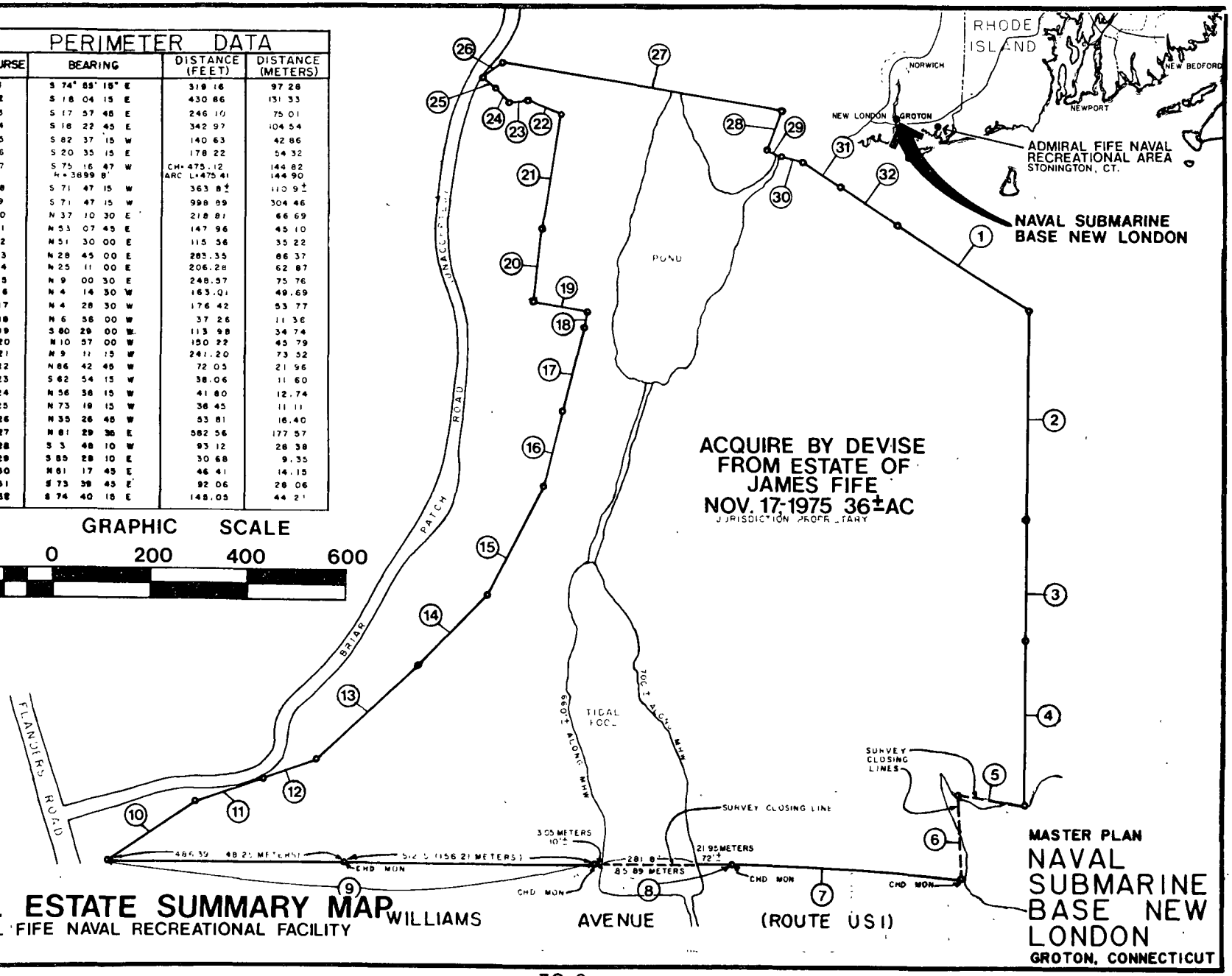
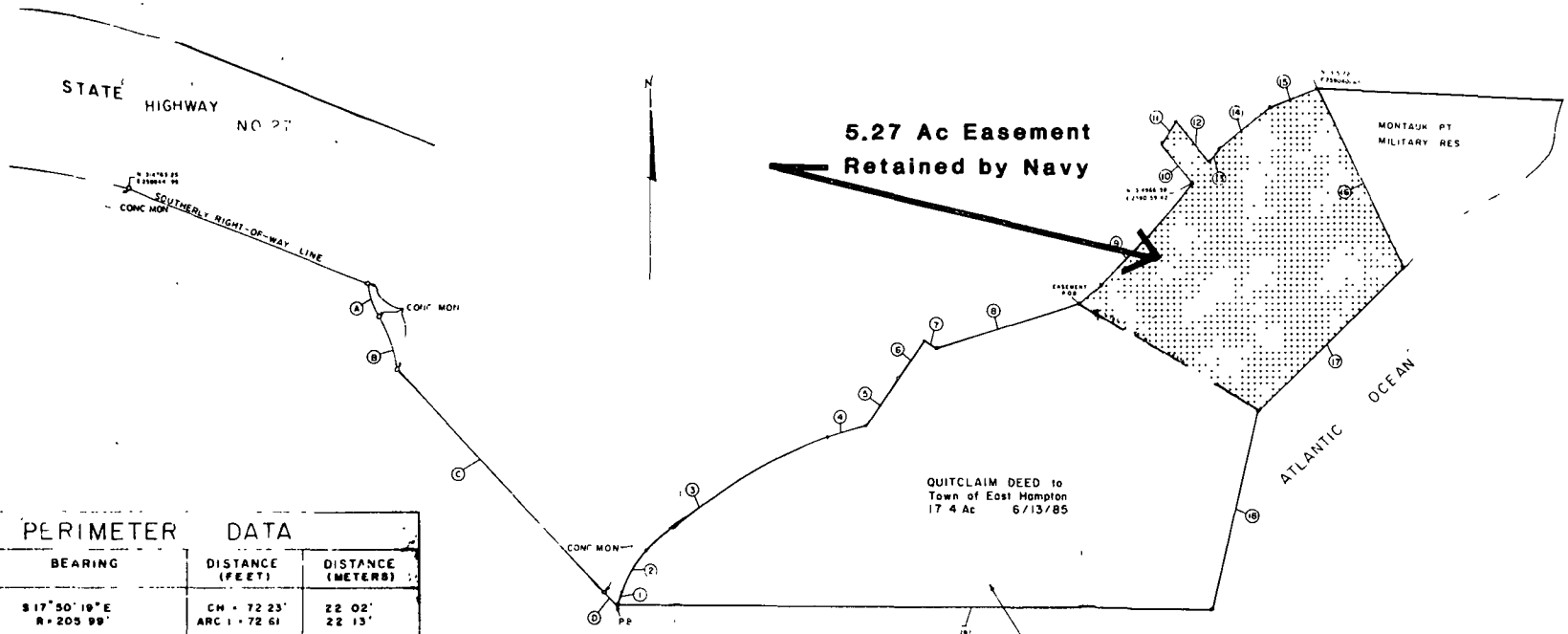




REAL ESTATE SUMMARY MAP
ADMIRAL FIFE NAVAL RECREATIONAL FACILITY

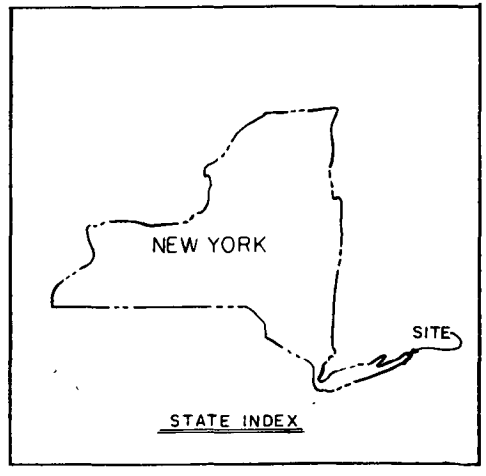
PLATE 7G-9

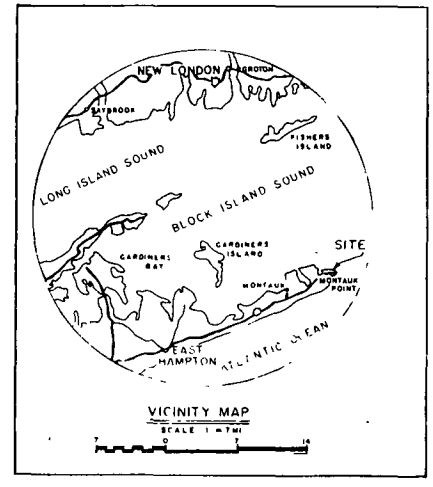


MONTAUK POINT, NY

PERIMETER DATA

COURSE	BEARING	DISTANCE (FEET)	DISTANCE (METERS)
A	S 17°50' 19" E R = 205 99'	CH = 72 23' ARC L = 72 61	22 02' 22 13'
B	S 18 16 31 E R = 345 09'	CH = 115 83 ARC L = 116 38	35 31 35.47
C	S 43 21 19 E	634 47	193 39
D	S 43 21 19 E TO POINT OF BEGINNING	37 54	11 44
1	N 19 19 16 E R = 250 51'	CH = 18 59 ARC L = 18 59	5 67 5 67
2	N 28 47 29 E R = 237 37	CH = 103 26 ARC L = 104 24	31 47 31 77
3	N 56 57 26 E R = 772 87	CH = 440 63 ARC L = 440 84	134 30 134 20
4	N 73 31 12 E	84 11	25 64
5	N 30 32 33 E	117 97	35 96
6	N 31 41 18 E R = 2288 56'	CH = 91 53 ARC L = 91 55	27 90 27 90
7	S 57 09 57 E	33 0	10 06
8	N 68 24 35 E R = 2332 77'	CH = 311 70 ARC L = 311 88	95 01 95 06
9	N 30 08 05 E R = 661 10	CH = 346 74 ARC L = 350 60	105 69 106 86
10	N 38 22 25 W	104 93	31 98
11	N 32 29 51 E	52 75	16 07
12	S 38 22 25 E	105 85	32 26
13	N 32 29 40 E	34 69	10 57
14	N 47 08 30 E R = 257.39'	CH = 130 17 ARC L = 131 60	39 68 40 11
15	N 65 55 55 E R = 752 30'	CH = 108 71 ARC L = 108 81	33 13 33 17
16	S 22 19 15 E	406 68	123 90
17	S 44 31 27 W	420 41	128 14
18	S 09 02 10 W	420	128 02
19	WESTERLY	1234±	376±





MASTER PLAN

NAVAL SUBMARINE BASE NEW LONDON

GROTON, CONNECTICUT

REAL ESTATE SUMMARY MAP

ENCROACHMENT STUDY
SUBMARINE BASE NEW LONDON

Groton, Connecticut

LIST OF ILLUSTRATIONS

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1. EXECUTIVE SUMMARY

The following encroachm nt pressures and areas of concern have been identified at the Submarine Base New London. None of these issues are significantly impeding the performance of operations at this time, however, they all have a potential to hinder certain ar as of the Base functions or submarine operations.

A. The density of boats and fixed fishing gear in the route traversed by submarines heading out to and returning from sea maneuv rs periodically interfere with the unobstructed passage of submarin s.

B. The malfunctioning of the railroad drawbridge across the Thames River may cause it to be stuck in the closed position, preventing the passage of SSN 585 class submarines to and from the Submarine Base, xcept under emergency conditions.

C. The possible increase in small craft traffic in the New London Harbor, generated by the future implementation of proposed waterfront development sites, may interfere with the unobstructed transit of submarines.

D. There are two areas of land adjacent to the Submarine Base that hav the potential to be developed in a manner not compatible with the Base facilities.

E. Any proposed Providence and Worcester (P&W) Railroad passenger service passing through the Base during normal weekday working hours may interfere with Base weapons handling operations.

F. Submarine Base personnel are aware of the types of hazardous chemicals transported over the P&W railroad through the Base and are developing a firm plan of action to confront a spill, leak, or fire resulting from a railcar accident on or near Base property.

G. The existing conditions of Crystal Lake Road outside the Base main gate and visitor/pass parking lot and the creation of a new entranc for the NAUTILUS Memorial may create a confusing arrival experience for visitors to the Memorial and haphazard traffic patterns/flow at the intersection of Crystal Lake Road and Military Highway.

H. The future cost of the Base solid waste removal services and the uncertainty of future regional disposal facilities justify starting an investigation into state-of-the-art methods and future alternatives for Base solid waste disposal.

This study was prepared by Northern Division, Naval Facilities Engineering Command, Philadelphia, PA, in accordance with NAVFACINST 11010.63B of 15 July 1982.

Encroachment is defined as any non-Navy action planned or executed in the vicinity of a Navy/Marine Corps activity or normal area of operations which inhibits, curtails, or has the potential to impede the performance of operations.

September 1983

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2. BACKGROUND

A. LOCATION

The Naval Submarine Base, New London, Groton, Connecticut is located on the Atlantic seacoast approximately midway between the cities of Boston and New York at Latitude 40°23'40"N and Longitude 72°05'30"W. Situated on the east bank and approximately six miles from the estuary of the Thames River, the Naval Submarine Base lies within the two Connecticut Townships of Ledyard and Groton. The Submarine Base also includes the facilities leased at the Connecticut State Pier, located approximately two miles below the Base on the west bank of the Thames River within the City of New London, Connecticut. Navy-owned family housing areas serving the New London Complex are located immediately south and southeast of the Base proper, within the Town of Groton, Connecticut. See Plates 1 and 2.

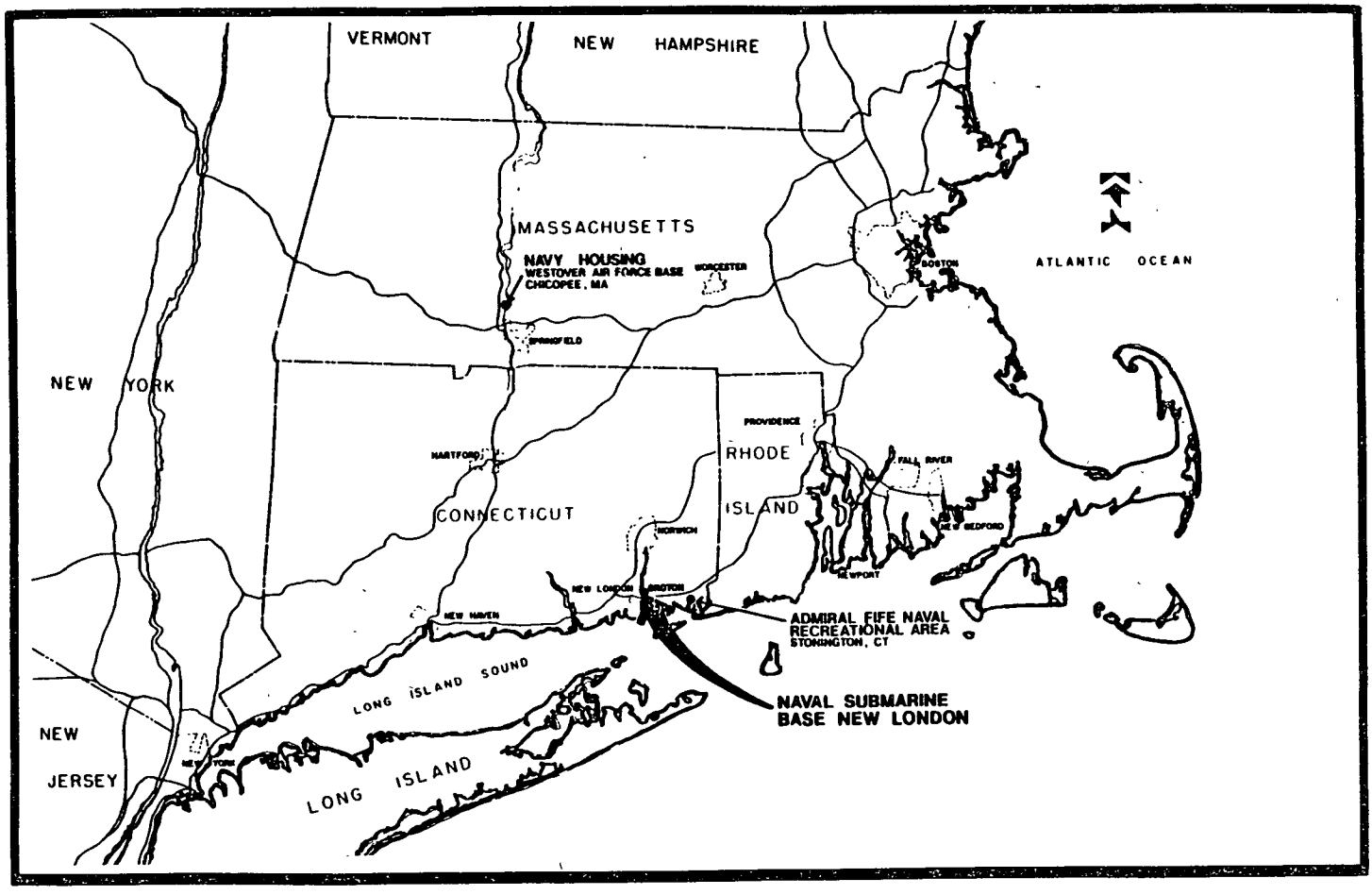
B. ACREAGE

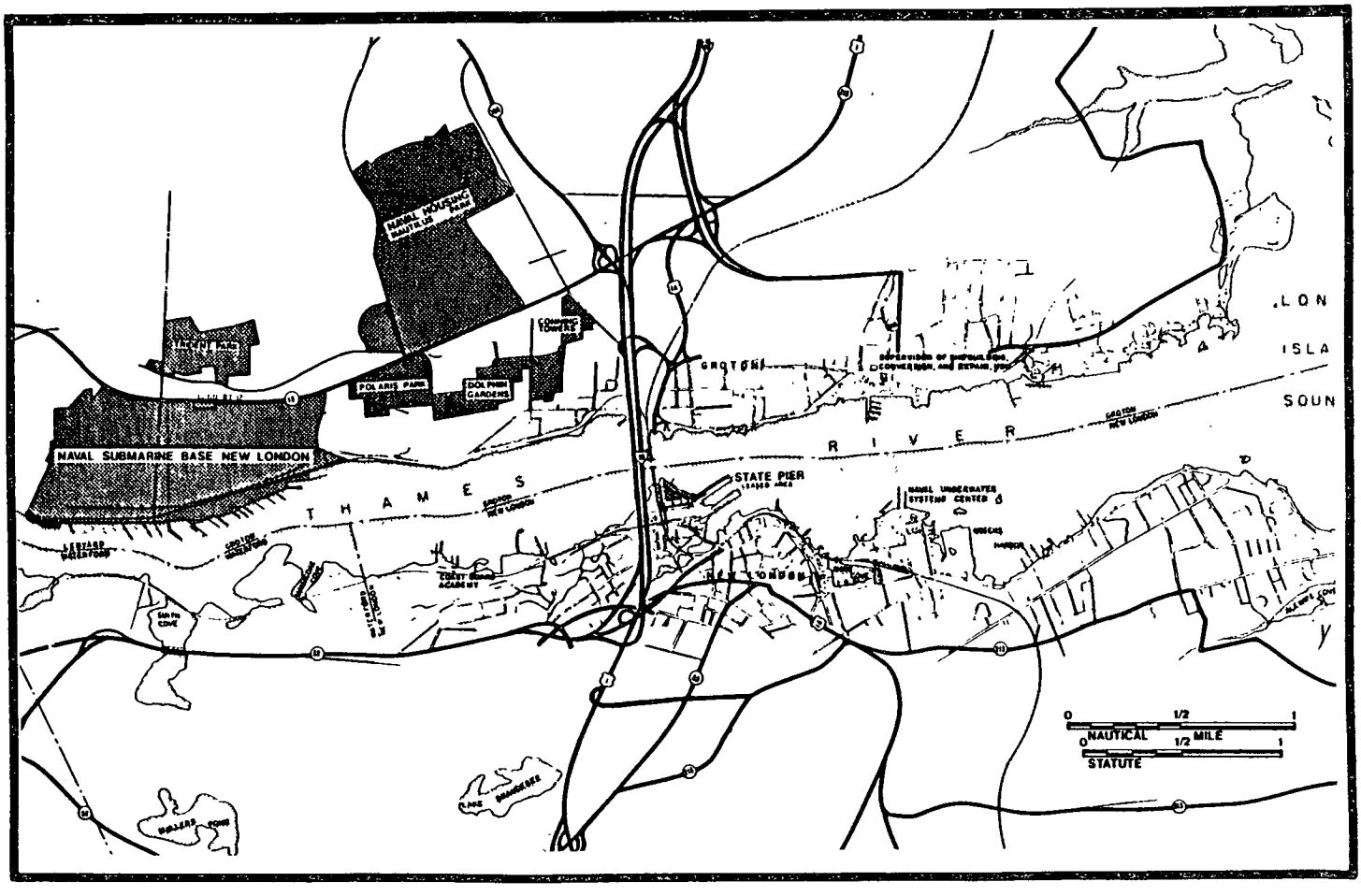
The Naval Submarine Base including all activities under its cognizance encompasses a total of 1,306.9 acres of land primarily in the Town of Groton and partially in the Town of L dyard, Connecticut. The following chart shows all parcels of land owned and their size in acres.

PARCEL	ACRES
SUBASE	546.06
NAUTILUS PARK	410.24
POLARIS PARK	51.56
CONNING TOWERS	49.83
DOLPHIN GARDENS	39.74
TRIDENT PARK	85.18
WESTOVER, MASS	86.
ADMIRAL FIFE	36.
STATE PIER	2.29
TOTAL	1,306.90

The main Base area totals 546 acres which are primarily used for operational and direct fleet support by the Base and its various tenant activities.

Five Navy housing developments lie within one and one half miles of the Base. Nautilus Park, the largest housing area, lies southeast of the Base across Route 12. It is comprised of 1,246 housing units, 54 mobile home sites, a community center and a church, all situated on 410.24 acres of land. Three housing developments lie directly south of the Base. They are Dolphin


VERMONT
NEW HAMPSHIRE
MASSACHUSETTS
NAVY HOUSING
WESTOVER AIR FORCE BASE
CHICOPEE, MA
WORCESTER
BOSTON
ATLANTIC OCEAN
SPRINGFIELD
NEW YORK
PROVIDENCE
HARTFORD
RHODE ISLAND
FALL RIVER
CONNECTICUT
NORWICH
NEW BEDFORD
NEWPORT
NEW LONDON
GROTON
NEW HAVEN
ADMIRAL FIFE NAVAL RECREATIONAL AREA
STONINGTON, CT
LONG ISLAND SOUND
NAVAL SUBMARINE BASE NEW LONDON
NEW JERSEY
NEW YORK
LONG ISLAND


NAVAL HOUSING
NAUTILUS PARK
TARDENT PARK
CONNING TOWERS
POLARIS PARK
DOLPHIN GARDENS
GROTON
NAVAL SUBMARINE BASE NEW LONDON
THAMES
RIVER
STATE PIER
NAVAL UNDERWATER SYSTEMS CENTER
NEW LONDON
LON
ISLA
SOUN
0 1/2 1
NAUTICAL MILE
0 1/2 1
STATUTE

Gardens, Polaris Park, and Conning Towers.

In descending order of size, Dolphin Gardens, Polaris Park, and Conning Towers contain 400, 300, and 156 housing units respectively on 39.7, 51.6, and 49.8 acres of land. In addition there are 51 mobile home sites in Conning Towers. The Navy recently acquired 85.2 acres of land east of the Base across Route 12, on which 400 housing units were built. This new development, Trident Park, satisfies the previous Navy family housing shortage.

The Navy owns and provides the management, including maintenance, operational, and inventory responsibility for 313 housing units on 86 acres of land at the Westover Air Force Base, Massachusetts. The Base is located approximately 55 miles northwest of the Submarine Base, New London. This housing accommodates personnel from the Nuclear Propulsion Training Unit at Windsor Locks, Connecticut.

The Navy also owns the Admiral Fife Recreation facility which lies about 12 miles southeast of the Base in the Town of Stonington. This 36 acre property is a passive recreational area for Naval personnel and their families and includes ponds, picnic sites, volleyball and horseshoe courts.

In addition to the owned land, the Navy also leases 3.4 acres of land, 1,320 lineal feet of berthing pier, 44,600 square feet of dock space, and 2,875 square feet of building space at the Connecticut State Pier for support of Submarine Squadron Ten.

C. MISSION AND MAJOR FUNCTIONS

The mission of the Submarine Base is to maintain and operate facilities to support training and experimental operations of the submarine force, to provide support to submarines, submarine rescue vessels and assigned service and small craft, within capabilities, to provide support to other activities of the Navy and other governmental activities in the area; and to perform such other functions as may be directed by competent authority.

The Submarine Base primarily serves as an operating and support Base for Submarine operations in the Atlantic. The closest Base by several hours to the North Atlantic, the Submarine Base becomes strategically important in certain mobilization scenarios. The Base along with its tenant activities perform four major services to the operating fleet:

1. Hom porting of Submarines and their cr ws plus the hom porting of SSBN crews.

2. Maintenance and Repair (Intermediate level) and Selected Restricted Availabilities of Submarines and other assigned crafts. Store, tranship, issue, receive submarine tactical weapons and perform intermediate maintenance of MK 48 torpedoes.

3. Submarine basic, advanced and refresher training.

4. Medical care, research and training in the field of submarine medicine.

The afloat commands at the Base include Submarine Group Two, Submarine Squadron Two, Submarine Development Squadron Twelve, and Submarine Squadron Ten. Squadron Ten is located at the Connecticut State Pier in New London.

Major ashore tenant commands include the Naval Submarine Support Facility, Naval Submarine School, Naval Hospital Groton, Naval Submarine Medical Research Laboratory and the Marine Barracks.

D. BASE LAND USE AND FUTURE DEVELOPMENT

The land use at the main Base is quite complex due to the large number of tenant activities and the variety of facility requirements needed to accomplish their missions.

The Base is physically divided into what are termed the upper and lower Base areas. The Providence and Worcester Railroad operates a branch line that runs completely through the main part of the Base parallel to Shark Boulevard. The land east of the right-of-way is the upper Base and the land to the west of the right-of-way is the lower Base.

The lower Base primarily contains facilities that provide support in the areas of operations and maintenance/production for the submarine fleet. Maintenance and Production functions utilize the remaining pier and many buildings. This function is the largest of any located on the lower Base. Two other functions which occupy significant portions of the lower Base land are the Administrative facilities for Submarine Group Two, Submarine Squadron Two and Submarine Development Squadron Twelve, and the Supply Department's warehouse, shipping and receiving facilities.

The upper Base can be viewed as being composed of three general areas. The northern area, predominantly undeveloped and natural land, is encumbered to a large extent by ESQD arcs. The middle area is a combination of developed land and land still in a natural state and not being used. This middle area is the only

place on the Base that has potential sites for future construction and expansion. These sites are very limited due to one-half of the undeveloped land in the area being on slopes that are over thirty percent. The slopes make construction impractical. The southern section of the upper Base, is highly developed and contains the majority of the structures built on the upper Base. This southern section also has an extensive road system and is the most accessible part of the upper Base. Each of the three general areas support a variety of land uses with the number of uses being fewer at the northern section and the most at the southern section. See the Submarine Base Master Plan for a detailed description of land use.

The main Base area consists of one tract of land whose border is made up of four distinct sides. Three sides are inflexible while the fourth is unfavorable for expansion.

The northern boundary line abuts private land. The majority of this boundary lies within ESQD arcs which extend over the boundary into the private land. Any expansion to the north would have to be beyond these arcs. In addition, there is virtually no existing development in this northern part of the Base. Consequently, any new development would involve the high cost of extending utilities from the more southern sections of the Base. Also, the nature of the terrain on and above the northern border makes it unfavorable for development. Taking all these constraints into consideration, it is not feasible to expand to the north.

The eastern border is formed by Connecticut Route 12 and the southern border is formed by Crystal Lake Road. Both are important traffic corridors and are therefore inflexible. Any development to the other side of these routes would have to involve activities or functions that could stand alone without interacting with other activities on the main Base. At this time, all functions in need of expansion require proximity to other Base functions so expansion across these routes is not practical. The eastern boundary is formed by the Thames River and is also inflexible.

The inability to expand the perimeter of the main Base tract of land presents a planning constraint. Any new development will most likely occur within the existing pattern of development which contains few sites suitable for construction. The construction of new buildings will have to respond to this constraint in their design in order to accommodate spatial requirements for the future. Multi-story construction is recommended for future building construction.

E. ECONOMIC CLIMATE

The Submarine Base is located in the New London-Norwich Labor Market Area. This Labor Market Area consists of all the towns in the Southeastern Connecticut Region with the exception of Colchester and also includes the towns of Lyme and Old Lyme. Groton and New London combined form one of the area's two urban centers. Norwich, located further north in the market area, is the other urban center. See Plate 3.

The economy of the area is comprised primarily of defense and related industries, manufacturing and non-manufacturing segments, commercial fishing, agriculture and tourism.

Since this labor market is not located within easy commuting distance of the large metropolitan centers of Connecticut and adjacent states, its economy is relatively self-sufficient. The market is, however, within reasonable travel distance of such major cities as Boston, Hartford, New Haven, New York City, and Providence.

Defense-related industries comprise a major portion of the manufacturing labor force as well as the total regional labor force. Major defense facilties and employers include: the General Dynamics Corporation in Groton; the US Naval Submarine Base, New London, in Groton; the US Coast Guard Academy and the Naval Underwater Systems Center, both located in New London. A total of 21,700 civilians worked for these employers in 1980. This does not include small defense contractors, several of which are engineering firms, that provide services both to the General Dynamics Corporation and to the military organizations.

In addition to civilian employment, 13,950 U.S. Navy military personnel are currently attached to the U.S. Submarine Base in Groton. Also, there are 494 U.S. Coast Guard enlisted men and officers at the Coast Guard Academy in New London plus about 900 cadets. These figures give a grand total for military personnel residing in the Labor Market Area of 15,344. These people, together with their families, have an important impact on the economy of the area, especially on retail trade and on the housing market.

In 1981, approximately 34 percent of regional income and employment was directly attributable to defense activity. This percentage does not include secondary income and employment generated by defense employees and military personnel.

Since its establishment, the Submarine Base and its tenant activities have continued to grow and change with advancements in the Submarine Force. All indicators show that the Submarine Base will continue to be one of the major employers in the Southeastern Connecticut Region and the New London-Norwich Labor Market Area.

F. COMMUNITY RELATIONS

During the field investigation for this report, many local municipal planning agency officials were consulted with to identify encroachment issues. Meetings were held with representatives from the Town of Groton, City of Groton, Ledyard, New London and Waterford. The overall attitudes towards the Navy expressed by all officials met with were favorable. The communications/interaction level between these towns/cities and the Naval establishment vary with each community.

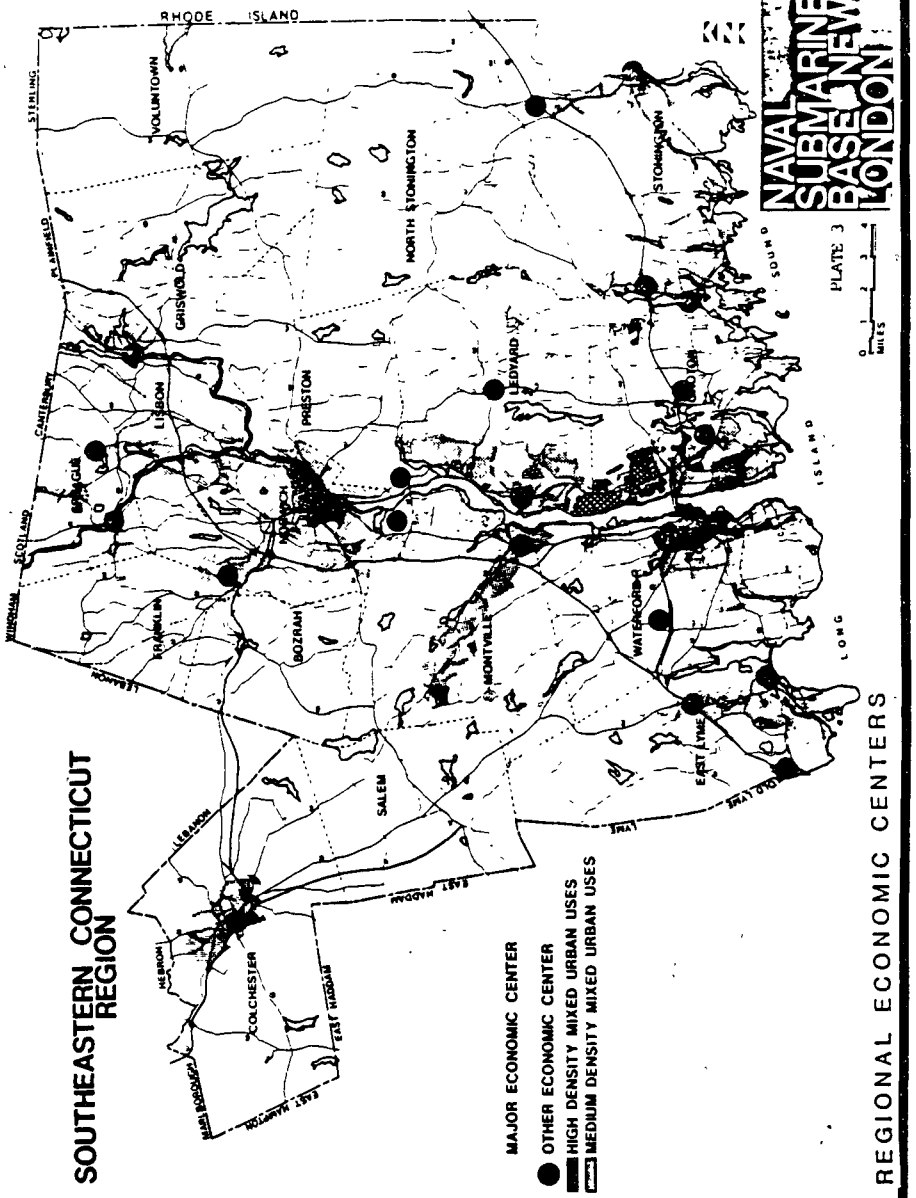
In the Town of Groton, the Zoning Board of Appeals sends official notifications of hearings on proposed zoning changes to the Submarine Base civilian planner. The Navy's representatives usually attend these meetings if the proposed changes may affect Navy property. The Planner for the Town of Groton expressed his desire to work with the Navy to improve the existing good relations.

Ledyard is a rural community with little interest in issues concerning the Submarine Base. Indications from the town planning officials are that the town officials elected in November 1983 will want to become more involved in future Base issues that affect the surrounding communities.

The City of New London has a positive image of and good relations with the Navy. The city sponsors events such as excursion trips to the city beach for sailors at the Submarine Base. These alternative recreation opportunities enhance the quality of life for military personnel while stationed at the Base.

The town planner from Waterford indicated that it would be good for him to have a point of contact at the Submarine Base to send any waterfront development proposals for Navy review. The Navy could determine if the project would have any negative impact on Navy operations. This is especially important since the proposed development could be located across the river from the Base.

An objective of this study is to develop a community liaison program. This program will be an extension of the existing Navy/community relations since the xisting relations ar positive.



G. DEMOGRAPHIC ANALYSIS AND PROJECTION

The population of the Southeastern Connecticut Region (SCR) has increased over the last two decades. In 1960, the region had a population of 179,060 which grew to 220,402 by 1970, a 23 percent increase. The 1980 population grew to 225,666, only a 2.4 percent increase over 1970. The State of Connecticut grew by 2.5% during the last decade to a 1980 total of 3,107,576 persons. Nationally, the country grew at a rate of 11.4% to a 1980 total of 226,504,825 persons.

The distribution pattern of Southeastern Connecticut's 1980 population, like the developed lands, is concentrated along the coast of Long Island Sound and along the Thames River Valley, forming an inverted "T" shape. Population outside of this area is thinly scattered, although concentrations do appear in extensive suburban r sidential developments. See Plate 3. The region's 1980 population of 225,666 accounts for 7.3% of Connecticut's 1980 population, while 11.7% of Connecticut's land area is located in South astern Connecticut.

Forty-eight percent of this regional population live in urban towns, forty-seven percent live in suburban towns and five percent live in rural towns. As a group, the three urban towns fared badly. Groton was the only one to increase in population, by 7.4%. Th growth in Groton during the 1970s corresponds with the growth of industrial activity, notable at the Electric Boat Division of General Dynamics. Both New London and Norwich had population declines approaching 9%. Clearly, the shift of population to the suburbs has continued. Between 1970 and 1980, the urban towns had a loss in population of 3.3 percent while the suburban towns grew by 7.1 percent and the rural towns grew by 18.6 percent. Population gains in the suburban and rural towns offs t the out-migration losses in the urban areas, resulting in the overall growth of the region.

Rates of growth varied greatly for the individual towns of the region. See following chart. Although the population has increased in the SCR as a whole, it has decreased in the towns of N w London, Norwich and Ledyard by 8.8, 8.8, and 7.4 percent respectiv ly. Groton had the largest numerical increase (2,818) whil Salem had the largest rate of growth at 60.7 percent. The next fast st growing towns were Preston, East Lyme, Colchester and Franklin with respective percentages of 29.3, 21.7, 17.5 and 17.4.

Minority ethnic groups represented a small percentage of Southeast rn Connecticut's population in 1980, however, these groups represented 92 percent of the population increase from 1970 to 1980. The percent of the total population each racial group represented changed from 95.8, 3.4, and 0.8 percent for whites, blacks, and other non-whites, respectively, in 1970, to 93.7, 3.9, and 2.2 percent, respectively, in 1980.

SOUTHEASTERN CONNECTICUT REGION POPULATION

	1970	1980	% CHANGE	PROJECTED 1990**
URBAN TOWNS:				
Groton	38,244	41,062	7.4	41,830
New London	31,630	28,842	- 8.8	29,140
Norwich	41,739	38,074	- 8.8	39,440
URBAN TOTALS:	111,613	107,978	- 3.3	
SUBURBAN TOWNS:				
Colchester	6,603	7,761	17.5	8,940
East Lyme	11,399	13,870	21.7	14,860
Griswold	7,763	8,967	15.5	9,470
Ledyard	14,837*	13,735	- 7.4	15,630
Lisbon	2,808	3,279	16.7	3,580
Montville	15,662	16,455	5.1	17,960
Preston	3,593	4,644	29.3	5,000
Sprague	2,912	2,996	2.9	3,100
Stonington	15,940	16,220	1.8	17,350
Waterford	17,227	17,843	3.6	18,550
SUBURBAN TOTALS:	98,744	105,770	7.1	
RURAL TOWNS:				
Bozrah	2,036	2,135	4.9	2,190
Franklin	1,356	1,592	17.4	1,690
North Stonington	3,748	4,219	12.6	4,620
Salem	1,453	2,335	60.7	3,385
Voluntown	1,452	1,637	12.7	1,780
RURAL TOWNS:	10,045	11,918	18.6	
REGIONAL TOTALS:	220,402	225,666	2.4	

* 11,659 exclusive of military personnel.

** Projections are based on the official state projections prepared by the Connecticut Offic of Policy and Management.

3. ENCROACHMENT ISSUES AND AREAS OF CONCERN

A. THAMES RIVER/HARBOR ACTIVITIES AND WATERFRONT DEVELOPMENT

There are several issues related to the Thames River and Harbor that already present minor encroachment problems to the Navy. Also, future waterfront development along the river has the potential to cause additional encroachment on the submarine operations.

The New London Harbor is located at the eastern end of Long Island Sound, thirteen miles west of the Connecticut-Rhode Island state line. Because of its location, the harbor is the most favorable natural port location along the Connecticut coast. The harbor provides direct access to the major trans-Atlantic and coastal sea lanes.

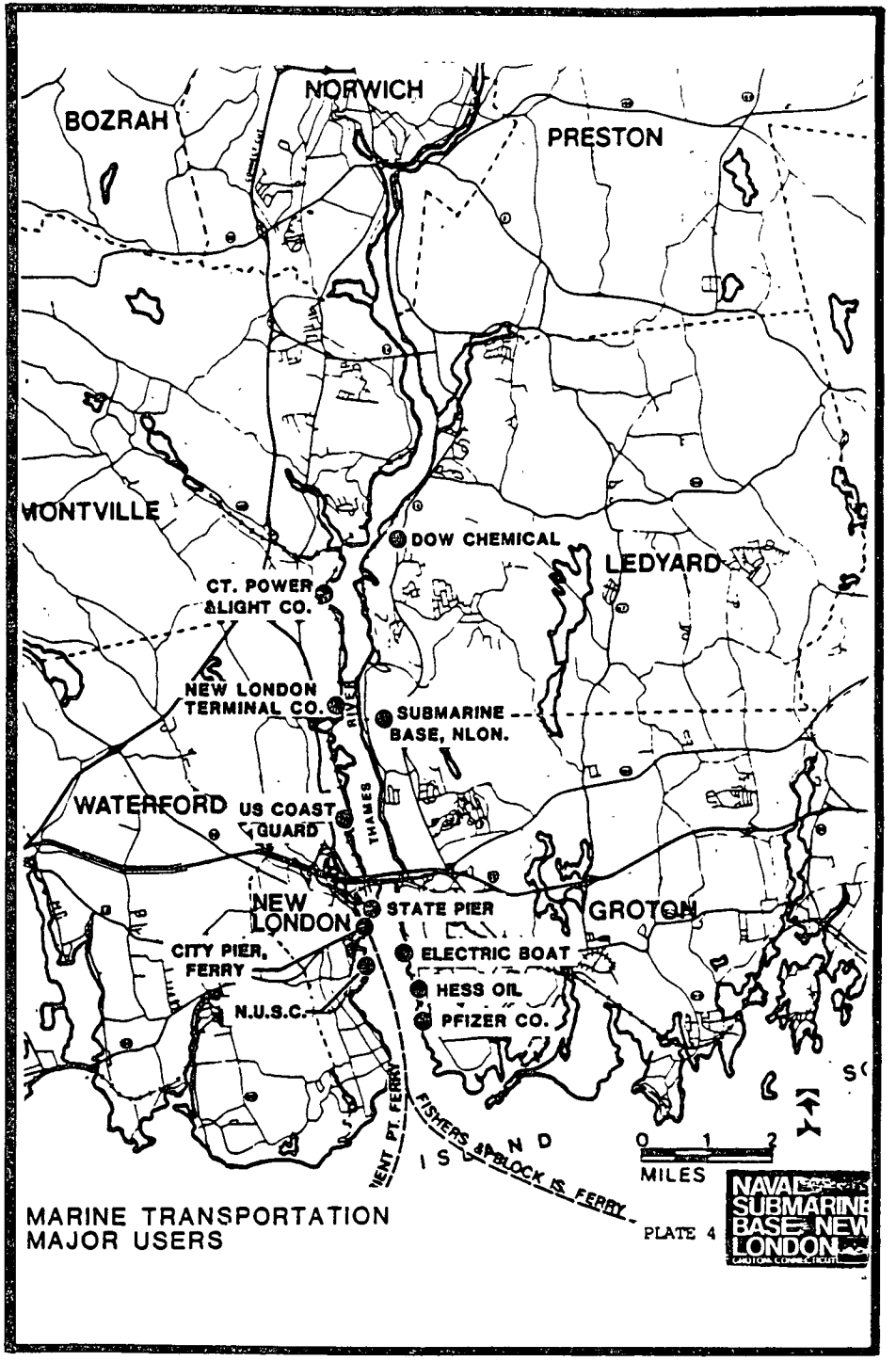
The New London Harbor entry channel is 500 feet wide and was recently dredged to a depth of 40 feet. It is approximately 3.5 miles in length. The main harbor ends at the State Pier. The main navigation channel continues beyond this point, as far as Norwich, but at progressively shallower depths. Various activities on both sides of the Thames River and harbor have private docking facilities and are major users of the river for marine transportation, especially for the receipt of fuel and chemicals. See Plate 4.

The waters outside the harbor, especially Block Island Sound, are prolific fishing areas. The local fishing industry is comprised mostly of small businesses, many of which are family owned. There are cooperatives but no major unifying organizations in this industry. The harbor and Long Island Sound also support a large amount of pleasure craft including yatchs over 100 feet in length.

Year-round ferry service provides daily passenger service and vehicle transport from New London to Fishers Island, New York, and Orient Point, Long Island. In addition, service is provided to Block Island, Rhode Island, between June and September. Plans for locating all of the ferries near the New London City Pier were implemented in 1978.

In addition to all of the above river, harbor, and sound traffic is the operation of the submarine fleet homeported at the Submarine Base. The submarines generally depart and return from maneuvers during the week.

There are three areas of encroachment that sometimes interfere with submarine movements from the Base to the sea. See Plate 5.



MARINE TRANSPORTATION
MAJOR USERS

PLATE 4

1. The first problem involves th abundance of commercial and pleasure craft that anchor, fish and generally navigate in the waters from the entrance to the Thames River channel out to the Race. The Race is the geographic opening from Long Island Sound to the Atlantic Ocean. The density of boats and fixed fishing gear is greatest during the warmer months of June thru August. A major problem for submarine traffic is the abundance of lobster pots that are placed in the route they traverse when heading out to and returning from sea. The lines attached to these devices have become entangled on the submarines on various occasions.

In addition to the hazards associated with snagging anchor and lobster pot lines and fishing nets, there is also the potential for a small craft to be swamped in the wake of a submarine if it is too close. The failure of craft to stay out of the route of a submarine or the need for a submarine to manuever around many craft anchored in its normal route are both undersirable situations.

The boats in these waters do have a right to be there. Only the river channel is a designated area where no vessels or objects are allowed to interfere with or block the passage of ships. The Coast Guard, Army Corps of Engineers, and the State Department of Environmental Protection enforce the state and federal laws governing the use of the river channel, however, the waters outside of the designated channel cannot be regulated in a similar manner.

There are two approaches that the Navy can take to resolve or diminish the existing situation. The first is for the Navy to take the lead and establish a dialogue with all the local parties involved and work out an amicable solution. If this approach does not work and the problem continues or worsens, the second approach would be to initiate available legal procedures.

It is in the best interest of the Navy and any specific Navy Installation to maintain positive public relations with the adjacent communities. The fisherman, perceived as the major cause of this problem, earn their living from the waters involved here. Th needs of all concerned must be understood and respected.

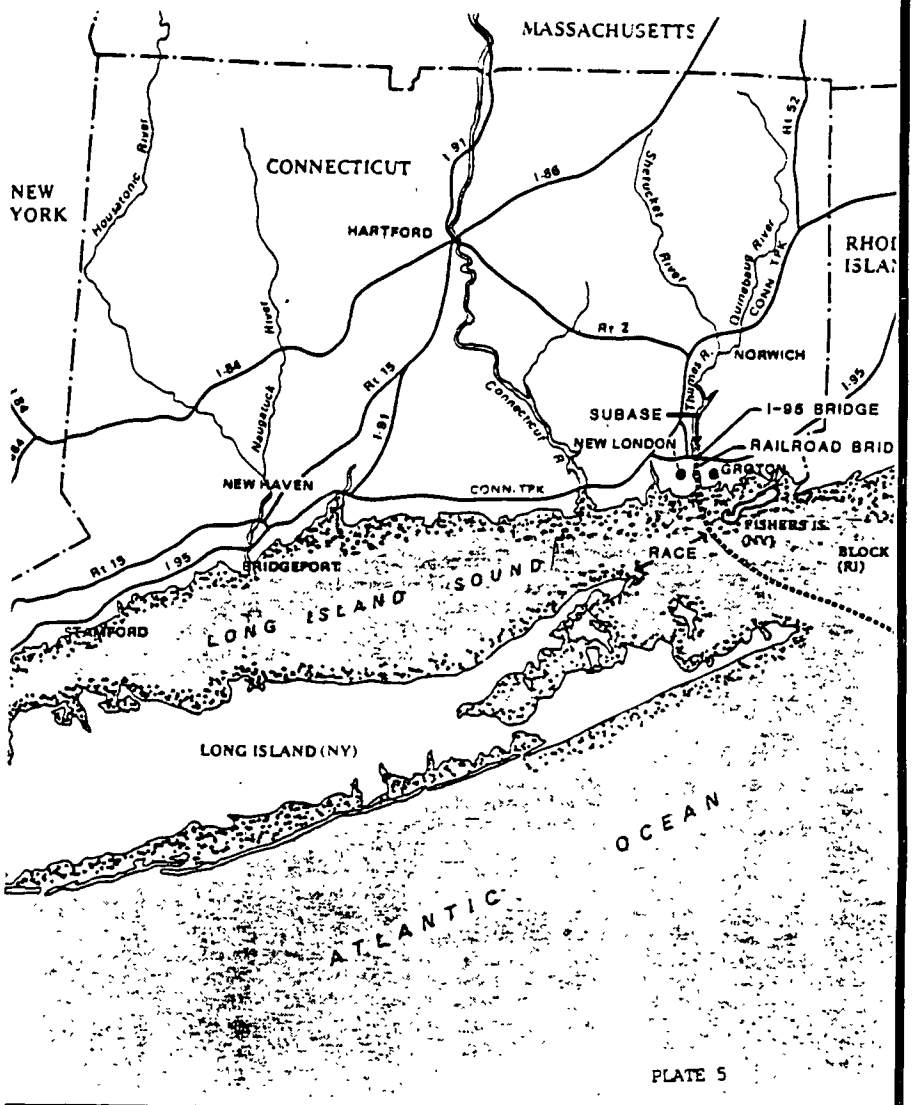


PLATE 5

SUBMARINE NAVIGATION ROUTE

NAVAL SUBMARINE BASE NEW LONDON

0 5 10 20 Miles

The two most frequently mentioned groups of people involved in this problem are the lobstermen and charter party boat operators. The Navy could obtain a list of all the licensed lobstermen in the area. The State Department of Environmental Protection licenses all lobstermen and can provide this list. Also a list of all charter party boat operators could be obtained from the local party boat association. The Navy could send a letter to each individual along with a marked USGS map or Coast Chart from the National Ocean Survey. In the letter, the potential hazards to craft operating in the submarine route would be enumerated. A brief discussion on the importance of unobstructed transit of submarines for national defense would also be included with the route of the submarines from the channel entrance to the Race drawn on the map or chart. In addition, the letter would ask for replies that would describe the specific requirements the fisherman have for utilizing these waters traversed by the submarines.

After preliminary responses are gathered, meetings could be set up with the various lobstermen cooperatives and party boat owners to discuss alternatives and find a solution that will meet the needs of all parties concerned. A solution can be found if all parties concerned have an open dialogue with each other and all views and opinions are discussed and encouraged. Only through amicable relations and a mutual understanding of everyones needs can a cooperative spirit develop and prevail in the use of the harbor and sound waters. All Navy efforts in this matter should be coordinated with and be in concurrence with the Coast Guard, State Department of Environmental Protection and the Army Corp of Engineers.

A more drastic approach would be to initiate legal actions. If the Navy can prove that an individual is creating an obstruction in the navigable waters between the channel entrance out to the Atlantic Ocean, the Army Corps of Engineers has the enforcement capability, under the Rivers and Harbors Act of 1899, to have the obstruction removed. This would occur by the Corps requesting the U.S. Attorney to obtain an injunction from a Fed ral Court which would prevent the individual from continuing to obstruct the waters. Lobster pots are considered by the Army Corps of Engineers an object that would be in this category of objects or structures that may block navigable waters. This type of litigation would be very time consuming and the Navy would have to produce strong evidence that the obstructions were a clear and present danger to navigation.

The Coast Guard has the authority to designate a fairway when deem d necessary. A fairway is an area of water which usually occurs at the approach to a major harbor or port. Two lanes of opposing traffic and a buffer zone between them are marked with buoys. It is similar in concept to a major highway for vehicles on land. Fairways have restrictions which prevent craft from obstructing the passage of ships in this designated area. These restrictions include the prohibition of net fishing, the anchoring of any craft or the placement of any fixed gear. The Navy would have to present a strong case to justify the need for such an action. The amount of commercial cargo and tanker traffic currently traversing the sound, harbor and river do not justify such an action at this time. However, the Navy may det rmin that the fairway is needed to ensure the unobstructed passage of submarines and is therefore in the interest of national security.

This action would be very controversial and no doubt create much opposition from the local fishing interests. It would also place an additional burden on the Coast Guard who would have to police the zone. They already have numerous tasks and functions to perform in the New London Harbor and coastal waters.

2. The second problem area is similar in nature to the first one but involves the regulated river channel. Periodically the submarines encounter lobster pots that have been illegally placed in the channel by fishermen. These wooden devices that ar attached to a small buoy can be hit by the screw of the submarine and cause minor damage. Also the attached buoy lines can become entangled.

The State Department of Environmental Protection (SDEP) is th agency that regulates the lobster fishing in the state. All lobstermen have to obtain a license from the SDEP to utilize th New London harbor and Long Island Sound waters. The SDEP is also an enforcement agency for regulations it promulgates. Th regulations clearly state that no fixed gear, including lobster pots, can be placed in any navigable channel established and marked by the U. S. Coast Guard. The penalty for violating these regulations is a fine and a loss of license for a period of time that varies with the specific violation. This problem of lobster pots in the channel does not occur frequently.

The Navy, as part of an ongoing dialogue with the Coast Guard and the SDEP can continue to emphasize the importance of their n ed for unobstructed movement of submarines. Since potential violators of channel waters are aware of th regulations, the Navy can request that these agencies be strict in their enforcement and penalizing of violators who place fixed fishing gear in the designated river channel.

3. The final problem is the periodic malfunctioning of th Thames River railroad drawbridge that crosses between Groton and New London. The most recent mechanical problems occurred in July 1983. The failure of the clutch and misalignment of the main drive motors resulted in the inability to open the bridge for several days.

The bridg was in the process of having a major overhaul when this problem occurred. The recently completed $7 million renovation included major work on the mechanical and structural components of th bridge. The bridge is owned by Amtrack and the work was funded and contracted out by the Federal Railroad Administration. It would seem reasonable to say there should not be any problems with the bridge in the forseeable future. However, in the unlik ly vent of the bridge being stuck in the closed position again, the SSN 585 class submarines will be restricted in their movement. Also, the passage of all surface ships to and from the Submarine Base will be blocked.

The clearanc under the drawbridge at mean high water (MHW) is 30 feet. All classes of submarines normally berthed at the Submarine Base, except USS SKIPJACK (SSN 585) Class, can pass under the drawbridg at MHW when the bridge is lowered. The Skipjack class can pass under at Mean Low Water (MLW) with about 1 1/2 feet of clearance. There are currently five SSN 585 class submarines at the SUBASE. Their unrestricted movement is considered hampered when the bridge is in a down position because it is too risky to pass under it with such a small amount of clearance. The blockage of several submarines and some submarine support ships on the Thames River, above the drawbridge, presents a serious problem in the event of a major mobilization.

Two actions could help prevent this scenario in the future. The first action involves the communications between all parties concerned with the bridge and the planned closings of the bridge by the owner, AMTRAK.

According to the Coast Guard Bridge Administration Office in New York City, the railroad bridge is subject to federal regulations. Fed ral law states that the owner of the bridge, AMTRAK, has to notify th Coast Guard one week in advance of any planned bridge closing.

Submarine Group Two has appointed a representative to be the point of contact for all bridge related matters. This person communicates with the New London Captain of the Port. The Navy could request the Coast Guard Bridge Administration Office in New York City to send a letter to AMTRAK reminding them of their responsibility to report all planned bridge closings one week in advance. If a good communication system is maintained, the Navy will have ample time, one week, to relocate potentially affected Base berthed ships down river beyond the bridge to the State Pier facilities.

The second action is the investigation of the riverbed conditions between the piers of the railroad drawbridge and the structural design of the pier foundations. If it is feasible, the existing channel may be dredged an additional five feet in the bridge and bridge approach areas. The SSN 585 class submarines would then be able to safely pass out of the river to the sea with the bridge in a down position. The submarine would be required to take on some ballast to sit lower in the water and give greater clearance between the bridge and the conning tower of the submarine.

The Army Corps of Engineers has cognizance of the formation and maintenance of channels in the New London Harbor and Thames River. A representative of the Submarine Base could initiate the investigation of the above action with the Army Corps of Engineers Regional Office while keeping the Captain of the Port of N w London informed of the investigation status.

4. In addition to the three above existing problem areas, ther is a potential area of encroachment in the form of additional river traffic generated by future riverfront development.

The development plans for the municipalities of Leydyard, City of Groton, New London, Waterford and Montville, all designate ar as of their riverfront land for either water related industrial/commercial or water related recreational development. See Plate 6.

The Town of Ledyard has designated two areas of their shorelin to be used for water dependent and water enhanced commercial activity. One of these areas lies immediately adjacent to the northern boundary of the Submarine Base.

The City of Groton has recently pr pared th Thames Street Study which proposes substantial development along the edge of the Thames River and Thames Street from the I-95 bridge down to Electric Boat. The plan includes the development of three marinas.

The City of New London has also recently updated its Plan of Development. The plan designates many parcels of land in the Shaw's Cove area for waterfront development with marine uses such as marinas and yacht clubs, and waterfront commercial/ industrial. Th se uses emphasize a dependency upon waterfront locations. New London has two programs to attract development to the City. They are the Urban Enterprise Zone and the Foreign Trade Zone. Both of these zones encompass much of the above mentioned land around Shaw's Cove.

Transportation plans for the city include an additional ferry service to carry vehicles and passengers from the City Pier to Montauk Point on Long Island, NY.

The Town of Waterford's land use map shows a large parcel of riv rfront land for industrial use situated across the river from the Submarine Base. This land has the potential for marinas or other water dependent industrial uses.

Finally, the Town of Montville has also designated some riverfront parcels of land for coastal industrial uses.

On a regional planning scale, the Southeastern Connecticut Regional Planning Agency has prepared two reports in the past few years that make proposals for the development of Thames River waterfront land for both commercial and recreation purposes. These studies, an Action Plan for the Development of the Thames River and the Plan for Recreational Development of the Thames River, do not discuss development in detail. They do present overall management alternatives for development.

It is clear that the municipalities and regional planners want to take advantage of all waterfront development opportunities. The amount of development will depend on the ability of the local economy to support it. If the envisioned development does occur in all or most of the designated areas in future years, there will be much more river traffic to contend with. An important issue is how much of an impact this additional traffic, combined with the existing, will have on the Navy's submarine operations.

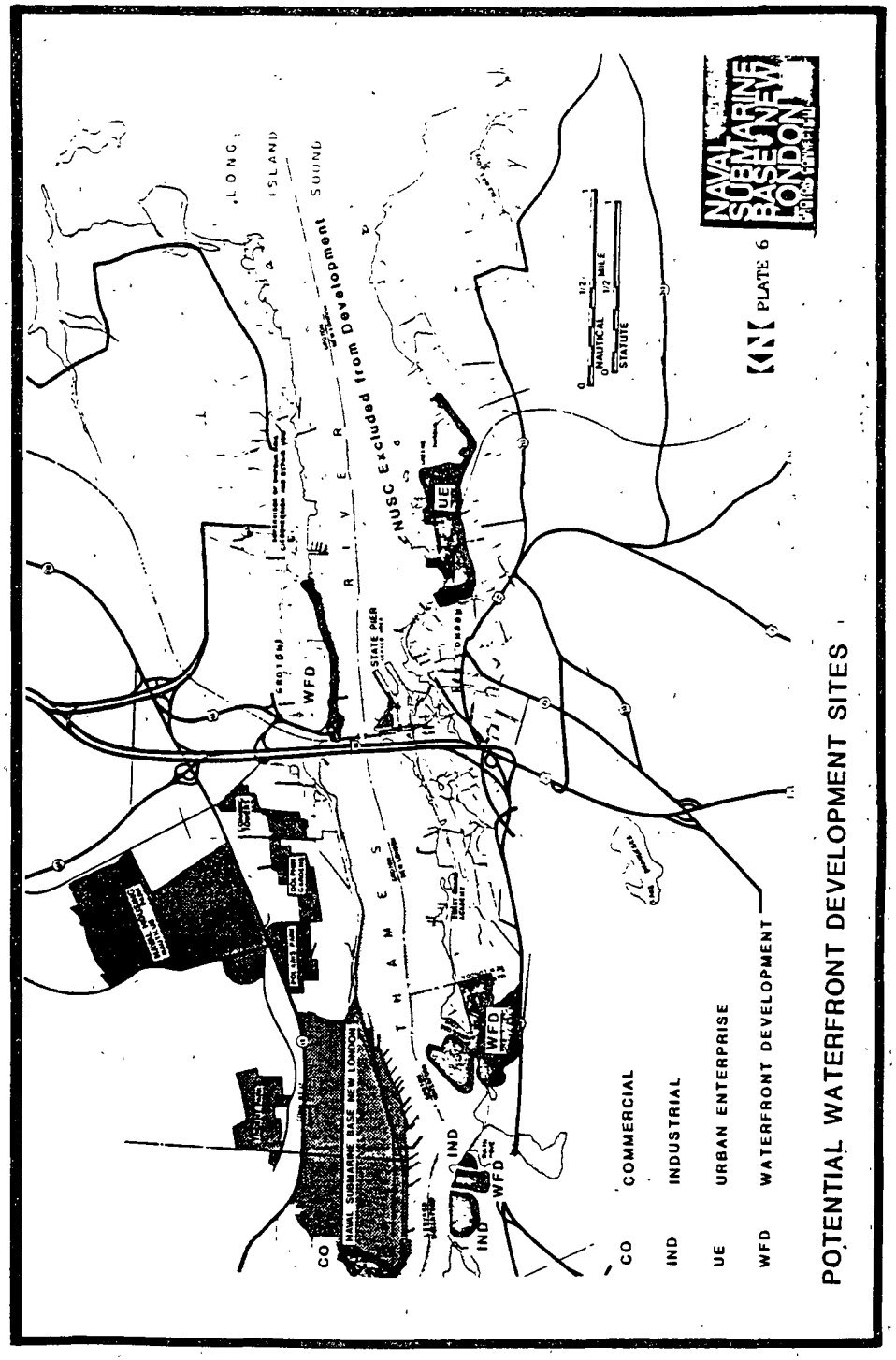


PLATE 6

POTENTIAL WATERFRONT DEVELOPMENT SITES

Presently, the river supports a moderate amount of traffic comprised of various types of vessels. They include the ferries that depart from the New London City Pier; cargo ships, approximately 40 during 1982-83, unloading at the State Pier; fuel/chemical barges and tankers destined for industries along the river; pleasure craft, many of which are significant in size; and the submarines from the main Base and State Pier. There are many more smaller pleasure craft utilizing the river today than larger vessels. There is no vessel traffic service that coordinates all ship movements in the harbor and river. The current volume of traffic does not justify such a service. The Captain of the Port, who is a Coast Guard officer, has jurisdiction over the river and harbor and monitors all activity. Currently, the Captain of the Port is notified of all commercial traffic to State Pier, commercial traffic to industries along the river, and large pleasure craft over 100 feet traversing the harbor and river. All ferry traffic is run on a regular schedule. The only large craft whose movements the Captain of the Port is not aware of is the Navy's submarines. He has indicated that it would be beneficial for him to know the submarine evolutions schedule as it would allow him to better manage and coordinate all activities on the river.

The future growth in river traffic will primarily be in the small pleasure craft. The potential for additional marinas is good along the river since many of the sites available for development are amenable to this type of activity. The local economy is not that diversified to support major import/export activities. This fact along with the lack of sites available for large piers and cargo handling facilities will most likely keep the volume of commercial traffic to its present level.

Overall, the existing conditions in the river traffic are satisfactory. The traffic does not negatively affect the arrivals and departures of the submarines. However, future increases in the amount of smaller pleasure craft and possibly smaller commercial fishing vessels may introduce a minor problem for submarine transit. There are two actions that may help ensure that the submarines continue to traverse the river and harbor uninhibited by other vessel traffic.

First, submarine operations personnel from the Submarine Base could provide the Captain of the Port with a weekly listing of all planned submarine arrivals and departures for the main Base and state Pier. Operations personnel at the Base have indicated they don't see a problem in providing the information to the Coast Guard. The Coast Guard already provides services for the Navy such as protecting the waterfront security zones around Naval facilities on the Thames River and providing security at the launching of new submarines at Electric Boat. This information would complete the total picture of all larger vessel movements on the river and help the Captain of the Port manage all activity on the river and prevent any potential conflicts between submarine traffic and other vessels.

A second action may help prevent interference of submarine traffic by the smaller pleasure craft. The Navy could initiate a dialogue with the owners of marinas in the area. Similar to the previously discussed problem with fishermen, the Navy could discuss with marina owners the importance of the uninhibited passage of submarines to and from the sea. The Navy could ask for the marina owner's cooperation in informing all boat owners at their marinas to exercise caution when navigating the main route of the submarines and give the submarines the right of way when in transit.

5. A final issue concerning river traffic is related to the Harvard-Yale boat races held every June. Participants in this event practice for two to three weeks before the races on a course marked by buoys located every one-half mile. This course extends down the river past the Base. The marker buoys are sometimes placed within the designated channel. As discussed in the previously mentioned lobster-pot issue, it is illegal to place any object, including buoys, in the channel. This condition is considered a nuisance since the buoys may briefly interfere with the movement of a submarine. The Navy could request the Coast Guard to monitor the placement of the buoys to ensure they are not put in the channel.

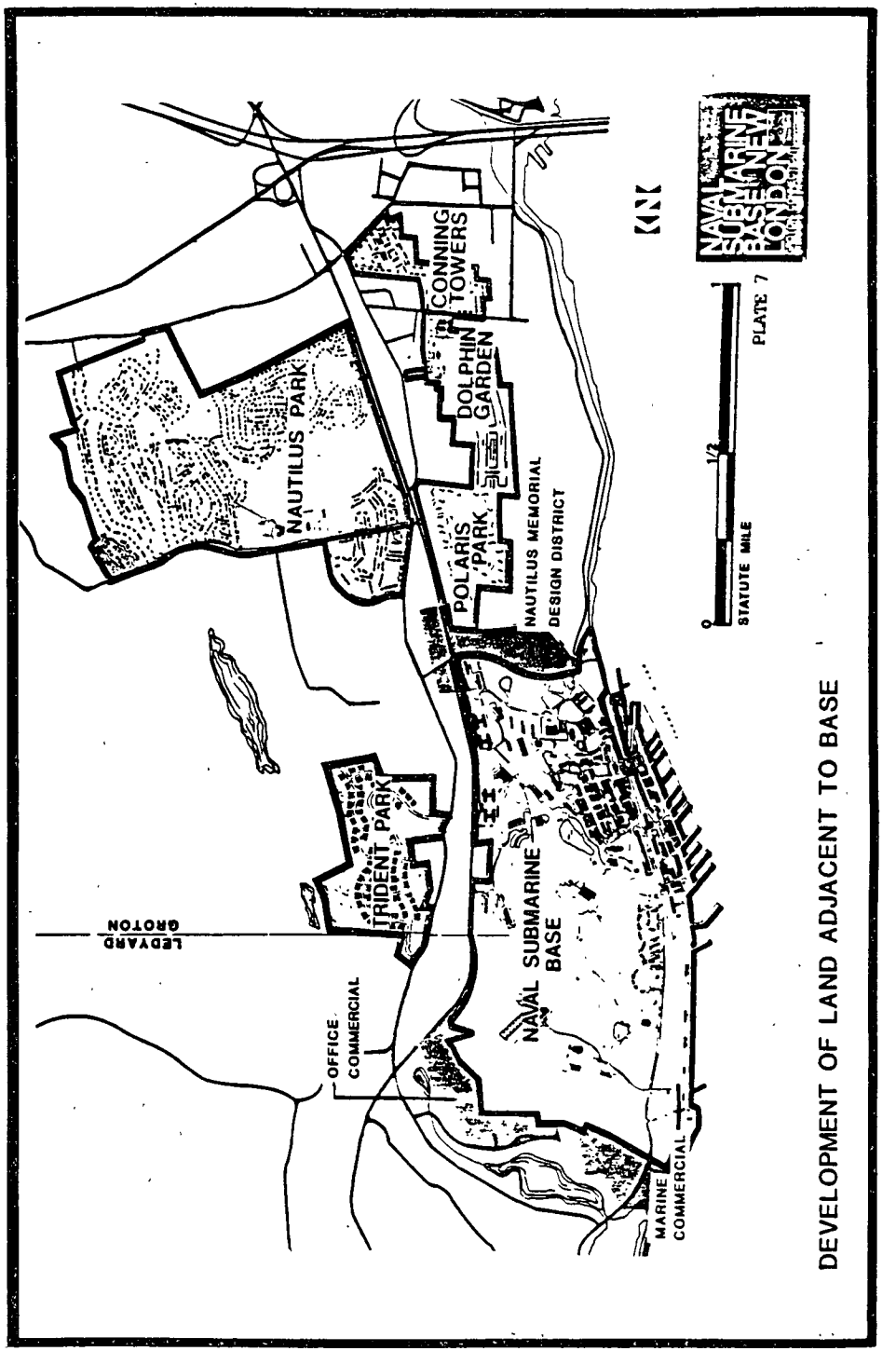
B. DEVELOPMENT OF LAND ADJACENT TO THE BASE

Th Submarin Base is bordered by th towns of Ledyard and Groton. Upon r viewing the Plan of Development for each town, a land area was discovered in each plan that has the potential to be developed in a manner not compatible with the Submarine Base facilities. See Plate 7.

In Ledyard, a new Plan of Development was completed in 1982. The previous plan of 1972 had designated the land immediately adjacent to the northern boundary of the Base for low density residential use with some medium density residential. The town land from the Base boundary line out to approximately 500 feet north has no development on it. This is primarily due to the building constraints caused by the physiography of the land and poor access. A similar situation exists outside the northern part of the Base's eastern boundary where undeveloped town land exists b twe n the eastern boundary and Route 12. The Navy land immediately south and west of the boundary lines is undeveloped and also has building constraints due to the physiographic features of the land.

There are not many facilities in the northern section of the Base, however, the weapons repair and storage facilities are located ther . These facilities generate Explosive Safety Quantity Distance (ESQD) arcs that extend out beyond the northern and eastern boundaries of the Base. See Plate 8. The Navy's land within these arcs is predominantly undeveloped and in a natural state. Since the Ledyard land which abuts these arcs is also undeveloped, a compatible Navy/private sector interface exists.

The 1982 version of the Ledyard Plan of Development, however, has proposed changing the land-use categories for the land adjacent to portions of the northern and eastern Base boundaries. The new plan designates much of the land for commercial use. A section of the land closer to the river is for marine commercial use while the remaining larger area is now for office commercial use. A key issue related to Ledyard's proposed change in land use is the fact that th town's proposed land use change to commercial use includes land that is presently encumbered by ESQD arcs. The Navy assumes the town is not aware of, or is overlooking, the ESQD arcs. The development of land within the Navy's ESQD arcs with private commercial facilities is unacceptable. See NAVSEA OP-5 (4th Revision) for the Department of Defense criteria pertaining to th se ESQD arcs.



DEVELOPMENT OF LAND ADJACENT TO BASE

The Navy could determine if the town was aware of the ESQD situation. If unaware, the Navy could inform the town. Taking this information into consideration, the town may be inclined to alter their proposed land-use categories adjacent to the northern end of the Base. Ideally a buffer zone strip of undeveloped land would be designated adjacent to the boundary line of the Base. The Navy policy at this time, however, is not to raise the ESQD arc issue until MILCON Projects P-165 and P-384 are firmly programmed for a specific fiscal year. These projects provide funds for the acquisition of the town land within the ESQD arcs.

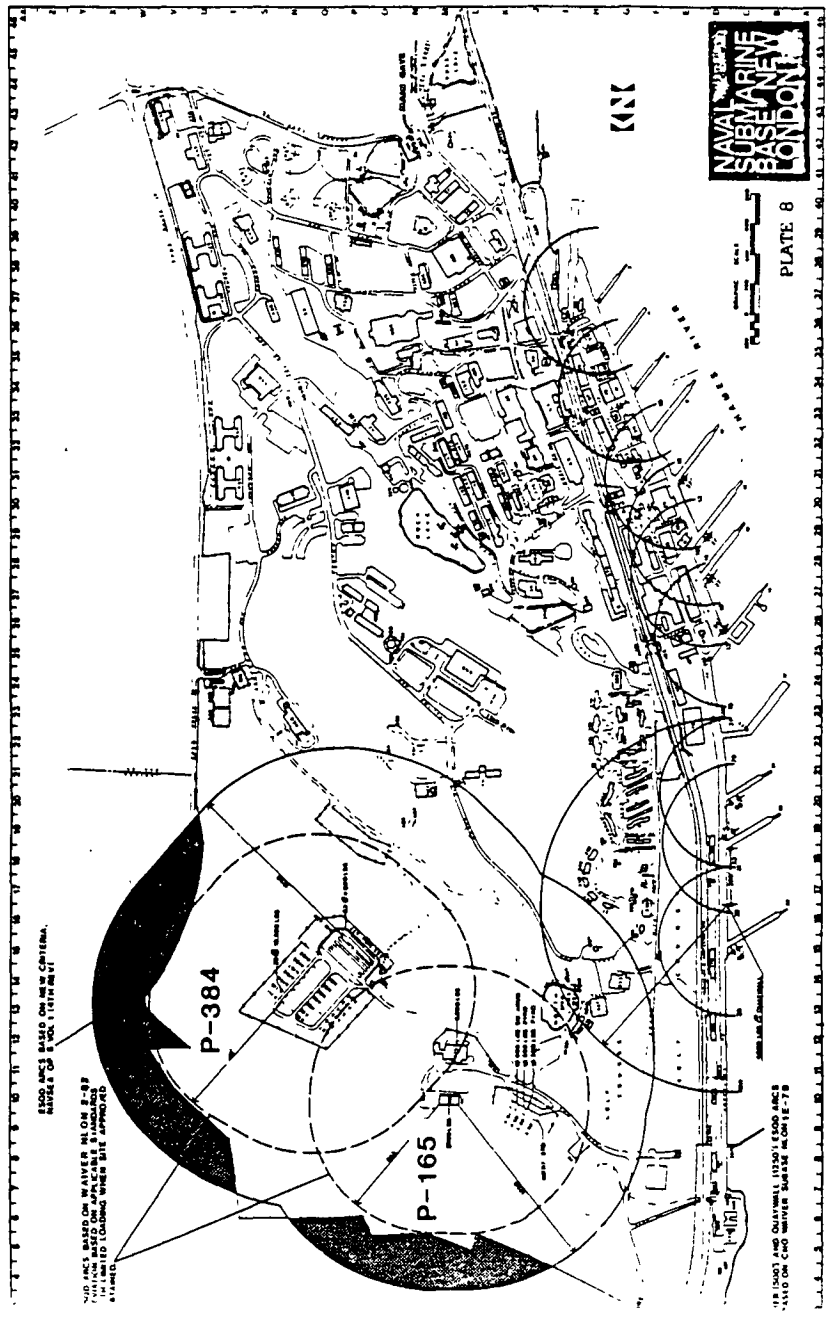
The Navy's acquisition of town land is an encroachment issue related to the above mentioned land use changes. The Navy is currently encroaching upon the Town of Ledyard with its ESQD arcs. Further, the above mentioned projects, P-165 and P-384, proposed for fiscal year 1986 and 1988 respectively, provide funds for the purchase of the town land within the arcs. The Navy intends to acquire a 16.6 acre parcel of undeveloped land and another approximate 23 acre parcel of land with 3 private residences. See Plate 8. The Navy does not intend to raise the acquisition issue until the projects are firmly programmed for a fiscal year.

Since the Navy intends to purchase the land or acquire a restrictive easement, the cost will be based on the fair market value of similar land in the area. The purchase will be less expensive to the Navy if the land remained a low density residential use. The future acquisition may be impeded if any commercial facilities are already developed or plans by developers for the construction of commercial facilities on this land exist when procedures are initiated by the Navy to acquire the land.

Since th Navy will not discuss the land acquisition with the town until the projects are closer to their implementation dates, it will be nec ssary to closely monitor Ledyard's planning and zoning activities affecting this land.

A Navy repr sentative could stay informed of any development plans for this land. If some action is proposed that could impede the Navy's purchase in the future, the Navy could discuss their plans with the town at that time and try to discourage the action.

The second area of potential encroachment from proposed land development occurs in the Town of Groton. The town has proposed the rezoning of land along Crystal Lake Road between Route 12 and



ROPOSED LAND ACQUISITION

Military Highway and land along Route 12 on both sides of Crystal Lak Road as a NAUTILUS Memorial Design District. This district is intended to be the primary entryway to the NAUTILUS Memorial on the Thames River. This proposed change involves land that is currently zoned multiple family, single family residential and some land zoned commercial heavy. The newly designated district would permit any retail or service use, hotel or motel, restaurant, commercial recreation or a mix of the same uses which are consistent with the purpose and objectives of the design district. All development would be subject to approval of a special permit.

Two issues of concern to the Navy in this proposed area of development are traffic flow and aesthetics.

Crystal Lake Road is the most heavily used road for all traffic entering the Submarine Base. The main gate on Crystal Lake Road carries approximately 17,000 vehicles daily or almost 70% of the total daily military personnel. Traffic is comprised of civilian and military personnel, trucks and other service vehicles, Exchange and Commissary patrons, and recipients of Naval Hospital out patient clinic services.

At times, the main gate area becomes congested with traffic. This usually occurs at the 6:30 to 7:00 a.m. and 3:30 to 4:00 p.m. peak periods. The additional traffic expected from visitors to the NAUTILUS Memorial will increase volumes on Crystal Lake Road but is not expected to generate a level that can not be handled by the existing road. The development of businesses along Crystal Lake Road that create many driveways and access points has the potential to create a more hazardous traffic corridor due to many vehicles turning onto and off of Crystal Lake Road. This type of strip development is not desirable and can be prevented by using modern principles for circulation design in the proposed district development.

Another concern with the development of this area is the visual image that will be created by all architectural and landscape components of new development. The NAUTILUS memorial will be a major tourist attraction in the region. Proponents of the memorial feel that its importance in Naval history warrants the image and operation to be in the realm of a national monument. The main gate of the Submarine Base is located at the intersection of Crystal Lake Road and Military Highway, the same area as the entrance to the memorial. The mission and history of the Submarine Base warrant the image it presents to reflect the significant role the Base has in the defense of the country. This image is conveyed best through the appearance of Base frontage and the main gate area on Crystal Lak Road. The Base land and structures along this major traffic corridor are well maintained and of high aesthetic value. S e NAVFAC P-960, INSTALLATION DESIGN - Improving the Visual Environment, for guidelines to use when planning for and improving the visual quality of Installation facilities and environment. It is very important to avoid the development of tacky "tourist trap" strip development across the road from the Base and the NAUTILUS Memorial. This type of development is not appropriate for the area and would detract from the intent of creating a first class cultural experience for visitors to the area.

Similar to the Ledyard situation, the Base representatives could closely monitor the proposals submitted to the Town of Groton that are related to Crystal Lake Road. The Navy and Town of Groton communications have been good in the past. The Town Zoning Board of Appeals currently sends the Submarine Base notifications of hearings on proposed zoning changes. Navy representatives attend meetings when concerned with the hearing issues. By closely monitoring planning and zoning activity, the Base will be aware of all proposed development for the NAUTILUS Memorial Design District. The Navy could voice its objections to any development along Crystal Lake Road that will have a negative impact on the traffic flow and safety or would be offensive to the high quality visual image desired by the Navy for this special environment, th approach and gateway to the NAUTILUS Memorial. The Navy could then present viable alternatives to mitigate or eliminate undesirable aspects of such a development proposal.

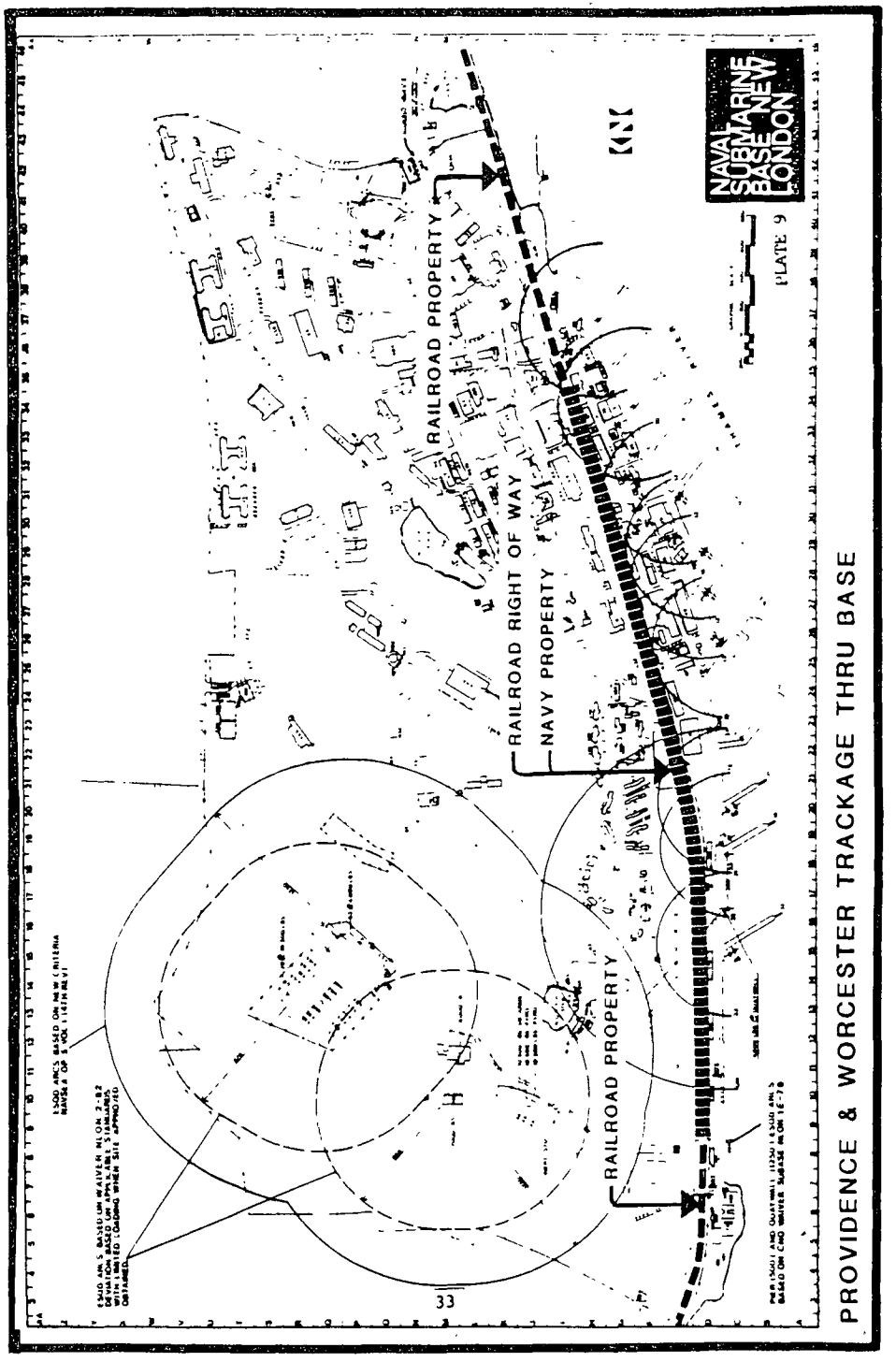
C. PROVIDENCE AND WORCESTER (P&W) RAILROAD

The P&W railroad owns and operates a line that runs from Worcester, Massachusetts to Groton, Connecticut. The section of tracks from Norwich to Groton run along the Thames River and pass through the Submarine Base. The railroad primarily provides freight service. It also has been operating excursion trains to specific attractions along its line from Worcester to the Groton/Mystic area. These excursion trips occur on weekends only and do not interfere with Base operations. Any proposed excursion trips during the week, however, will encroach on the Base operations because passenger trains would be passing through the ESQD arc safety zones generated by the weapons handling points on the piers of the lower base. The railroad was granted a right-of-way by the Navy in 1898 which contains several terms that must be followed. The Navy owns the land included in this right-of-way.

The tracks and right-of-way pass through the Base and physically divide it forming the interior boundary between the upper and lower Base. See Plate 9. This inflexible boundary, approximately 1.7 miles long, is traversed by vehicles at four locations. Three of these locations occur via very low underpasses at Barb, Dorado, and Corvina Roads. The fourth location, at Barbel Road, is the only one that crosses the tracks at the same grade. It is here at the most southern point of access/egress, that all large vehicles and equipment must cross from one side of the Base to the other.

There are several points along the lower Base waterfront where weapons are loaded onto and unloaded from submarines and transfer craft. There are nine berthing pier handling points which generate Explosives Safety Quantity Distance (ESQD) arcs with a radius of 500 feet. There is also a handling point on the quay-wall between piers 32 and 33 where boats are loaded and off loaded for transfer of weapons between the Base and State Pier based Squadron 10. An ESQD arc with a radius of 1,250 feet is generated from this point. See Plate 9.

The radii length of these arcs correspond to the minimum distance permitted between inhabited buildings and the explosives hazard. Since the ESQD arc criteria came into effect long after the facilities on the lower Base were constructed, a waiver has been granted to allow for deviations from the ESQD requirements for the handling points on the lower Base.



A separate criteria is used for arcs related to passenger railways. The minimum distance allowed b tween any railroad carrying passengers and an explosives hazard is 60 perc nt of the inhabited building distance requirements. The reduced distance is based on the facts that the railway cars are smaller than most buildings and have a smaller area exposed to concussion or flying fragments, railcars structurally have a greater resistance to concussion, and the presence of a train is only temporary instead of being stationary. Using this reduced criteria, any P&W passenger train would pass through three of the lower Base ESQD arc safety zones, exposing passengers to potential danger.

The weapons handling operations normally occur during the regular weekly work hours. Therefore, the current weekend excursion trips do not interfere with the operations. The railroad and Navy are currently working on an agreement that would allow the railroad to make stops at the NAUTILUS Memorial upon its completion in 1986. These proposed excursions would also occur on weekends. A designated stop area for the train would be defined and a special gate in the Base perimeter fence would be installed to allow passenger access to the Memorial. These proposed conditions are part of a larger real estate package that would allow the Navy to acquire some P&W right-of-way property to be used for the NAUTILUS Memorial.

An encroachment problem arises if the P&W wants to operate excursion trips through the Base during normal weekday working hours. The railroad has mentioned the possibility of having weekday educational trips to the NAUTILUS Memorial for schools. If and when the volume of all types of excursion trip traffic becomes so great that they occur at a rate where weekday trips are desired by the railroad, the Base will have to discuss the potential hazards to passengers with the railroad. There also has been discussions in the past about providing regular weekday passenger service on this line. The same encroachment issue would be involved in this scenario also. The P&W, however, has recently stated that all market analysis has shown that this type of service would not be economically feasible unless subsidized by the State of Connecticut.

Th re are two approaches the Base could take in response to proposed excursion trips or regular passenger service during the weekdays. The first is based on the terms of the right-of-way granted to the railroad. The ninth of eleven conditions of the right-of-way granted to the railroad by the Navy in 1898 states that the Secretary of th Navy may cause th railroad to remove all its structures from Navy property if it is necessary for the public good. It is unlikely that the Navy would consider removal of the railroad. This condition of the granted right-of-way. however, does imply that the Navy does have the right to refuse any action proposed by the railroad if the railroad's action could put passengers in danger. The Navy could refuse proposed excursion trips or regular passenger service passing through the Base during weapons handling operations because it is necessary for the public good.

The second approach to eliminate potential hazards to passengers of weekday excursion trips or passenger service would be one that would involve an on-going dialogue and cooperation between the Navy and the railroad. A schedule could be developed that would accommodate both the intermittent passage of trains through the Base and the weapons handling operations.

D. HAZARDOUS MATERIALS TRANSPORTED THROUGH THE BASE

The Providence and Worcester Railroad (P&W) operates freight service on the tracks it owns and operates along the Thames River as well as on tracks along Long Island Sound owned by AMTRAK. This freight service includes the transporting of hazardous materials in the form of corrosive, poisonous and flammable chemicals to industries in the New London/Groton area.

The largest tank cars used for chemical transport by P&W have a capacity of 33,500 gallons. A typical train would contain no more than 5 of these cars. The Submarine Base has not been cognizant of the types of freight transported through the Base on the section of P&W tracks that divide it into upper Base and lower Base areas. The adjacency of these tracks to the lower Base and vital submarine operations warrants an ongoing awareness of the types of freight passing through.

During the course of this encroachment study, the P&W provided this office with the following list of hazardous chemicals transported along the Thames River and Long Island Sound. Placard numbers are attached to the cars for easy identification of their cont nts.

CHEMICAL	PLACARD NO.	HAZARD
Acrylic acid	UN 2218	Corrosive
Ammonium Nitrate	UN 2068	Oxidizer
Butadiene,Inhibited	UN 1010	Flammable Gas
Caustic Soda Liquid (Sodium Hydroxide Solution)	UN 1824	Corrosive
Chlorine	UN 1017	Non-Flammable Gas/Poison
Diisopropyl Ether	UN 1159	Flammable
Dimethyl Chlorothiophosphate	UN 2922	Corrosive
Dimethyl Carbonate	UN 1161	Flammable
Ethyl Acrylate	UN 1917	Flammable Liquid
Hxdroxyethyl Acrylate	UN 2810	Poison
Liquefied Petroleum Gas	UN 1075	Flammable Gas
Methyl Chloride	UN 1063	Flammable Gas
Sodium Cyanide, Solid	UN 1689	Poison B

All of the above chemicals are likely to pass through the Base on many occasions. A serious encroachment problem arises in the event of an accident involving a spill, leak or fire from tank cars while on Base property or in the immediate area north or south of the Base. The Submarine Base fire department is now aware of the types of chemicals transported by the railroad and is preparing a plan of action to confront a hazardous material spill, leak or fire that could occur on Base property by a derailment, structural or valve failure on a tank, vandalism or sabotage. An accident of this type has the potential to impede operations at the Base for an undetermined amount of time until the danger is eliminated and the problem resolved.

A plan of action or contingency plan would involve a general evacuation plan for Base personnel and adjustments to operations during the emergency situation. Also a detailed knowledge of the methods to combat each type of chemical under all situations, spill, leak, or fire, would have to be known by all fire department personnel.

Presently the P&W does have a hazardous materials vehicle which contains equipment such as spill containment equipment, special clothing, breathing apparatus and radio equipment. The equipment contained in this vehicle only has the capacity to contain a spill in its early stages. No firefighting equipment is aboard this vehicle. The railroad depends on the community fire departments for the majority of services required for spills, leaks or fires involving their trains. The railroad can provide assistance with their expertise in the handling of rail cars.

The Base fire department should become proficient in the methods for handling all of the hazardous materials that pass through the Base and develop contingency plans to implement in the event of a rail car accident. All tank cars have placard numbers which will correspond to the UN numbers listed above. A good source of information on hazardous materils is the Hazardous Materials Emergency Response Guidebook published by the Department of Transportation. This book describes the general properties of all hazardous materials. Along with the health hazards and potential for fire and explosives, emergency actions are described for fires, spills and leaks. First aid actions are also described.

When developing contingency plans, the Base fire department could coordinate proposed actions with the P&W railroad as well as fire departments of adjacent communities.

The Base could request periodic updates of the list of hazardous chemicals from the railroad to keep current in their ability to respond to railroad accidents.

E. NAUTILUS MEMORIAL TRAFFIC

Regional access for visitors destined for the NAUTILUS Memorial will be primarily from I-95. Once in the Groton area the majority of visitors traveling to the site from I-95 will follow Route 12 from the Interstate to Crystal Lake Road and then to the Memorial entrance adjacent to the Submarine Base main gate. Signage will be utilized on I-95 and along Route 12 to direct visitors unfamiliar with the area along this corridor. See Plate 2 for location of these access roads.

The median average weekday attendance at the NAUTILUS Memorial during the peak summer period is projected at 1,214 visitors. Assuming similar vehicle loading conditions, these visitors will travel to the Memorial in approximately 380 cars. Allowing for travel both to and from the Museum, the average weekday trip generation during the peak summer period will be approximately 760 trips, with an additional 54 trips by non-visitors. Visitor arrivals and departures will be spread over a nine-hour period, commencing at 9:00 a.m. and ending by 6:00 p.m. according to the Navy's Final Environmental Assessment for the USS NAUTILUS Memorial and Submarine Force Museum, June 1983. Typical hourly arrival/departure pattern estimates for the Memorial indicate that within this nine-hour period 85 percent of the visitor arrivals and departures will be spread out between the hours of 9:00 a.m. and 3:00 p.m., with a minor peak from 1:00 to 3:00 p.m. Fewer than 5 percent of the visitors (19 autos on the average summer weekday) are expected to arrive prior to museum opening at 9:00 a.m. Assuming a 1-1/4 hour average length of stay, approximately 95 facility related trips will occur between 3:45 and 5:00 p.m. on the average summer weekday. Existing peak period traffic volumes on both Crystal Lake Road and Route 12 occur from 6:45 to 8:00 a.m. and from 3:45 to 5:00 p.m.. As few, if any, visitors are expected to arrive before 8:00 a.m., the proposed facility will have no impact upon weekday morning peak period traffic conditions.

During the evening weekday peak period on Crystal Lake Road (3:45 to 5:00 p.m.) the 95 Memorial related trips will constitute approximately 4 percent of the traffic passing through the intersection of Crystal Lake Road and Military Highway. Similarly, assuming all traffic entering and leaving the Memorial during this period uses Crystal Lake Road, the 95 peak period trips will constitute approximately 3 percent of the traffic passing through the intersection of Crystal Lake Road and Route 12.

As described above, analysis of peak period and average daily traffic generation associated with the NAUTILUS Memorial indicates that memorial related traffic will have a minor impact on Route 12

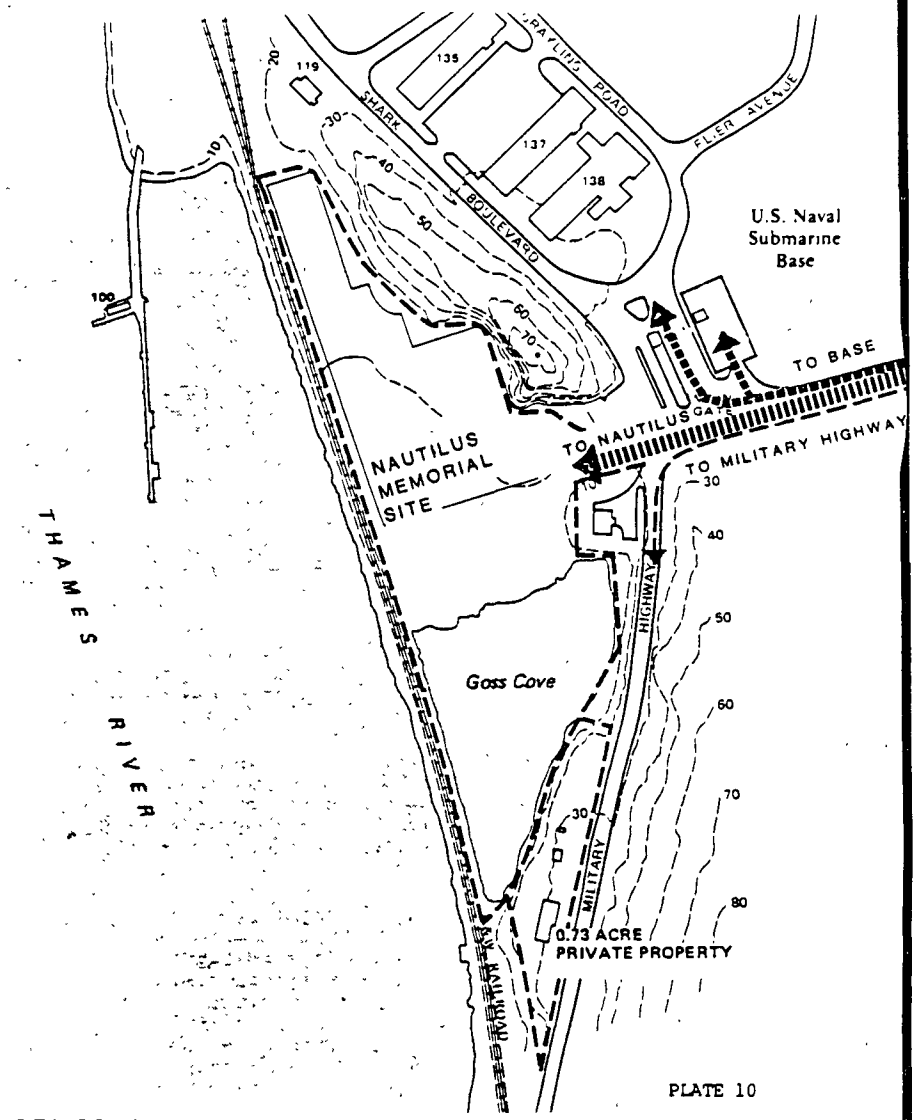


PLATE 10

CRYSTAL LAKE ROAD TRAFFIC PATTERNS

and Crystal Lake Road. The traffic projections are the best estimates possible using th information available to planners today. The actual effects the additional NAUTILUS Memorial generated traffic will have on the Crystal Lake Road/Military Highway intersection will be known after the Memorial is open in 1986.

Although the volume of new traffic generated by the NAUTILUS Memorial traffic is not foreseen as a significant problem at this time, there will be problems with the existing geometric layout of the Base main gate area and the intersection of Crystal Lake Road and Military Highway when the access road to the Memorial is created. See Plate 10.

The location of the Base main gate just before the Memorial, the configuration of the intersection outside the main gate where Military Highway meets Crystal Lake Road, and the existing traffic lane markings on the 40 foot wide Crystal Lake Road are all factors that could confuse visitors arriving at the Memorial. Visitors who mistakenly turn into the main-gate entrance lanes or the visitor/pass parking lot of the Submarine Base will interfere with the smooth flow of traffic at these locations. Today, a minor problem already exists at the main gate area. Sometimes visitors unfamiliar with the Base become confused and enter the gate lanes instead of turning into the visitor's parking lot first.

The creation of an access point to the NAUTILUS Memorial off of Military Highway will create a four-way intersection out of the existing three-way intersection along with new traffic patterns. There are currently three exit lanes from the Base entering the Crystal Lake Road and Military Highway intersection.

The addition of the Memorial access road may require that the entire int rsection and main gate area be modified for the safe and smooth flow of traffic. The Town of Groton has asked the State of Connecticut Department of Transportation (CONNDOT) to study this problem and come up with recommendations. The CONNDOT engineer in charge of the problem has indicated he is in the early stages of the investigation process which includes the gathering of data on projected volumes of traffic, turning patterns, etc. Preliminary thoughts for improving the situation include alterations to the design of the Base main gate area, signage, and the formation of two lanes for westbound traffic on Crystal Lake Road where it approaches the Base and Memorial entrances.

The CONNDOT must be aware of the Navy's requirements for the main gate area. The Navy, specifically a Base representative knowledgeable in traffic engineering, the Town of Groton and the State Department of Transportation could all work together to resolve these traffic problems. Through a harmonious working relationship, a solution can be developed that will eliminate any potentially hazardous conditions for tourists visiting the Memorial and employees of th Base.

F. SOLID WASTE DISPOSAL

Solid waste disposal is a growing problem for the communities in the southeastern Connecticut region. Studies have revealed that within five to six years, fourteen of the region's eighteen community landfills will be approaching the end of their useful life. The remaining four community landfills, including the Town of Groton, have a life expectancy of up to twelve years. The Submarine Base utilizes the town of Groton landfill to dispose of its general household type trash and construction debris. Since the Town of Groton landfill as well as all other landfills in the region will be closed within twelve years, it is not too early for the Base to be looking at alternative methods for future solid waste disposal.

The Submarine Base currently uses two contractors to remove solid waste from the main Base and the housing areas. The FY 1983 cost to the Navy for these services totals $246,237. The Base solid waste accounts for 20 percent of the total yearly tonnage taken in at the Town of Groton landfill. Current estimates predict this landfill will be filled to capacity in twelve years. This is assuming yearly tonnage will not increase signficantly and environmental regulations will not restrict the proposed capacity of the landfill.

There is a regional resource recovery task force that has been formed to investigate the feasibility of developing a regional energy recovery project or cogeneration facility that would utilize the solid waste from the communities of the region to produce energy in the form of steam and electricity. The energy would be sold to a major industry in the region. This task force is headed by the public works director of Waterford and is made up of public works directors and planners from many of the region's communities. The task force has recently accepted proposals from four major industries and will be hiring a consultant to evaluate the feasibility and practicality of each proposal. In order for a project of this type to work, the market for the energy produced has to be stable and be committed to a long term agreement to utilize the energy. Otherwise, the economic return to pay for the facility could not be guaranteed. Another economic factor involves the cost to the municipalities to transport their waste to the facility. If a community of the region is geographically distant from the facility, the contract for solid waste removal to th facility may be in excess of the cost to utilize a landfill out of the region.

The task force will have to find a proposal that meets three preliminary requirements. The market (industry) will have to be stable and able to make a long term commitment to use energy produced. A facility of this type will reduce the quality of the air immediately around it. A site that is not opposed by the adjacent local community will be required. Finally, the project has to be economically feasible to all parties involved.

This regional approach may be one solution to the problem. It should be noted that the regional task force feels the Submarine Base is one of the top three industries considered to be the most desirable market in the region for energy produced by a resource recovery project. They would like to discuss this further with the Navy if the Navy is interested in the program.

As mentioned above, the Navy currently spends nearly a quarter of a million dollars a year for solid waste removal and costs will most likely increase in future years due to the general economic trends.

There is always the possibility that a regional resource recovery facility will not be developed. If it was constructed distant from the Base, the cost for utilizing it may increase the Base expenditures for solid waste removal significantly due to increased transporting costs. Also the future use of a landfill out of the region, upon the closing of landfills in the southeastern Connecticut region, would increase the Base expenditures significantly since it will be much further away than the currently used Groton landfill.

The Base could start investigating all alternatives available to reduce future costs for solid waste disposal. Through reclamation, the Base may be able to significantly reduce the yearly volume of solid waste contracted for removal. This could reduce costs or hold the cost down to its current level in future years. Another alternative would be for the Navy to construct their own resource recovery facility. Although there would still be ashes to remove as waste, the volume would only be a fraction of the original solid waste burned. The payback in reduced utility costs would have to be evaluated along with the cost of such a facility.

The use of landfills is the cheapest method of solid waste disposal. Any alternative the Navy may study would be more costly than the use of landfills. The elimination of landfills, however, forces the users of landfills to consider alternative methods. This will be the situation in the Southeastern Connecticut region in future years.

The Navy's representative for the Base has an ongoing dialogue with the regional resource recovery task force to stay abreast of developments in the regional project. The Base could also start an investigative process to become familiar with all state-of-the-art methods and techniques for the reclamation of solid wastes and energy recovery from solid waste. All future alternatives for solid waste disposal could be explored.

Although the closing of the Town of Groton landfill is at the most twelve years away, the future economics of the Base solid waste removal service and the uncertainty of future regional disposal facilities justify starting an investigation into the solid waste issue.

4. SUMMARY OF RECOMMENDATIONS

"A" through "H" of the following recommendations correspond directly to the encroachment pressures and areas of concern listed in the Executive Summary.

A-1. The Navy should obtain a list of all licensed lobstermen and charter party boat owners who operate in the Thames River and the Long Island Sound waters from the river channel to the Race. The Navy, coordinating their actions with Coast Guard and State Department of Environmental Protection, should discuss with the above individuals the potential hazards to their crafts and fishing equipment operating in the route of submarines. Also, the importance of the unobstructed transit of submarines for national defense reasons should be emphasized. The specific requirements the fishermen have for utilizing the waters traversed by the submarines should be solicited. Meeting with the lobstermen cooperatives and party boat owners to discuss alternatives and find a solution that is agreeable to all parties is in the best interest of the Navy from a practical and public relations standpoint.

A-2. The Navy as part of an ongoing dialogue with the Coast Guard and the State Department of Environmental Protection should emphasize the importance of their need for unobstructed movement of submarines. Since potential violators of the Thames River channel waters are aware of the regulations, the Navy should request the above agencies to be strict in their enforcement and penalizing of violators who place fixed fishing gear in the designated Thames River channel.

B-1. The Navy point of contact for all railroad drawbridge related matters should continue to communicate directly with the New London Captain of the Port and the Coast Guard Bridge Administration Office in New York City. The Navy should request the New York City office to send a letter to AMTRAK reminding them of their responsibility to report all planned bridge closings one week in advance. If a good communication system is maintained, the Navy will have ample time, one week, to relocate potentially affected Base berthed ships down river beyond the bridge to the State Pier facilities.

B-2. A representative of th Navy should initiate the investigation of the riverbed conditions between the piers of the railroad drawbridg and the structural design of the pier foundations. If it is feasible, the existing channel should be dredged an additional five feet in the bridge and bridge approach areas. The SSN 585 class submarines, taking on some ballast, would then be able to pass out of the river to the sea with the bridge in a down position.

C-1. As a result of the preliminary investigation for this study, the Navy is now providing the Captain of the Port with a weekly list of all planned submarine arrivals and departures for the main Base and State Pier. The continuation of this action is recommended since this information completes the total picture of all larger vessels utilizing the river and helps the Captain of the Port in managing all river traffic and preventing any potential conflicts between submarine traffic and other vessels.

C-2. The Navy should stay informed of all waterfront development projects in the New London Harbor, especially those including marinas. If the future volume of small craft traffic generated by new marinas reaches a level that interferes with the unobstructed movement of submarines, the Navy should initiate a dialogue with marina owners to discuss submarine requirements for unobstructed passage to and from the sea.

D-1. The Navy should stay informed of any development plan for the land adjacent to the Base's northern and eastern boundaries that is proposed for commercial use by the Town of Ledyard. If some action is proposed that could impede the Navy's future purchase of land it intends to acquire via MILCON Projects P-165 and P-384, the Navy should discuss their plans with the town at that time and try to discourage the action.

D-2. Similar to the Ledyard situation, the Navy should continue to closely monitor proposals submitted to the Town of Groton Zoning Board concerning the NAUTILUS Memorial Design District. The Navy should voice its objections to any development along Crystal Lake Road that will have a negative impact on the traffic flow and safety or would be offensive to the high quality visual image desired by the Navy for this special environment, the approach and gateway to the NAUTILUS Memorial. The Navy should present viable alternatives to mitigate or eliminate undesirable aspects of such development proposals.

E. If future demand requires weekday excursions or regular passenger service trains on the P&W railroad line that passes through the Base, the Navy should work with the railroad to develop a schedule that will accommodate both the railroad's needs and the Base weapons handling requirements. If a mutual agreement cannot be made, the Navy should refuse the proposed passage of weekday trains carrying passengers through the Base.

F-1. The Base fire department should become proficient in the methods for handling all of the hazardous materials that pass through the Base via the P&W Railroad and develop contingency plans to implement in the event of a rail car accident. When developing such plans, fire department and public works department representatives should coordinate proposed actions with the P&W Railroad. The Base should request periodic updates of a list of hazardous chemicals from the railroad to keep current in their ability to respond to railroad accidents.

G-1. The Navy should continue to work closely with the Town of Groton and the State of Connecticut Department of Transportation on th design of the Crystal Lake Road/Military Highway intersection and the Base main gate area to ensure all Navy requirements are provided for in the final design.

H. The Navy's representative should continue an ongoing dialogue with the regional resource recovery task force to keep current on new developments concerning the proposed regional project. The Base should also start an investigation to become familiar with all state-of-the-art methods and techniques for the reclammation of solid wastes, energy recovery from solid wastes, and future solid waste disposal.

I. The Navy should communicate with the planning offices of all municipalities in the immediate area. This includes the Town of Ledyard, Town of Groton, City of Groton, City of New London, Town of Waterford and Town of Montville. The intent of the contact will be to initiate a dialogue between the Base planning representative and a representative of each municipality. Through an ongoing dialogue, both the Navy and the surrounding municipalities will be aware of each others development plans and requirements and can then work together to prevent any actions that may be incompatible to either party. By initiating and continuing a good communications system, the favorable relations the Navy has with the surrounding communities will be reinforced and enhanced.

J. Representatives appointed by the Base to establish contacts with specific agencies or to study specific encroachment issues should preferably be experienced civilians that will be able to provide a continuity of information through the years due to their permanent employment at the Base.

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8. CAPITAL IMPROVEMENTS PLAN

CAPITAL IMPROVEMENTS PLAN

GENERAL

The Naval Submarine Base, New London, Connecticut is located on the east bank of the Thames River above the town of Groton, Connecticut. The Base began as a Navy Yard in 1872 on 112 acres of land presented to the Navy by the State of Connecticut. The Base was officially designated a Submarine Base in 1916. Since that time, the Base has experienced tremendous growth.

MAJOR FACILITIES

The Submarine Base with all non-contiguous areas encompasses 1,412 acres of land, primarily in the two Connecticut Townships of Groton and Ledyard. The main base area of 547 acres is used principally for operational and direct support facilities while the remaining areas are used for housing and community support.

The Submarine Base is comprised of approximately 1,383 structures containing over 5.8 million square feet of floor space and 14 piers with the capability of providing adequate berthing and support for assigned submarines plus numerous other support craft. A leased facility at the Connecticut State Pier provides berthing for Submarine Squadron Ten.

PLANNING OBJECTIVES

The objective of this Master Plan is to provide a realistic and orderly development scheme for the Naval Submarine Base, New London.

Planning Proposals

a. Upgrade and Renovate Waterfront Facilities and Utilities to Modern Standards

P-377 Boiler Plant Modifications
P-391 New Turbine
P-392 Improvements to State Pier and Land Acquisition
P-396 Utilities Improvements (6th Increment)
P-413 Repairs to Quaywall

b. Upgrade Existing Facilities

P-130 BOQ Modernization
P-160 Public Works Shops
P-185 BEQ Modernization
P-356 Magazine Security Improvements
P-359 Heating, Ventilation & Air Conditioning
P-378 Air Condition Dealey Center
P-401 Fire Protection, Various Bldg's.
P-415 Replace Underground Tanks
MP-004 Air Condition Bldg's. 434, 435, 442, 447

c. Remove Non-Waterfront Related Functions from the Lower Base.

P-021 Fleet Support Warehouse
P-080 Automotive Vehicle Maintenance Facility
P-174 Advanced Engineering Training Facility (Mechanical)

d. Increase Capacity and Flexibility in Support of the Fleet.

P-084 Replace Pier #1
P-165 Weapons Facility Improvements (Increment I)
P-170 Dental Clinic Addition
P-385 Fleet Cryptologic Support Facility
P-393 BEQ Maintenance and Storage Facility
P-394 Submarine Intermediate Maintenance Facility (5th Increment)
P-402 Port Control Facility
P-403 Helicopter Pad
P-406 Support Facilities for NR-1
P-416 Replace Pier #4
P-418 BEQ

P-419 Weapons Facility Improvements (Increment II)
P-422 BEQ
P-424 Thames River Dredging
MP-003 Squadron and Group Headquarters
MP-010 Magazines

e. Improve Access and Security on Base.

P-057 Road Improvements
P-166 Main Gate Facility w/Land Acquisition
P-338 Parking Garage
P-383 Private Vehicle Parking
MP-005 Parking Structure at Exchange
MP-008 Truck/Exchange Gate
MP-009 Community Center Parking

f. Improve Quality of Life

P-064 Submarine Museum/Archives Storage
P-081 Community Center
P-198 Lower Base Exchange
P-307 Dispensary
P-349 Hobby Shop/Auto Body Repair
P-350 Indoor Tennis Courts
P-351 Special Services Maint. Fac.
P-352 Child Care Center Addition
P-395 Addition to Dolphin Mart
P-404 Indoor Swimming Pool
P-405 Library Addition
P-410 Naval Legal Services Facility
P-411 Navy Exchange Home & Garden Center
P-412 Addition Navy Exchange Gas Station
P-417 Addition to Chapel for Religious Education
MP-001 Medical Research Facility
MP-006 Playing Fields at Family Housing w/Land Acquisition
MP-007 Exchange Addition

g. Provide Expansion Opportunities for Training, Homeporting and Housing

P-169 BEQ w/Land Acquisition
P-182 Consolidated Open Mess
P-320 Fire Station - Polaris Park
P-336 Bachelor Officers Quarters
P-370 Replace General Warehouse, Bldg. 33
P-384 Land Acquisition
P-398 Advanced SSN 21 Training Facility
P-399 Family Housing Office & Whse. Complex
P-400 Indoor Rifle Range
P-407 Chief Petty Officer Mess Modernization
P-408 Commissioned Officer Mess Modernization
P-409 Enlisted Mess Modernization
P-414 Sewer Outfall
MP-002 Administration Building
MP-011 Bachelor Officers Quarters
MP-012 Bachelor Enlisted Quarters

INTRODUCTION

The purpose of the Capital Improvements Plan (CIP) is to portray the facility development program for Subase, New London as presently envisioned. The CIP is to be used as a planning and decision making tool for activity personnel engaged in space utilization, facilities planning and facilities maintenance programs. It is also a reference document used in the review process for all projects submitted to the Engineering Field Division for site approval.

The CIP is based on the Installation's Facility Requirements Plan and the Land Use and Development Proposals as delineated in the Master Plan. The projects indicated in the CIP have been developed through, and are supportable by, the Navy's Shore Facilities Planning System (SFPS) and other special emphasis programs such as Energy Conservation and Pollution Abatement. The CIP provides a complete listing of all programmed and unprogrammed Military Construction (MILCON) and non-appropriated fund (NAF) projects in one source along with graphics portraying the location of each project.

The CIP establishes the validity of the Master Plan since it shows that all planned projects are accounted for, appropriate sites are identified, a phasing scheme is worked out if appropriate, and all improvements can be physically accommodated on the Installation. It also shows relative priorities and overall construction phasing by indicating the expected years of implementation for MILCON and NAF projects. The CIP attempts in this manner to outline a multi-year construction program. However, it must be recognized that only the first two years projects have a high probability for funding. Later year programs, despite valid need, will be subject to change in program year due to variation in MILCON funding levels and priority in relation to all other projects. Also, future changes in facility requirements and other circumstances may alter the scope and cost of some projects included in the CIP.

Funding Sources

The MILCON projects at the SUBASE have several sponsors. The Naval Submarine Base and the Naval Submarine Support Facility are sponsored by CINCLANTFLT; the Naval Submarine School is sponsored by CNET; the Naval Submarine Medical Center,the Naval Submarine Medical Research Laboratory, and the Naval Branch Dental Clinic are sponsored by NAVMEDCOM; the Navy Branch Commissary Store is sponsored by NAVSUPSYSCOM; and the Marine Barracks is sponsored by NAVMILPERSCOM.

Projects Addressed

The following are lists of programmed and unprogrammed Military Construction (MILCON) projects, Non-Appropriated Funds (NAF) projects, and Master Plan proposed projects addressed in this CIP. The programmed projects are listed by proposed fiscal year. The unprogrammed projects are listed by project number in ascending numeric order.

PROGRAMMED MILCON PROJECTS

FY	PROJECT#	PROJECT TITLE	COST ($000)
88	P-396	UTILITIES IMPROVEMENTS (6TH INCR)	2,900

89	P-165	WEAPONS FACILITIES IMPROVEMENTS (INCR I)	6,660
89	P-174	ADVANCED ENGINEERING TRAINING FAC (MECH)	7,810
89	P-377	BOILER PLANT MODIFICATIONS	2,250
89	P-385	FLEET CRYPTOLOGIC SUPPORT FACILITY	1,170
90	P-169	BEQ W/LAND ACQUISITION	11,240
90	P-356	MAGAZINE SECURITY IMPROVEMENTS	3,500
90	P-410	NAVAL LEGAL SERVICES FACILITY	1,676
90	P-414	SEWER OUTFALL	3,700
90	P-419	WEAPONS FACILITIES IMPROVEMENTS (INCR II)	7,000
91	P-130	BOQ MODERNIZATION	4,700
91	P-391	NEW TURBINE	4,700
91	P-392	IMPROVEMENTS TO STATE PIER AND LAND ACQU	7,200
91	P-398	ADVANCED SSN 21 TRAINING FACILITY	15,000
91	P-413	REPAIRS TO QUAYWALL	9,100
92	P-057	ROAD IMPROVEMENTS	2,690
92	P-320	FIRE STATION - POLARIS PARK	750
92	P-394	SUBMARINE INTERMEDIATE MAINT FAC (5TH INCR)	6,000
92	P-415	REPLACE UNDERGROUND TANKS	2,017
*92	P-418	BEQ	11,600
93	P-080	AUTOMOTIVE VEHICLE MAINTENANCE FACILITY	3,260
93	P-084	REPLACE PIER #1	7,216
93	P-185	BEQ MODERNIZATION	6,760
93	P-352	CHILD CARE CENTER ADDITION	2,080
93	P-384	LAND ACQUISITION	1,400
*93	P-401	FIRE PROTECTION VARIOUS BLDGS	5,000
94	P-021	FLEET SUPPORT WAREHOUSE	7,000
94	P-370	REPLACE GENERAL WAREHOUSE (BLDG 33)	4,200
94	P-400	INDOOR RIFLE RANGE	1,100
94	P-406	SUPPORT FACILITIES FOR NR-1	1,140
94	P-416	REPLACE PIER #4	4,331
*94	P-422	BEQ	6,660
*94	P-424	THAMES RIVER DREDGING	4,100

UNPROGRAMMED
MILCON PROJECTS

PROJECT #	PROJECT TITLE	COST ($000)
P-064	SUBMARINE MUSEUM/ARCHIVE STORAGE	3,200
P-081	COMMUNITY CENTER	1,000
P-160	PUBLIC WORKS SHOPS	3,100
P-166	MAIN GATE FACILITY W/LAND ACQUISITION	4,500
P-170	DENTAL CLINIC ADDITION	7,500
P-307	DISPENSARY	4,200
P-336	BOQ	6,000
P-338	PARKING GARAGE	2,400
P-359	HEATING, VENTILATION & AIR CONDITIONING	225
P-378	AIR CONDITION DEALEY CENTER	1,200
P-383	PRIVATE VEHICLE PARKING	600
P-393	BEQ MAINTENANCE & STORAGE FACILITY	833
P-399	FAMILY HOUSING OFFICE & WAREHOUSE COMPLEX	1,800
P-402	PORT CONTROL FACILITY	3,090
*P-403	HELICOPTER PAD	300
P-404	INDOOR SWIMMING POOL	3,500
P-405	LIBRARY ADDITION	1,500
P-417	ADDITION TO CHAPEL FOR RELIGIOUS EDUCATION	976

MASTER PLAN PROJECTS

PROJECT #	PROJECT TITLE	COST ($000)
MP-001	MEDICAL RESEARCH FACILITY	9,000
MP-002	ADMINISTRATION BUILDING	4,500
MP-003	SQUADRON AND GROUP HEADQUARTERS	3,000
MP-004	A/C BUILDINGS 434, 435, 442, and 447	4,000
MP-005	PARKING STRUCTURE AT EXCHANGE	4,000
MP-006	PLAYING FIELDS AT FAMILY HOUSING W/LAND ACQUISITION	250
MP-007	EXCHANGE ADDITION	1,500
MP-008	TRUCK/EXCHANGE GATE	900
MP-009	COMMUNITY CENTER PARKING	100
MP-010	MAGAZINES	-----
MP-011	BACHELOR OFFICERS QUARTERS	-----
MP-012	BACHELOR ENLISTED QUARTERS	-----

NON-APPROPRIATED FUNDS PROJECTS

FY	PROJ. NO.	PROJECT TITLE	COST ($000)
91	P-349	HOBBY SHOP/ AUTO BODY REPAIR	840

UNPROGRAMMED NON-APPROPRIATED FUNDS PROJECTS

PROJECT NO.	PROJECT TITLE	COST ($000)
P-350	INDOOR TENNIS COURTS	500
P-351	SPECIAL SERVICE MAINT. FAC.	500
P-395	ADDITION TO DOLPHIN MART	456
*P-182	CONSOLIDATED OPEN MESS	4,800
*P-198	LOWER BASE EXCHANGE	510
*P-407	CHIEF PETTY OFFICER MESS MODERNIZATION	520
*P-408	COMMISSIONED OFFICERS MESS MODERNIZATION	870
*P-409	ENLISTED MESS MODERNIZATION	590
*P-411	NAVY EXCHANGE HOME AND GARDEN CENTER	2,116
*P-412	ADDITION NAVY EXCHANGE GAS STATION	228

*Projects under development. Projects may require definition of scope and site selection.

FY 88 MILCON PROJECTS

TITLE: P-396 UTILITIES IMPROVEMENTS (6TH INCREMENT)
COST: $2,900,000

SCOPE:

The project will provide a new 76,500 lb/hr, 650 psig, 750 degree F boiler with foundation, casing, insulation, smoke stack, piping, economizer, fans, controls, and feed pump.

REQUIREMENTS:

Uninterrupted utilities service is essential for Base operations and facilities that directly support the fleet. The power plant lacks the capability for continuous operations in the event of system component failure or required shutdown for emergency repairs.

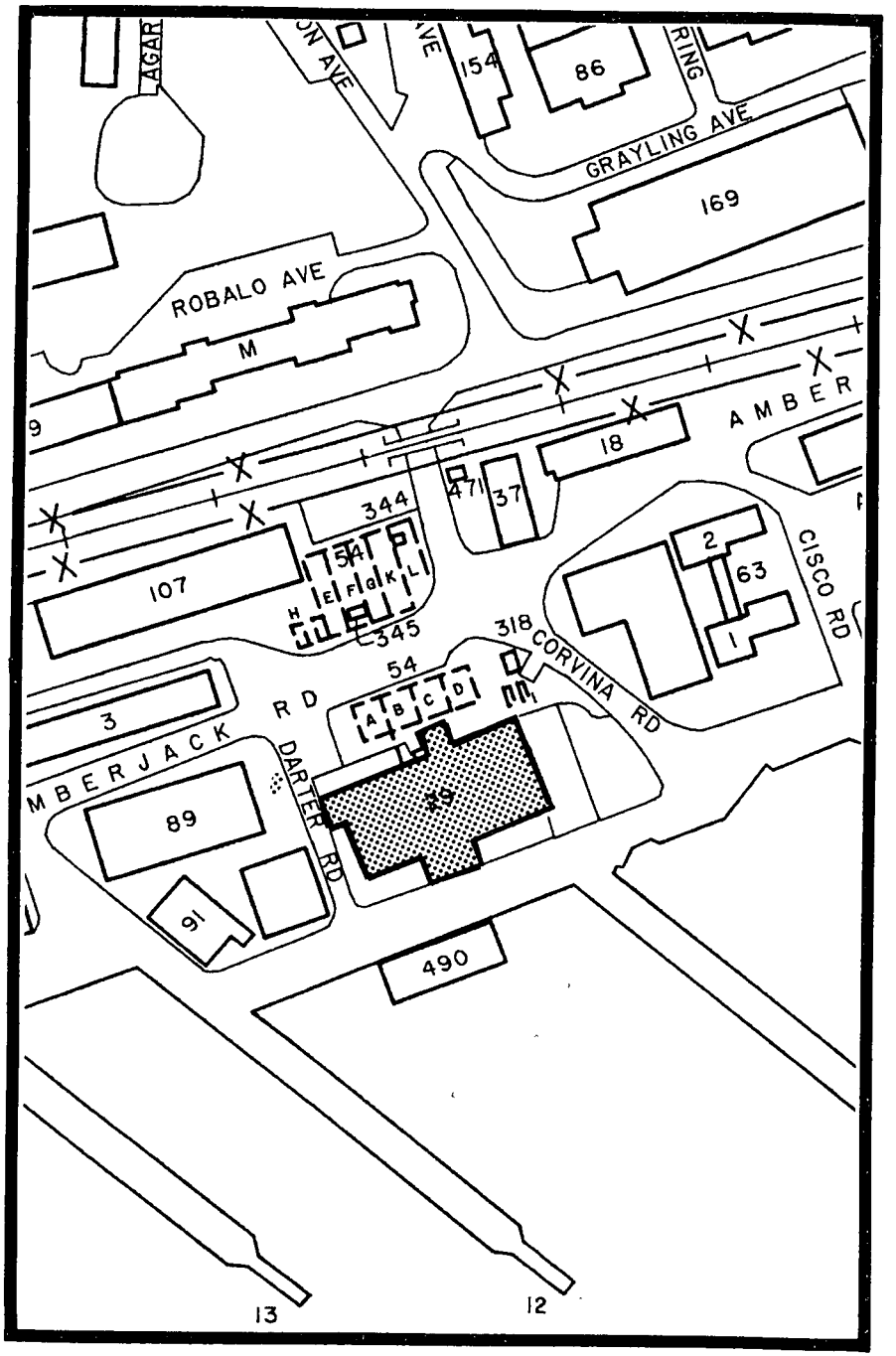
This project will correct the existing deficiencies and allow the power plant to maintain operations at any time of the year if one of the older boilers fails or is shut down for routine maintenance.

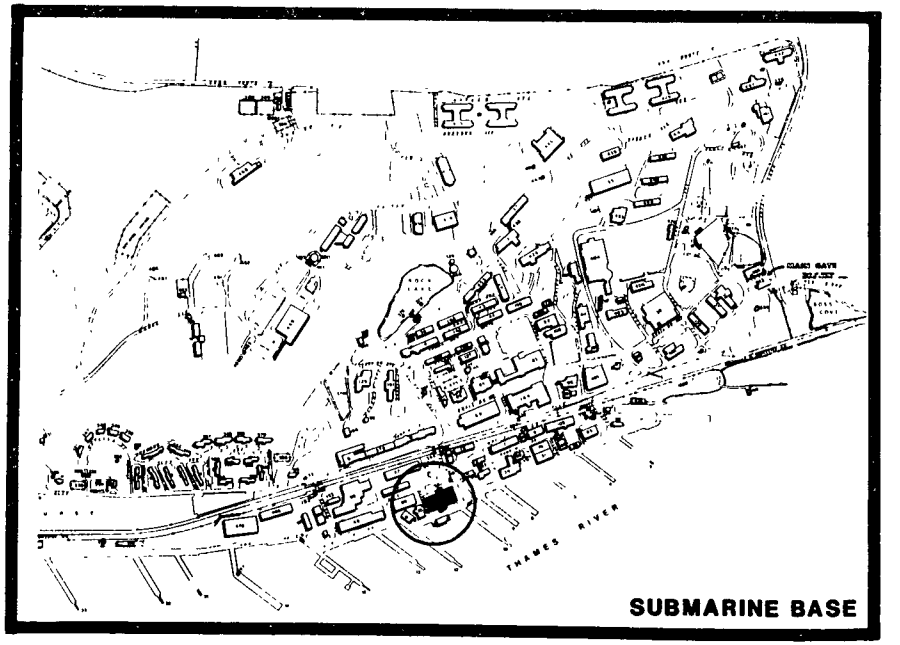
SITING CONSIDERATIONS:

Portions of this project currently exist or will be located within explosive safety quantity distance (ESQD) arcs. As a result of proposed construction occurring within ESQD arcs, site approval must be obtained from the Department of Defense Explosives Safety Board (DDESB).

DESIGN CONSIDERATIONS:

Portions of this project currently exist or will be constructed within the one hundred year flood plain of the Thames River and will require appropriate design and construction.





P-396

UTILITIES IMPROVEMENTS (6TH INCREMENT)

COST:

$2,900,000

FY 89 MILCON PROJECTS

TITLE: P-165 WEAPONS FACILITIES IMPROVEMENTS (INCREMENT I)
COST: $6,600,000

SCOPE:

This project will provide alterations and additions to Buildings 325 and 176. Also, a new ordnance operations building outside the intra-line distance arcs from other weapons facilities and a new Otto fuel storage tank adjacent to Building 325, necessary ledge removal, electrical/mechanical utilities distribution, paving, fencing and site improvements associated with the proposed facilities will all be provided by this project.

REQUIREMENT:

Weapons handling requires facilities for continuous maintenance and upkeep of weapons transfer vehicles, including garage facilities and a protected shelter for refuge from lightning storms during weapons handling operations along the waterfront. The necessity to keep this function operating during alterations requires that another facility, Building 176, be modified for the operational maintenance and storage functions.

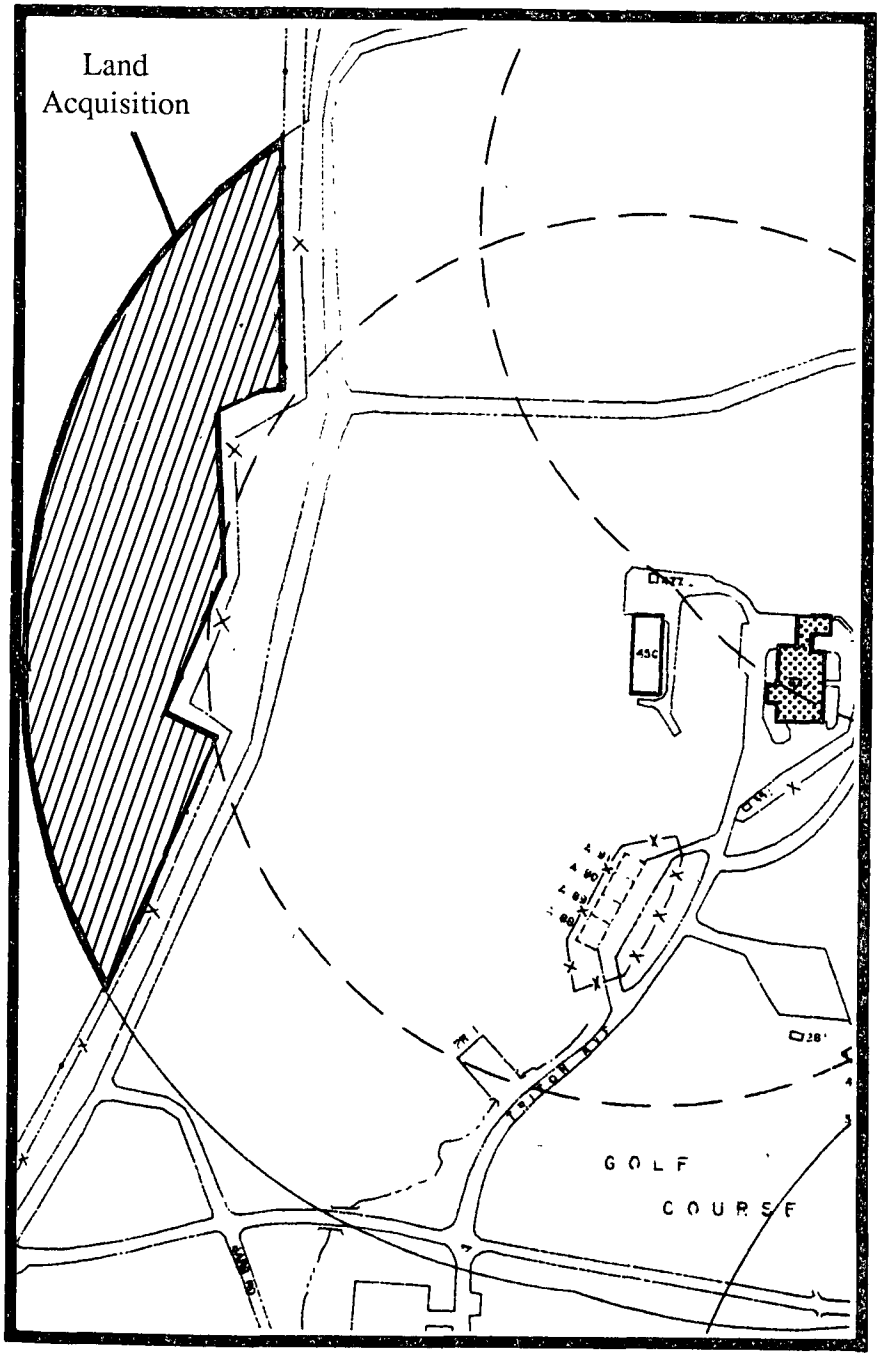
The Ordnance Operations Maintenance Facility will provide maintenance and shelter for grounds equipment, along with relocation and upgrading of toilet, supervisory space, and watch functions from Building 393 which is within the intra-line arcs from existing storage magazines.

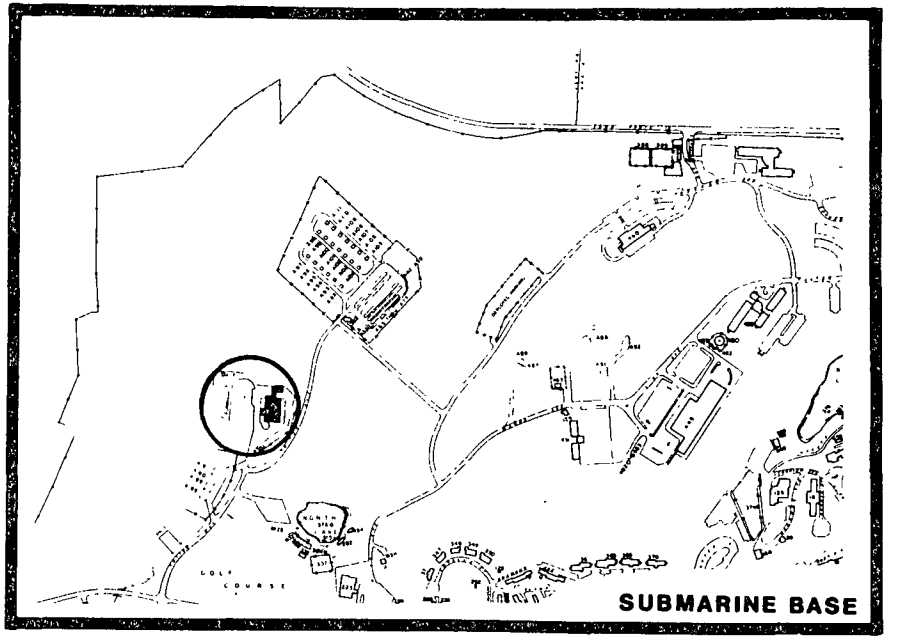
SITING CONSIDERATIONS:

Due to the generation of ESQD arcs resulting from torpedo production shops, land will be acquired off-base which falls within the 1,250 foot radius ESQD arc emanating from Building 450.

DESIGN CONSIDERATIONS:

None.





P-165

WEAPONS FACILITIES IMPROVEMENTS

COST:
$6,600,000

TITLE: P-174 ADVANCED ENGINEERING TRAINING FACILITY, MECHANICAL
COST: $7,810,000

SCOPE:

This project will construct a two-story steel frame structure with masonry walls. Space for operational trainers will be concentrated on the lower deck. Mechanical and electrical systems include high and low pressure air, fresh and salt water, hydraulics, special exhaust ventilation, steam, storage tanks and distribution lines for various gases, sprinkler fire protection, elevators, lightning protection, 60 Hz and 400 Hz AC, 120 V and 270 V DC, grounding system, smoke and fire detection and alarm systems, motor generators, chillers, cooling towers and 225 tons of air conditioning.

REQUIREMENTS:

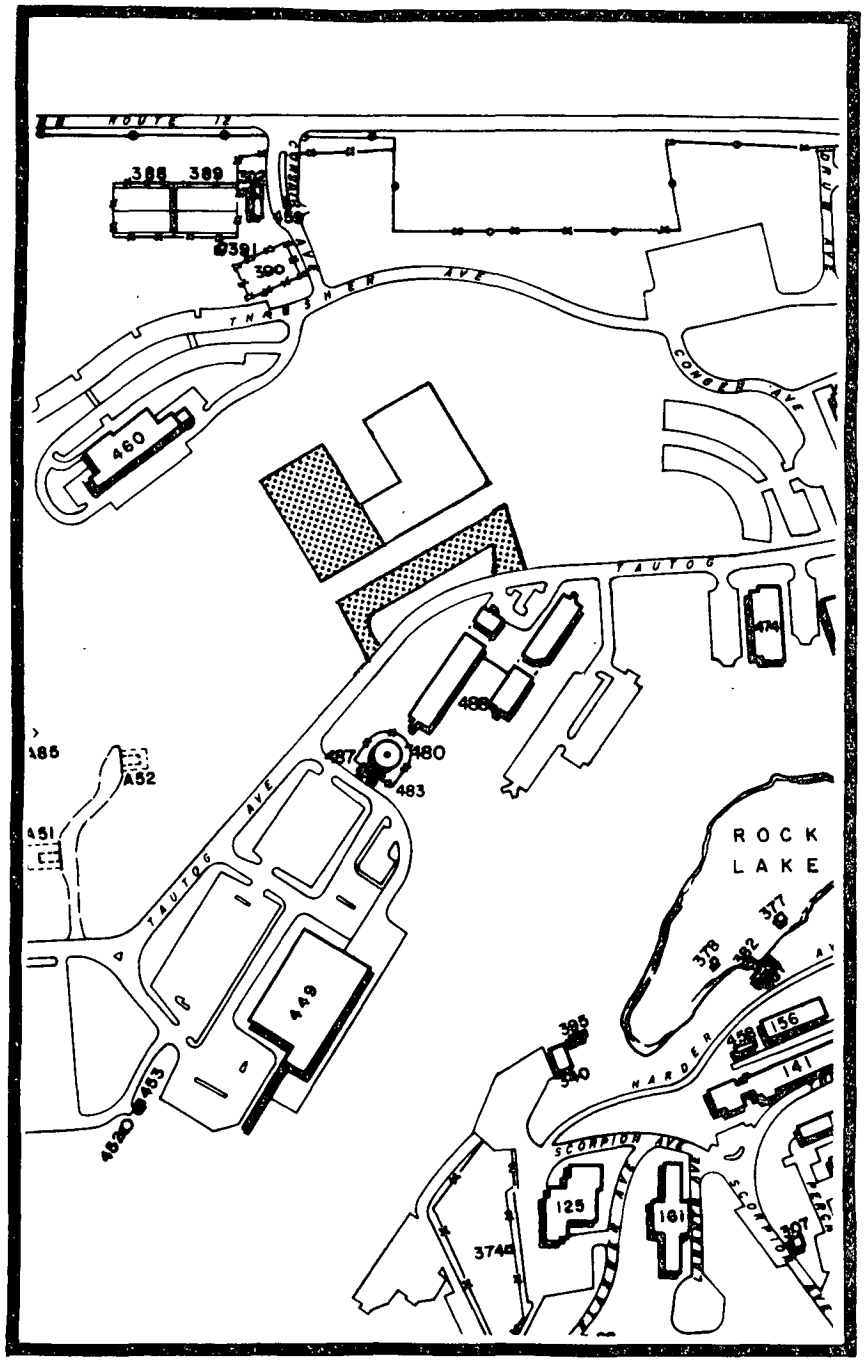
This project will satisfy the requirement to provide an enlarged replacement facility for advanced engineering training on submarine mechanical systems. Requirements for additional training on new equipment scheduled for installation through 1988 has been documented. Currently, the required training is conducted in a 65,729 SF building shared with the electrical division of the Advanced Engineering Training Department, which was originally built in 1940 and has been expanded and modified countless times. The building is located in the congested industrial waterfront area. No space exists to expand the current facility.

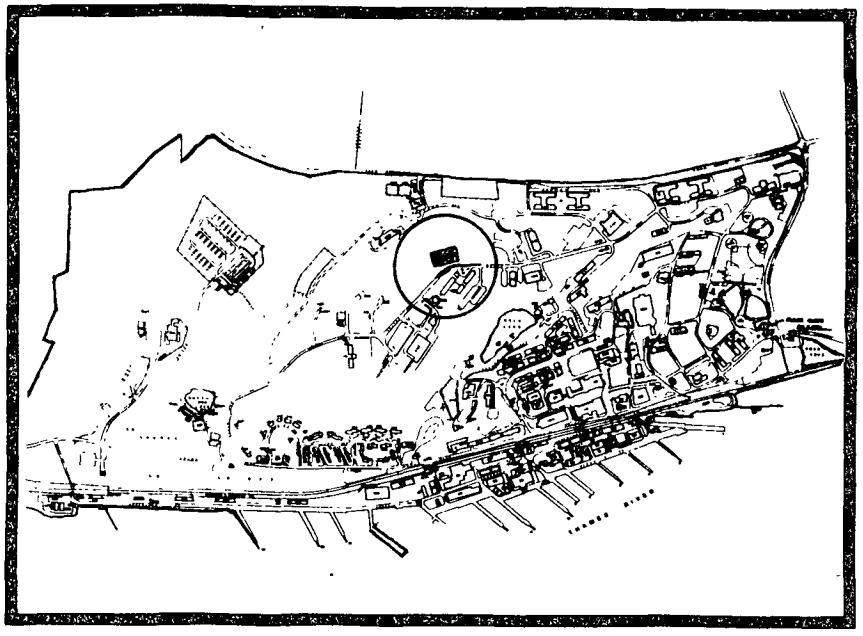
SITING CONSIDERATIONS:

None.

DESIGN CONSIDERATIONS:

None.





P-174
ADV ENGINEERING TRNG FAC
(MECH)

COST:
$7,810,000

TITLE: P-377 BOILER PLANT MODIFICATIONS
COST: $2,250,000

SCOPE:

This project consists of installing a distributed digital system for boiler plant monitoring, recording and management control, the replacement and addition of metering, the replacement of existing combustion controls, operators, transmitters and valves with a dedicated microprocessor based digital control system, the installation of variable speed drives for combustion and induction fans for boilers 1, 1S, 2, and 3 and the construction of a control room required to facilitate the centralized management and control of plant operations.

REQUIREMENTS:

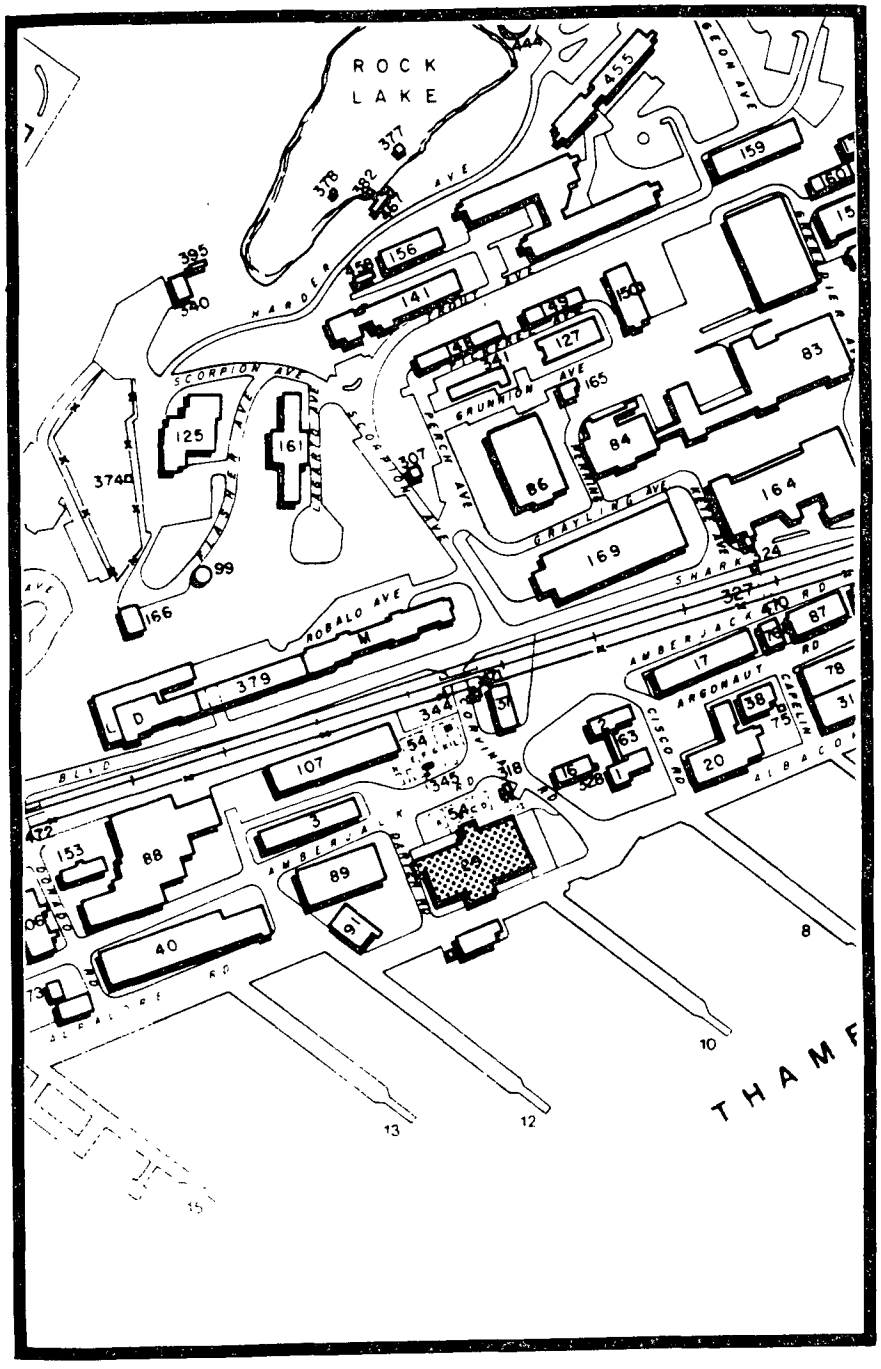
OPNAV INSTRUCTION 4100.5B of 18 May 1982 requires a 20 percent reduction in energy consumption in existing federal buildings by FY-1985, a 25 percent reduction by FY-1990, 30 percent by FY-1995 and 35 percent by FY-2000 based on FY-1975 usage. This project will help to achieve this objective.

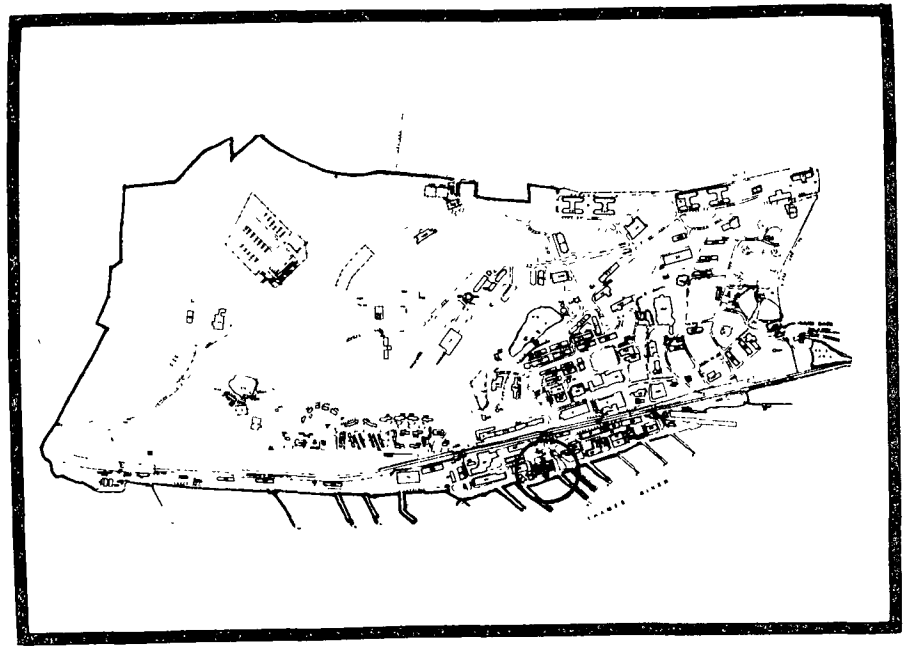
SITING CONSIDERATIONS:

None.

DESIGN CONSIDERATIONS:

None.





P-377

BOILER PLANT MODIFICATIONS

COST:
$2,250,000

TITLE: P-385 FLEET CRYPTOLOGIC SUPPORT FACILITY
COST: $1,170,000

SCOPE:

This project will provide interior and exterior alterations to Building 106 for electronics maintenance shop, administrative office, classrooms and supply storage. The project includes masonry blocking of window openings, interior partitions and finishes, HVAC equipment, lighting, electrical wiring, paint spray booth and built-in electronics work benches. Fire detection, sprinkler protection, and alarm systems and an enclosed exterior fire escape stair tower are included.

REQUIREMENTS:

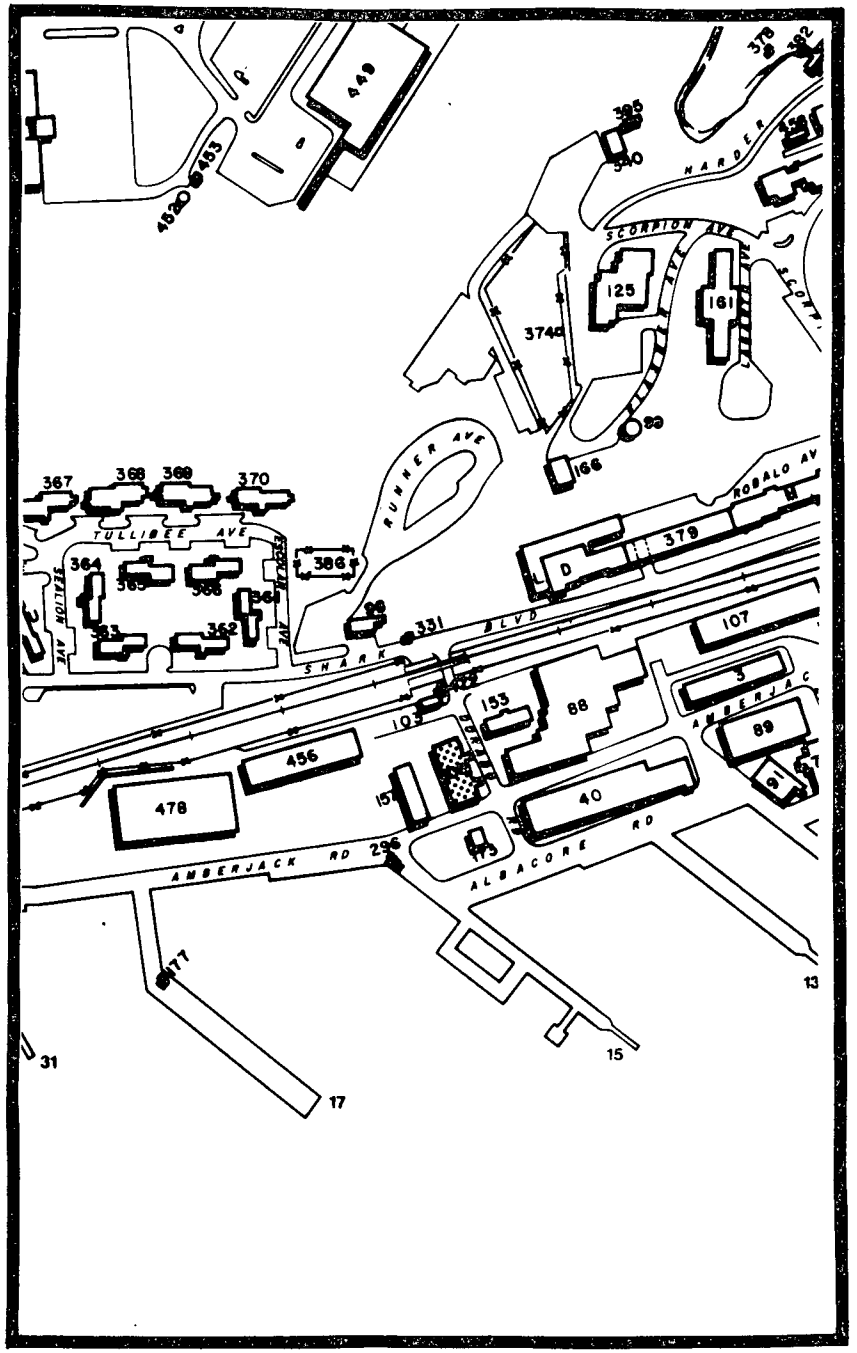
This project will provide adequate facilities for the Naval Security Group Activity (NSGA) Groton. NSGA Groton provides support for Electronic Warfare Support Measures (ESM), cryptologic logistic support and associated training to units of the U. S. Atlantic Submarine Force and performs other Naval Security Group functions as directed by CINCLANTFLT and COMSUBLANT. Over the past three years, NSGA Groton has experienced an unprogrammed 60 percent increase in mission tasking. To support this expanded mission, alterations are urgently needed to resolve present security and safety deficiencies and to provide additional useable space.

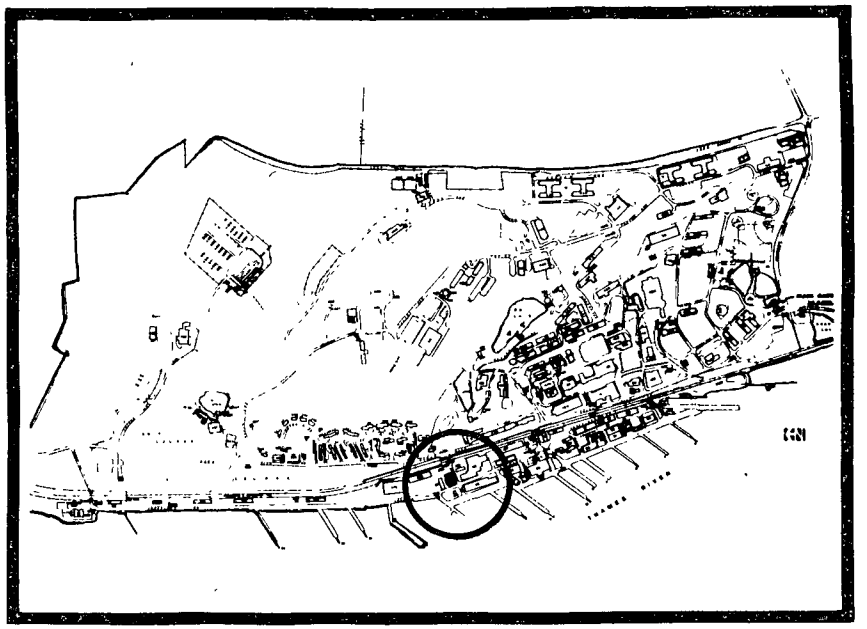
SITING CONSIDERATIONS:

None.

DESIGN CONSIDERATIONS:

None.





P-385
FLEET CRYPTOLOGIC
SUPPORT FACILITY

COST:
$1,170,000

FY 90 MILCON PROJECTS

TITLE: P-169 BEQ WITH LAND ACQUISITION
COST: $11,240,000

SCOPE:

This project will provide bachelor enlisted quarters for 396 E1 through E6 personnel. The facility is to be a multi-story structure with brick facing on masonry unit walls and precast concrete plank floors and roof on steel framing. The quarters will consist of 116 two-bedroom modules with private baths, lobby, lounges, laundry, mechanical equipment, and storage. The acquisition of privately held land at the project site as well as the demolition of an existing private residence are included in the project.

REQUIREMENTS:

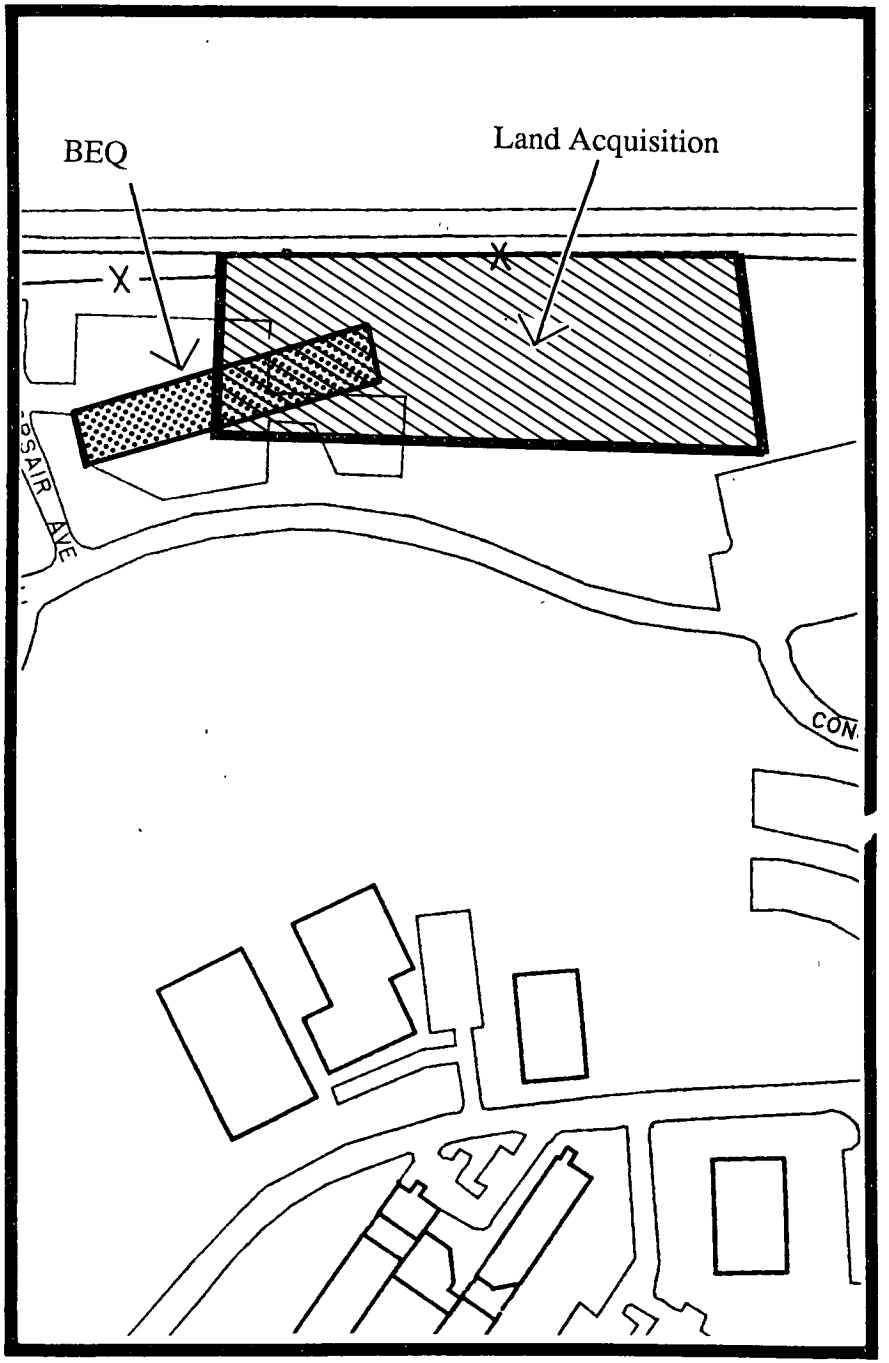
Adequate housing for bachelor enlisted personnel is required. Current deficiencies cannot be corrected without new construction. Existing assets are fully utilized. During peaks in student loading, personnel are housed at a density of only 50 SF per person. A number of enlisted personnel assigned to homeported submarines must live aboard ships because of insufficient adequate housing on station or ashore.

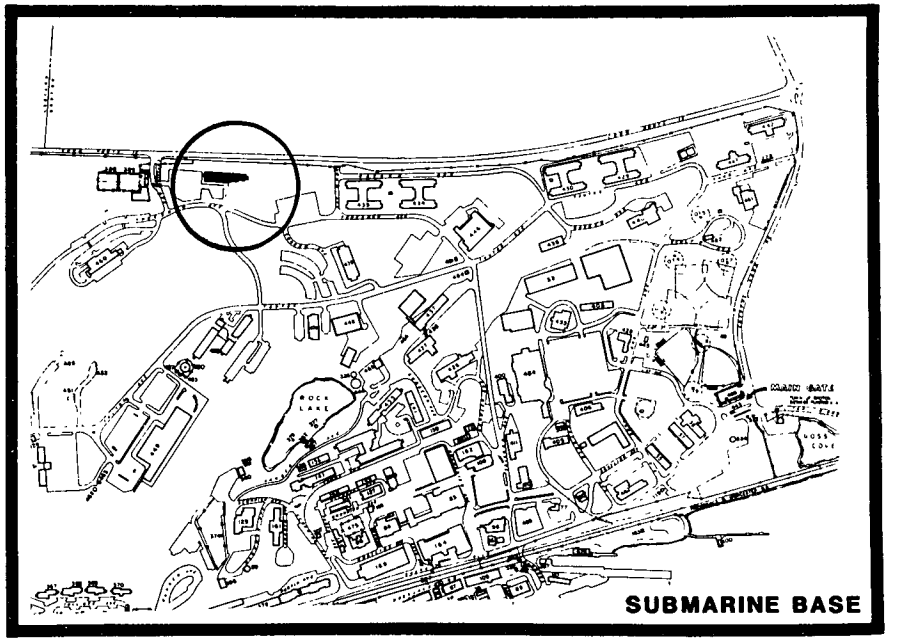
SITING CONSIDERATIONS:

The site is currently privately held land and will be acquired as a result of this project.

DESIGN CONSIDERATIONS:

None.





P-169
BEQ W/LAND ACQUISITION

COST:

$11,240,000

TITLE: P-356 MAGAZINE SECURITY IMPROVEMENTS
COST: $3,500,000

SCOPE:

This project will provide security and operational improvements to existing magazines. The project consists of excavating earth covering around magazines, jacking and aligning magazines, stabilizing foundations, backfill, waterproof membranes, replacing existing doors, high security hasps and pad locks, and grounding doors. Also included in the project will be the expansion of container holding yard, construction of Trident weapons loader facility, and fencing of weapons security area.

REQUIREMENT:

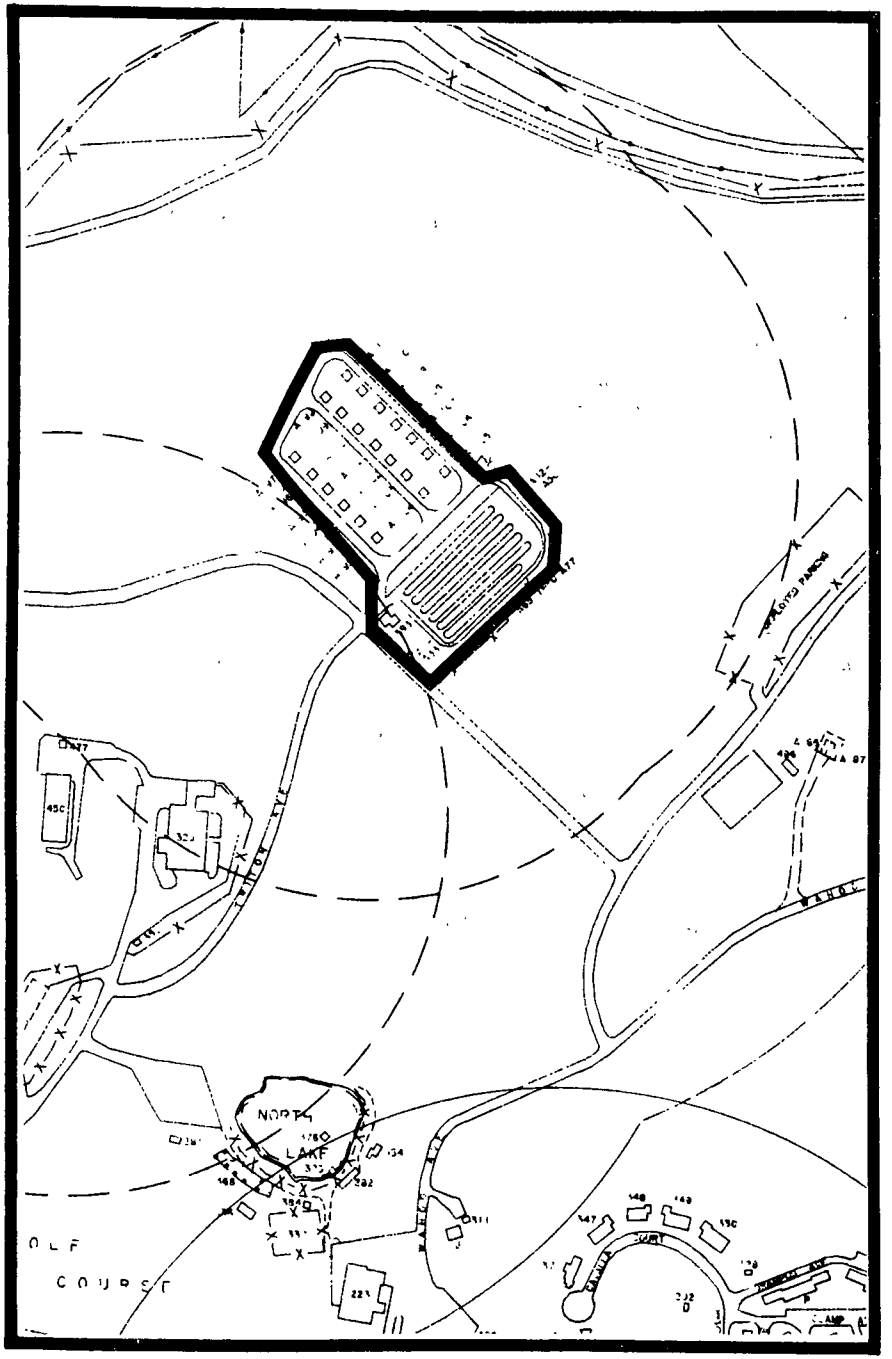
In order to comply with OPNAVINST 5530.13 and OP-5 the physical deficiencies with existing high explosive and other weapons storage magazines must be corrected. Weapons handling operations and magazine security must also be improved.

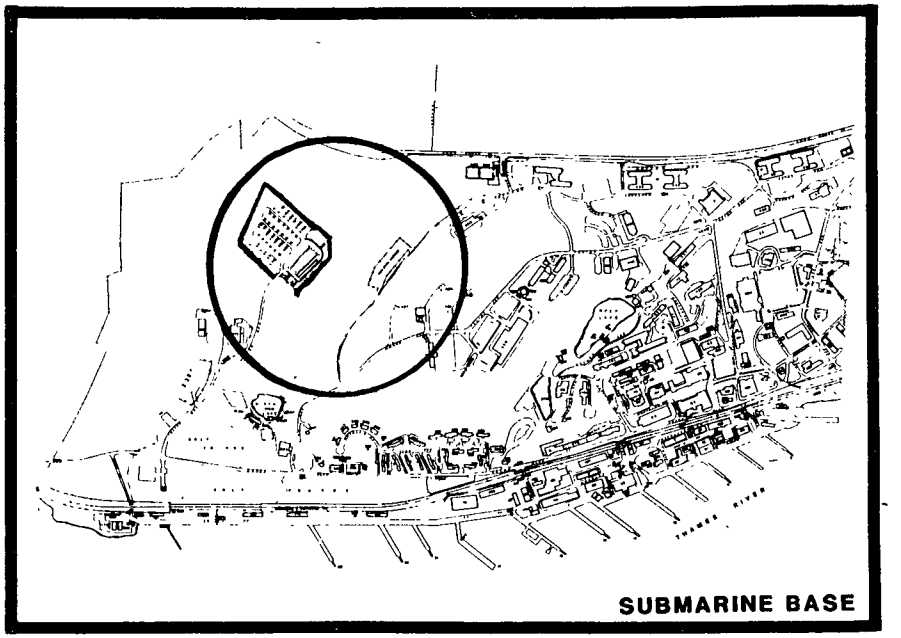
SITING CONSIDERATIONS:

Construction will occur under existing Explosive Safety Quantity Distance (ESQD) arcs.

DESIGN CONSIDERATIONS:

None.





P-356
MAGAZINE SECURITY IMPROVEMENTS

COST:
$3,500,000

TITLE: P-410 NAVAL LEGAL SERVICES FACILITY
COST: $1,676,000

SCOPE:

This project will provide courtroom and support facilities for Naval Legal Service Office, Groton, CT. The facility will be a new two-level administrative and courtroom facility to replace existing inadequate facilities. Areas include legal archives, library facilities, general and private offices for legal assistance and counseling, courtrooms, jury deliberation, trial and defense counsel, witness room, judge's chamber, court reporter and clerks. The project includes the demolition of Building 96.

REQUIREMENT:

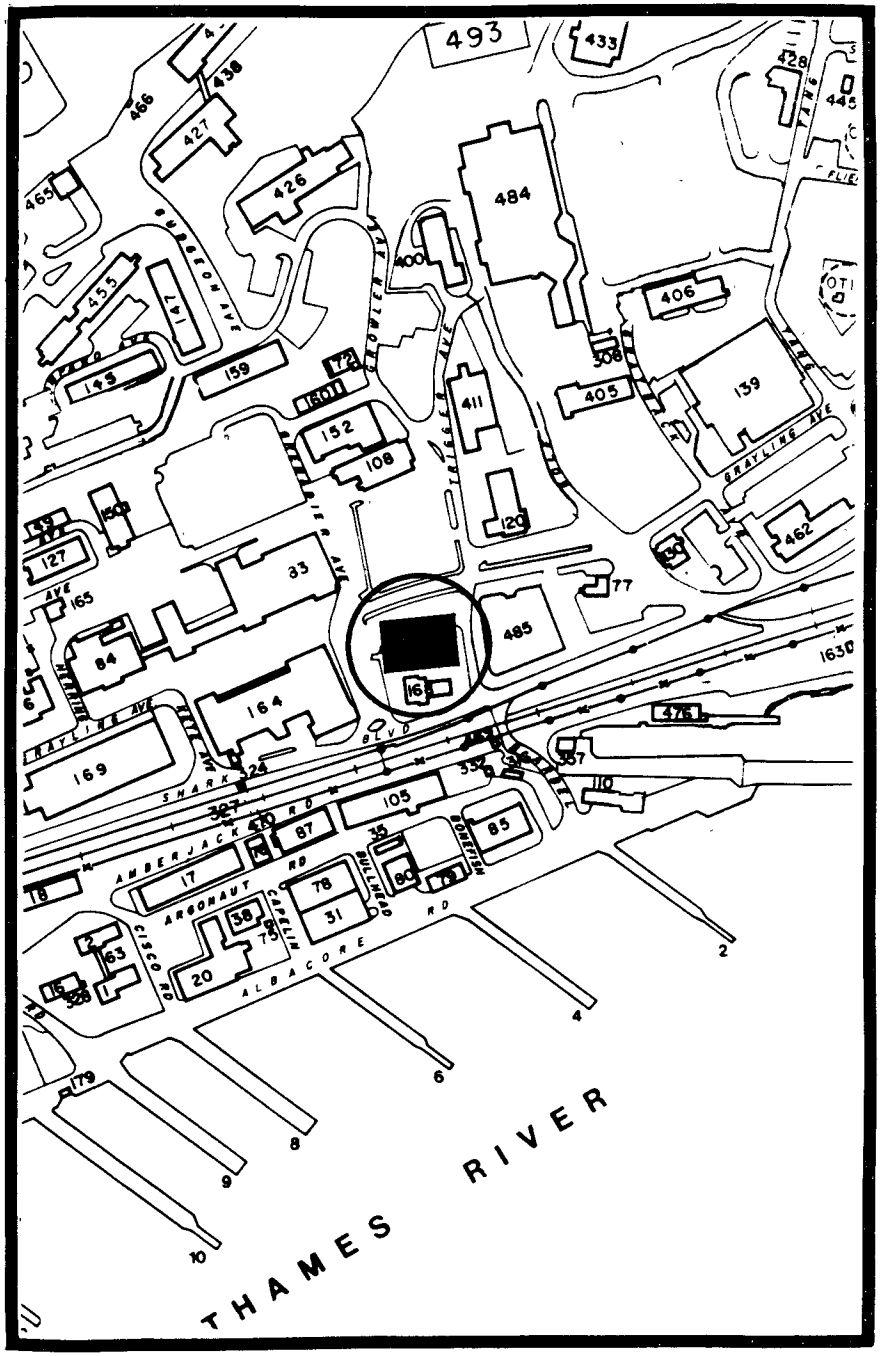
This project is required to provide effective and timely legal services and counsel to active duty military retirees, and their dependents in Connecticut, western Massachusetts, Vermont and northern New York State. The existing facility does not provide sufficient space for legal service functions, personnel and clients or support spaces. Additionally, the existing facility does not provide for audio privacy or separation of defense and trial witnesses from each other or from other clients seeking legal assistance.

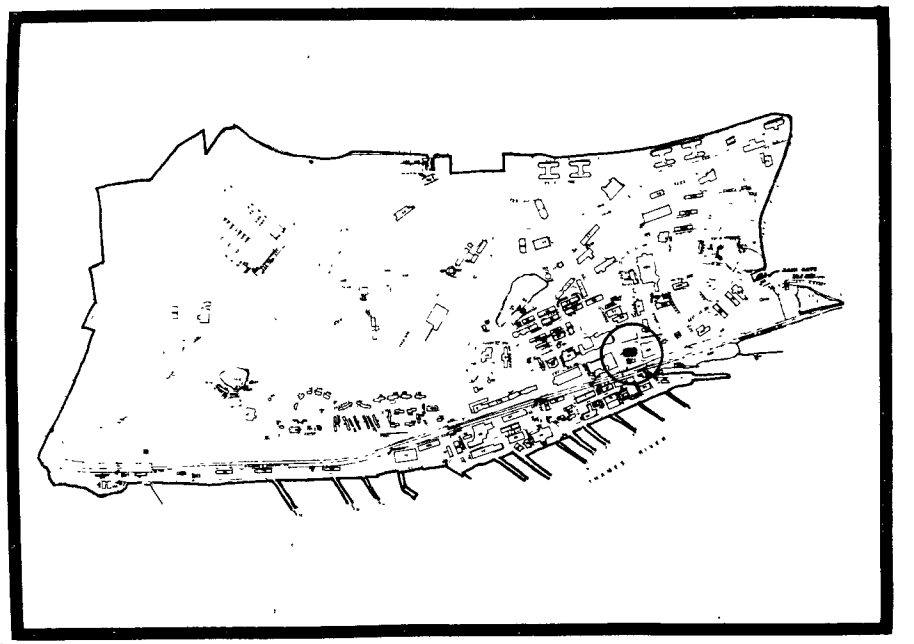
SITING CONSIDERATIONS:

This project requires no special siting considerations.

DESIGN CONSIDERATIONS:

The project requires no special design considerations.





P-410

NAVAL LEGAL SERVICES FACILITY

COST:

$1,676,000

TITLE: P-414 SEWER OUTFALL
COST: $3,700,000

SCOPE:

This project will provide for funding the Navy's share of the construction costs for a sewer outfall from the Town of Groton's Secondary Wastewater Treatment Plant. The sewer outfall is required to meet Federal court order to eliminate pollution of Mumford Cove by diverting effluent to Thames River.

REQUIREMENT:

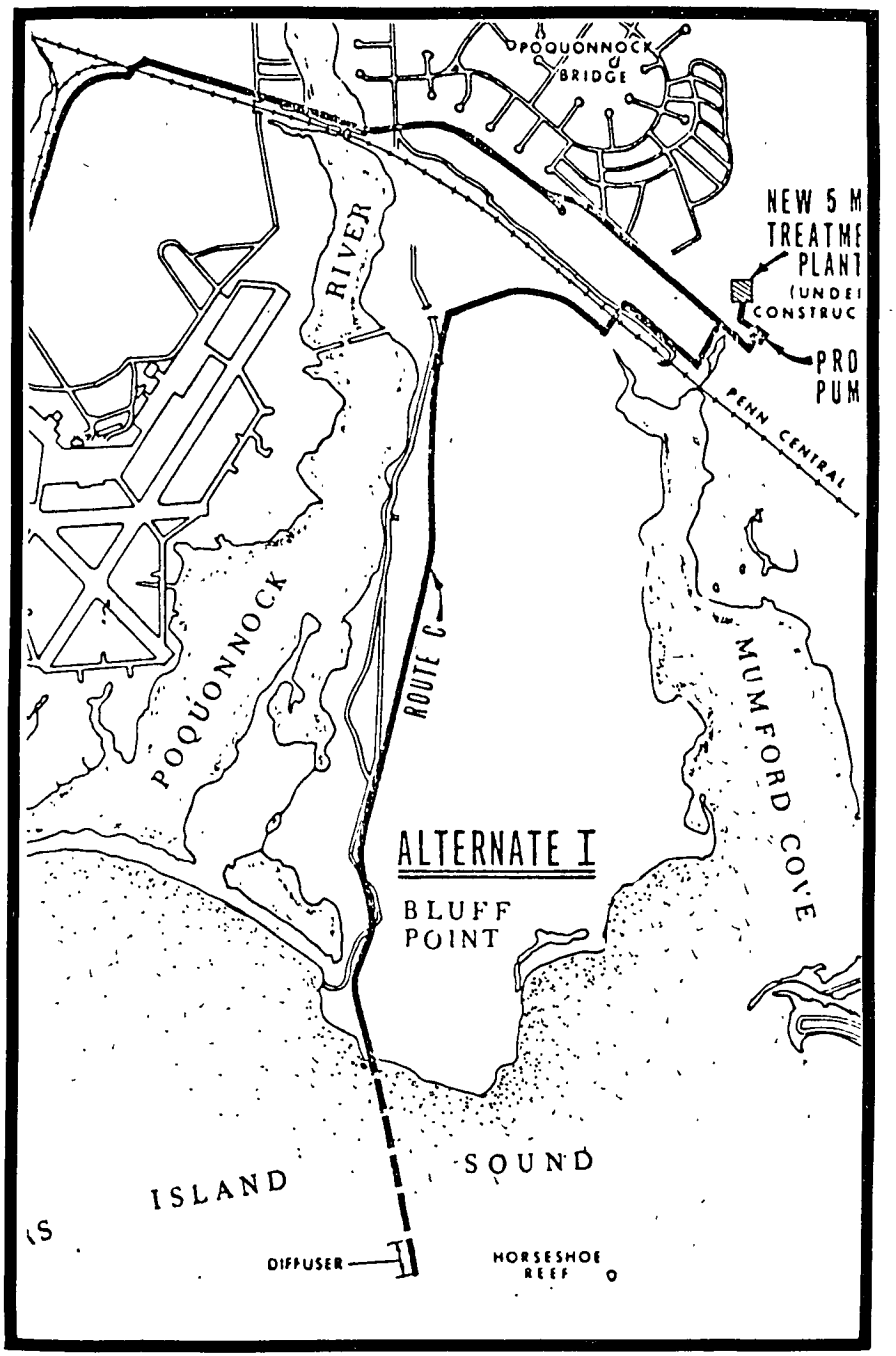
The Federal District Court has ordered the Town of Groton to construct an outfall to the Thames River to eliminate this source of pollution. The Town of Groton provides secondary treatment at their wastewater treatment plant. It has been determined that the effluent from the wastewater treatment plant is causing the pollution of Mumford Cove, principally through the introduction of nutrients which have accelerated plant growth and depleted dissolved oxygen in the cove. The Navy's flow makes up approximately 28% of the design flow of the Town's wastewater treatment plant.

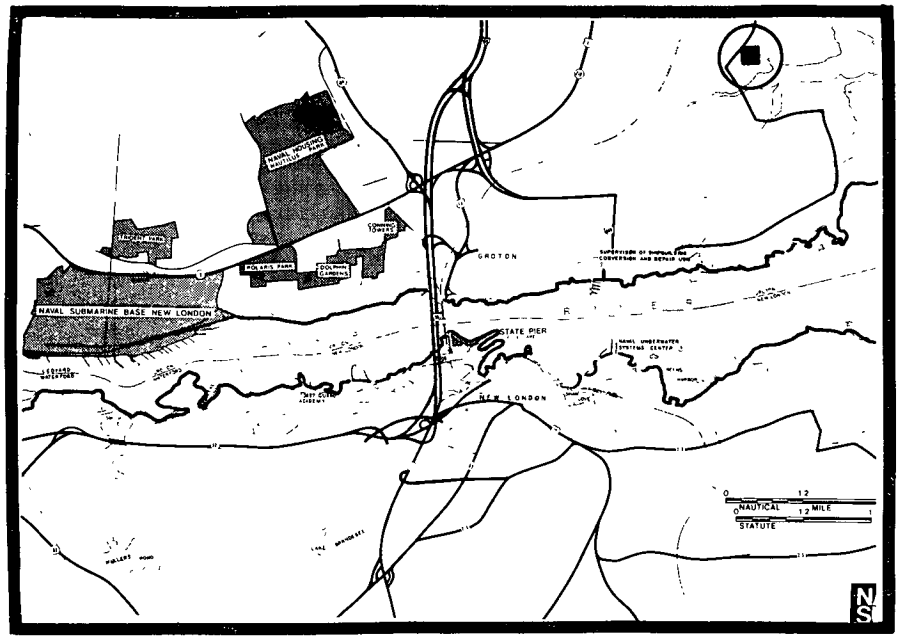
SITING CONSIDERATIONS:

The project is located on Town of Groton land.

DESIGN CONSIDERATIONS:

None.





P-414
SEWER OUTFALL

COST:
$3,700,000

TITLE: P-419 WEAPONS FACILITIES IMPROVEMENTS (2ND INCREMENT)
COST: $7,000,000

SCOPE:
This project will provide alterations and additions to Building 325 with structural, electrical, mechanical, lightning protection, and demolition of obsolete portions of existing building.

REQUIREMENT:

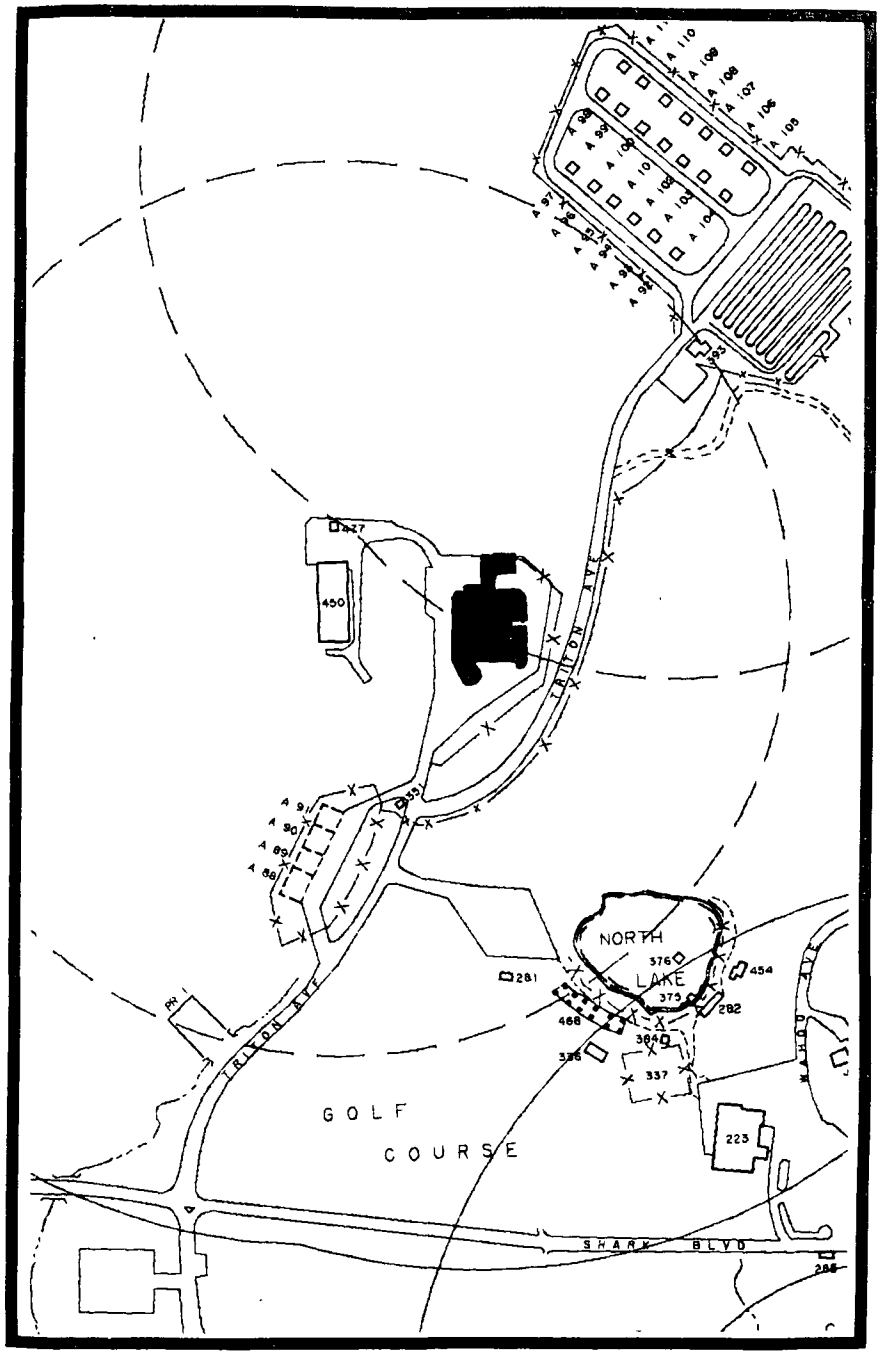
Mission changes in the past several years have eliminated production requirements for the Mark 14 and Mark 37 torpedoes, which were produced in Buildings 411 and 325, respectively. Mark 48 Advanced Capability (ADCAP) torpedo production requirements have increased dramatically. Building 450, the current Mark 48 torpedo shop, contains an insufficient amount of space and can not be expanded due to topographic constraints. Therefore, the conversion of Building 325 to handle Mark 48 (ADCAP) production is considered the most reasonable solution.

SITING CONSIDERATIONS:

Construction will occur within ESQD arcs.

DESIGN CONSIDERATIONS:

This project is being designed in conjunction with P-165.



P-419
WEAPONS FACILITIES IMPROVEMENTS
(INCREMENT 1)

COST:
$7,000,000

FY 91 MILCON PROJECTS

TITLE: P-130 BACHELOR OFFICERS QUARTERS MODERNIZATION
COST: $4,700,000

SCOPE:

This project will convert Buildings M and D from single rooms sharing a bath and Building 379 from single rooms with private baths to two-room suites with bedroom, bath, kitchenette, dining and living areas. Air conditioning will be provided in Buildings M, D, and 379. The project will provide adequate billeting for 99 bachelor officer personnel.

REQUIREMENT:

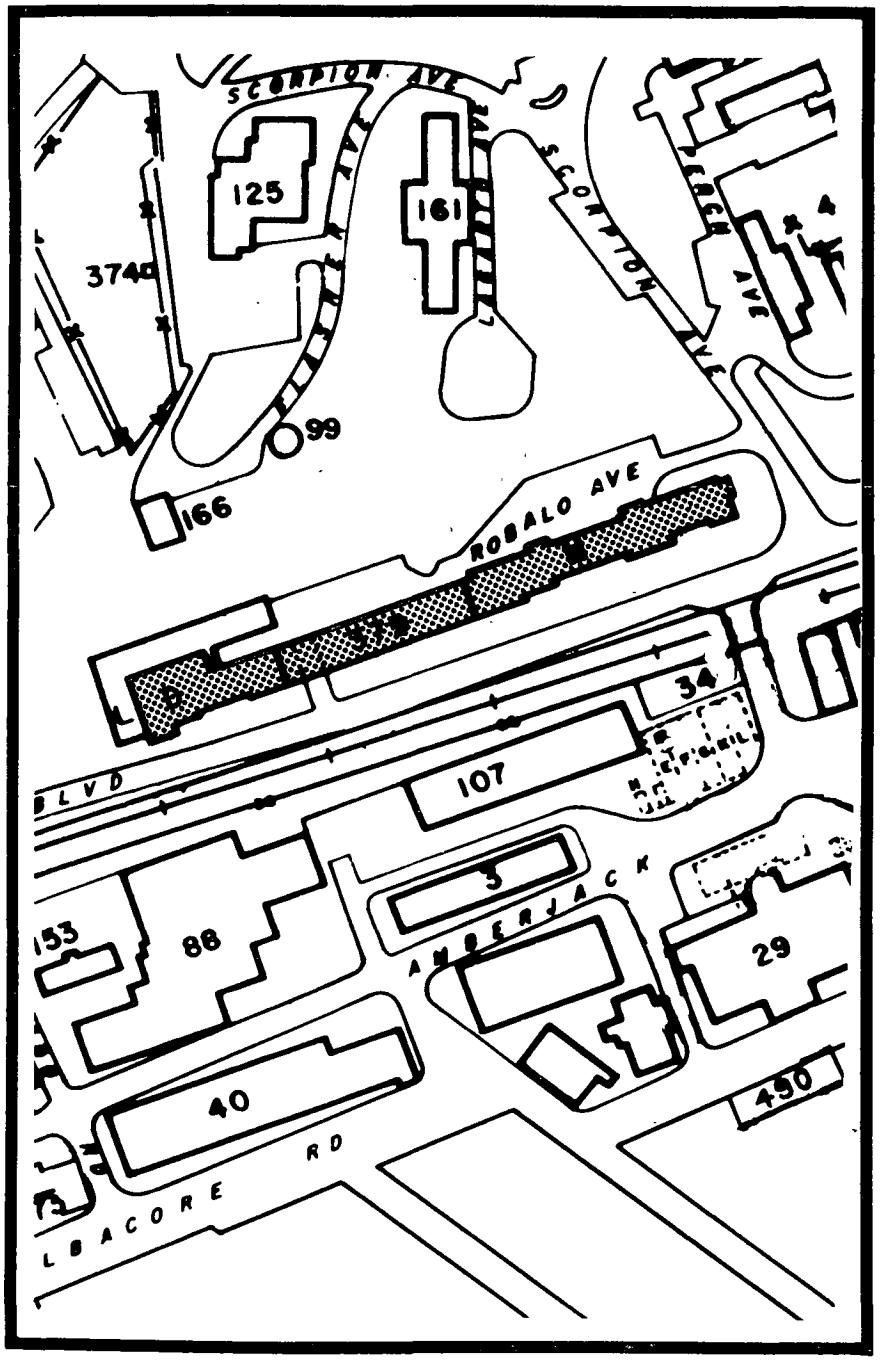
This project will satisfy the requirement for adequate housing for bachelor officers quarters. The FY83 Housing Survey shows billeting for 82 bachelor officer personnel in Buildings M and 379 classified as substandard and housing for 17 bachelor officer personnel in Buildings M and D classified as adequate. The suites in Buildings M and D are adequate in terms of square footage only. Since these suites require modification of rooms configuration to yield a functional suite arrangement, they cannot be defined as adequate as defined by NAVFACINST 11101.91E.

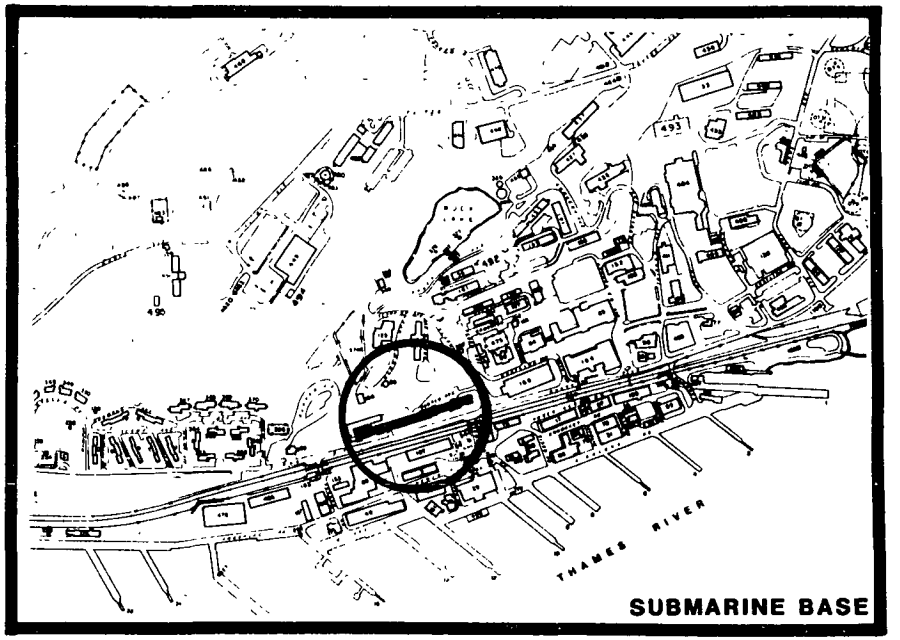
SITING CONSIDERATIONS:

None.

DESIGN CONSIDERATIONS:

None.





P-130

BACHELOR OFFICERS QUARTERS MODERNIZATION

COST:

$4,700,000

TITLE: P-391 NEW TURBINE
COST: $4,700,000

SCOPE:

This project will install an extracting/condensing turbine generator and provide for structural, electrical and piping/valve modifications. Included also are insulation, controls, control room instrumentation, meters, condenser, lubrication system and other miscellaneous work.

REQUIREMENT:

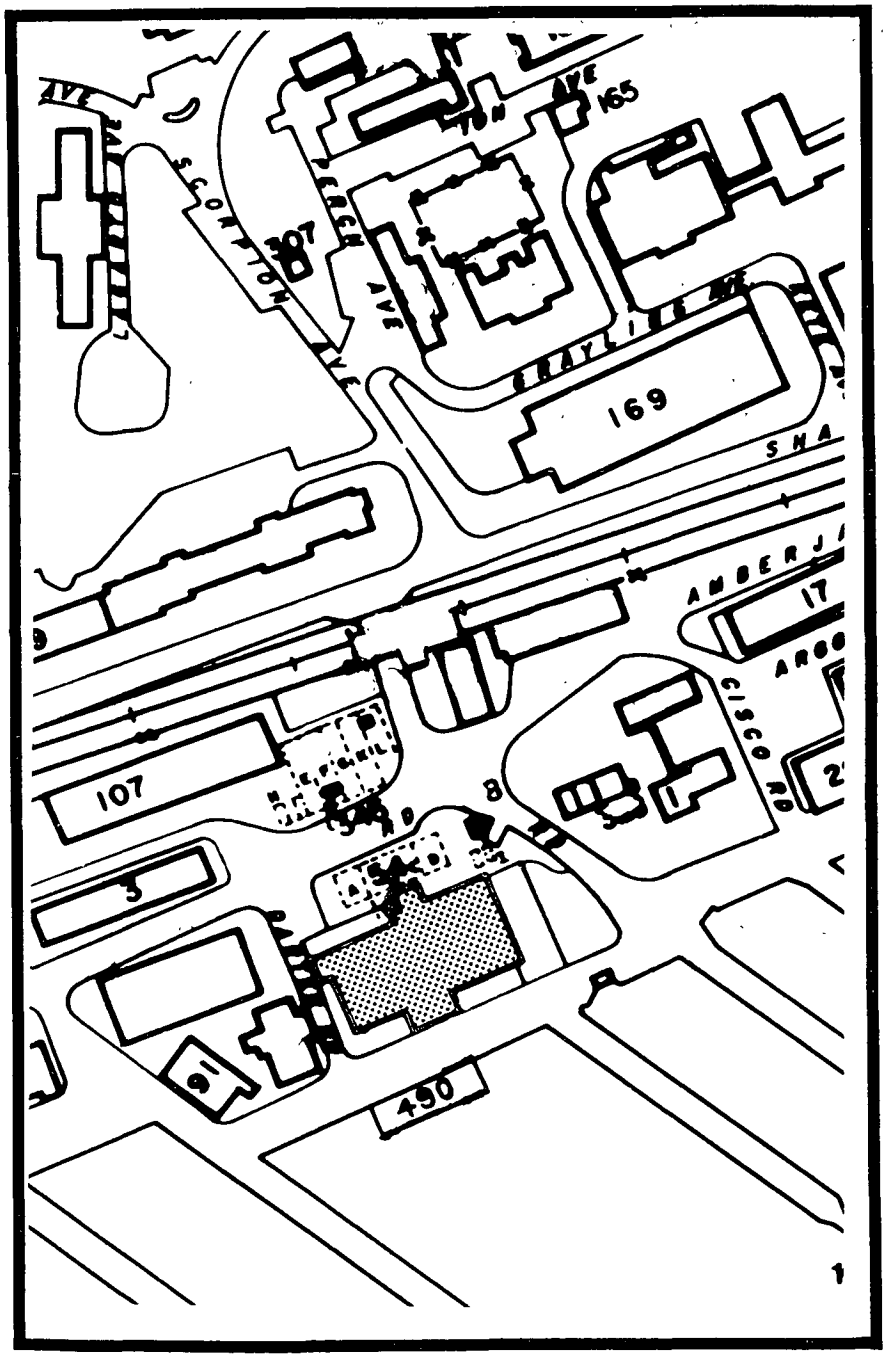
This project is required to supply sufficient electrical generating capability for emergency power. Projected FY93 power demand is 42MW. Currently the existing generating capability is 10MW when all existing turbine generators are operating. This is not adequate to support either the afloat or the ashore load in emergency conditions or to meet projected peak demand loads.

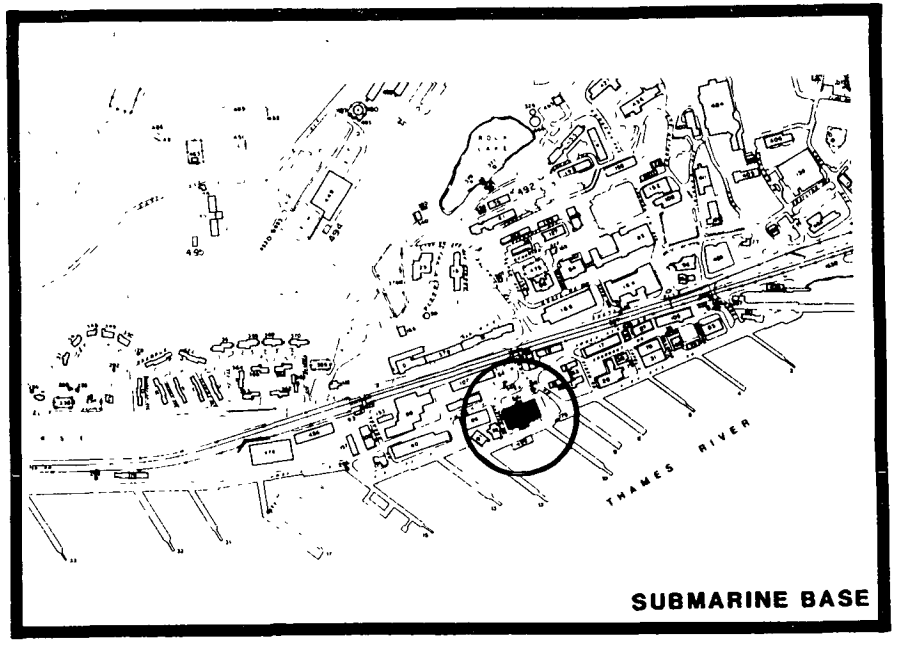
SITING CONSIDERATIONS:

None.

DESIGN CONSIDERATIONS:

None.





P-391
NEW TURBINE

COST:

$4,700,000

TITLE: P-392 IMPROVEMENTS TO STATE PIER AND LAND ACQUISITION
COST: $7,200,000

SCOPE:

This project will acquire the State Terminal Building and a portion of the State Warehouse. Construction will include rehabilitation of the Navy side of the pier after demolition of the lean-to portion of the warehouse, selective deck replacement, relocation of electrical utilities, and construction of an operational storage warehouse on pilings. The project also includes a 12" waterline, shore power improvements to tender and boats, dredging, security lighting, fencing, demolition of State Terminal building.

REQUIREMENT:

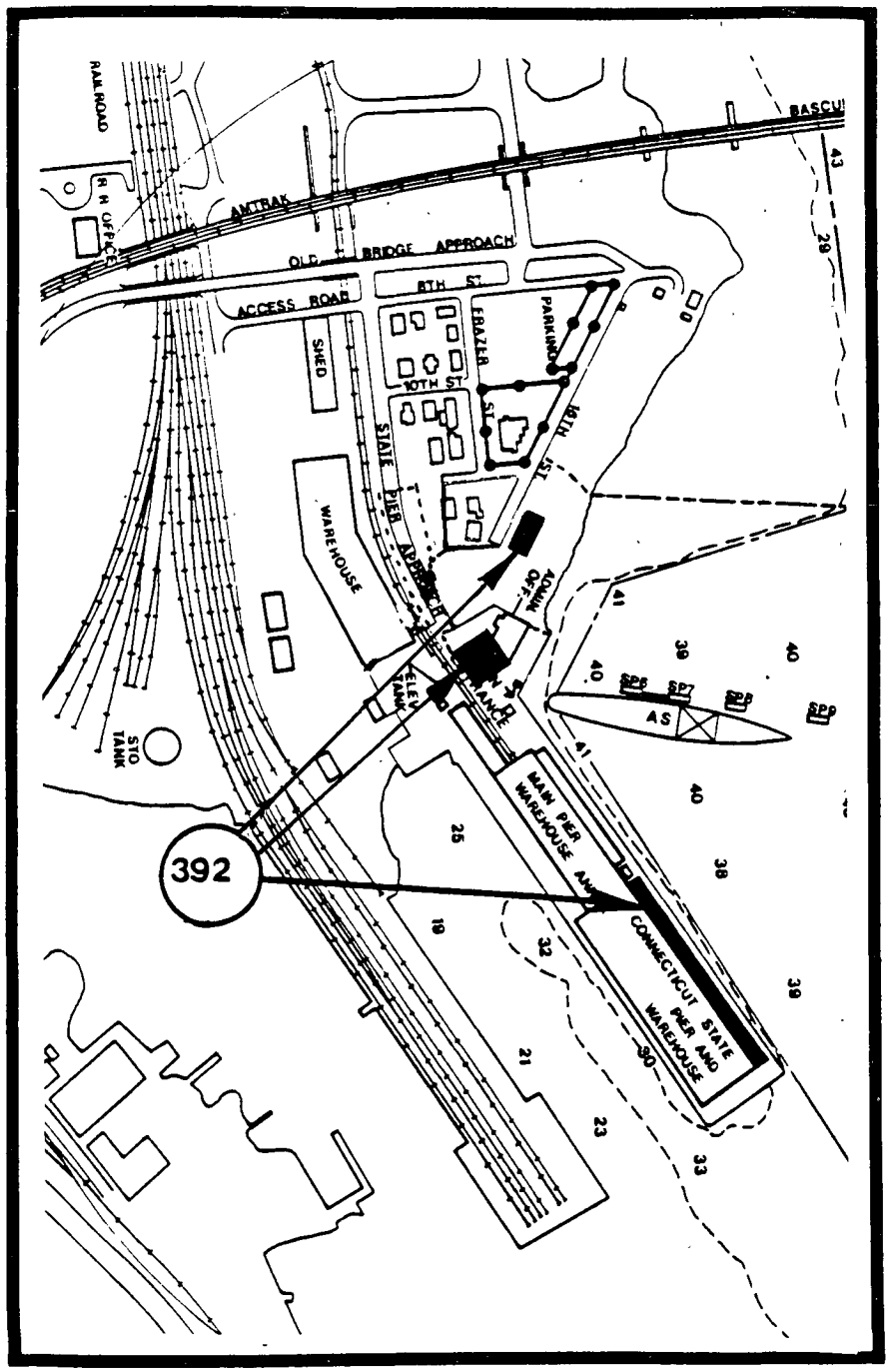
Adequate shore support for Submarine Squadron TEN must be provided at State Pier to ensure fleet readiness and effectiveness. Currently, State Pier facilities are inadequate. The pier structure is deteriorated and provides limited access to berthed submarines. The leased area of the pier is not wide enough for full support of berthed submarines. Physical security of the area is not complete due to poor lighting levels and the presence of non-Navy personnel in uncontrolled areas immediately adjacent to operations area. Water service is not adequate.

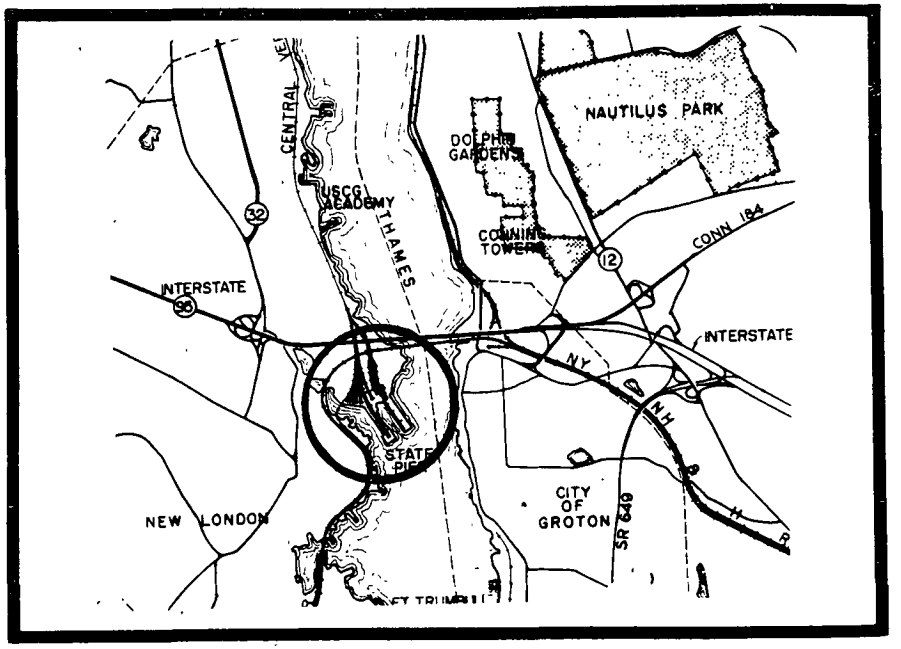
SITING CONSIDERATIONS:

This project will include dredging and therefore requires a Corps of Engineers permit.

DESIGN CONSIDERATIONS:

None.





P-392
IMPROVEMENTS TO STATE PIER AND LAND ACQUISITION

COST:
$7,200,000

TITLE: P-398 ADVANCED SSN-21 TRAINING FACILITY
COST: $15,000,000

SCOPE:

This project will provide a facility for training personnel in the operation and maintenance of the new SSN-21 class submarine combat systems. The facility will be steel frame with concrete floor and roof slabs on cellular metal decking. The building will be air conditioned and equipped with hydraulic and 3,000 psi compressed air systems. Site work will include excavation and fill and a bituminous paved parking area.

REQUIREMENT:

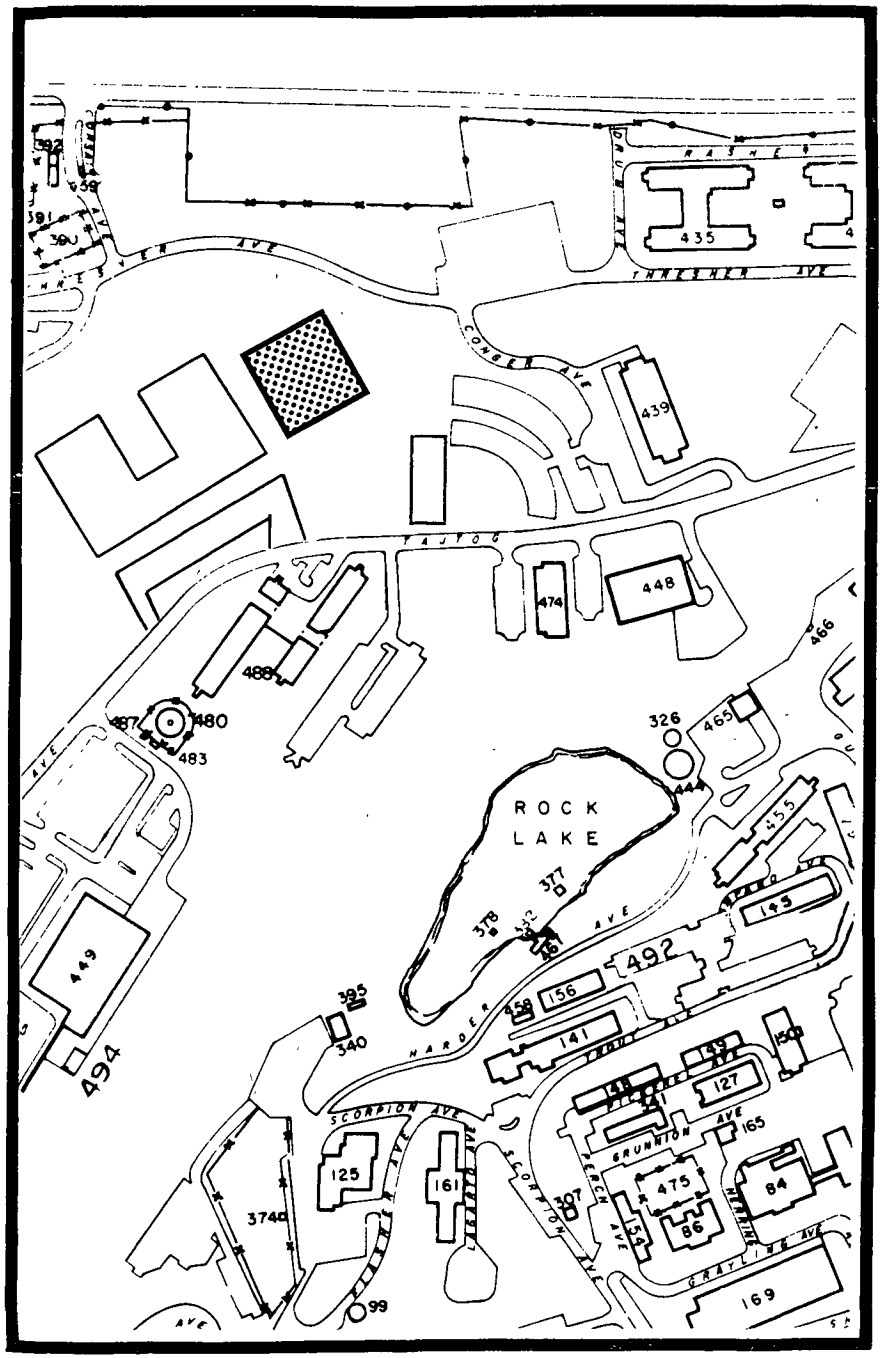
Facilities are required to house new training equipment and provide classroom space for electronic, electrical, mechanical and combat systems training for the SSN-21 class submarine. This project will provide the Navy's only training facility for the initial training of personnel who will man the SSN-21.

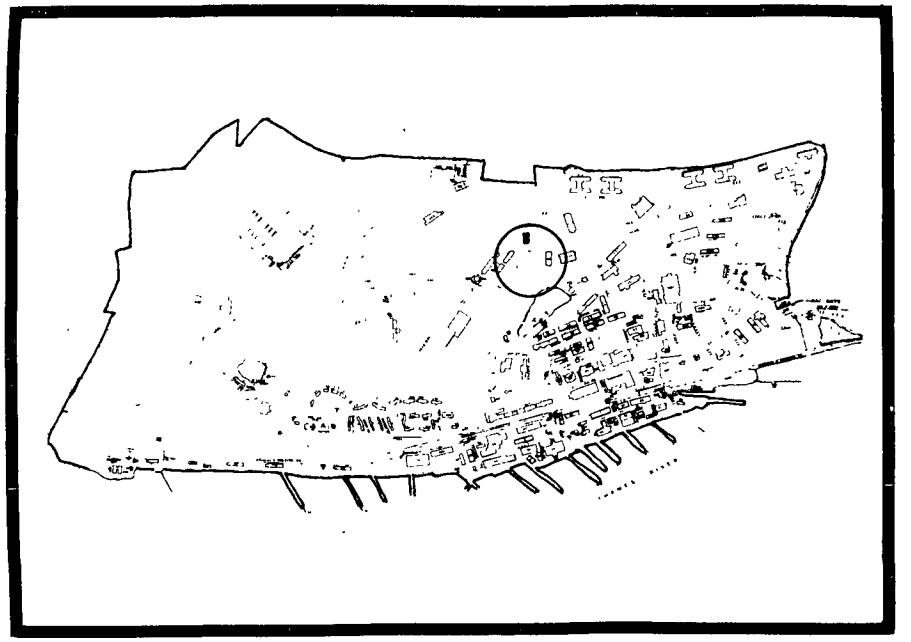
SITING CONSIDERATIONS:

The proposed site for this project is located off Tautog Avenue, adjacent to existing and proposed SUBSCOL buildings.

DESIGN CONSIDERATIONS:

None.





P-398
ADVANCED SSN-21 TRAINING FACILITY

COST:
$15,000,000

TITLE: P-413 REPAIRS TO QUAYWALL
COST: $9,100,000

SCOPE:

This project will repair three sections of deteriorating quaywall on the structured waterfront area of SUBASE NLON. The three areas affected and the repairs to be accomplished are: 1) replacement of existing concrete retaining wall section north of Pier 33 with new concrete platform on steel H-piles with rip rap slope, 2) replacement of existing steel sheet pile bulkhead north of Marina Pier with new sheet pile and concrete platform supported by rigid "A" frame of steel, 3) replacement of existing timber relieving platform and timber sheeting with a concrete relieving platform over the existing and new steel sheet pile bulkhead. All three sections include fendering, cathodic protection, street lights, storm drains and pavement. Dredging and rock excavation will be required north of Pier 33.

REQUIREMENT:

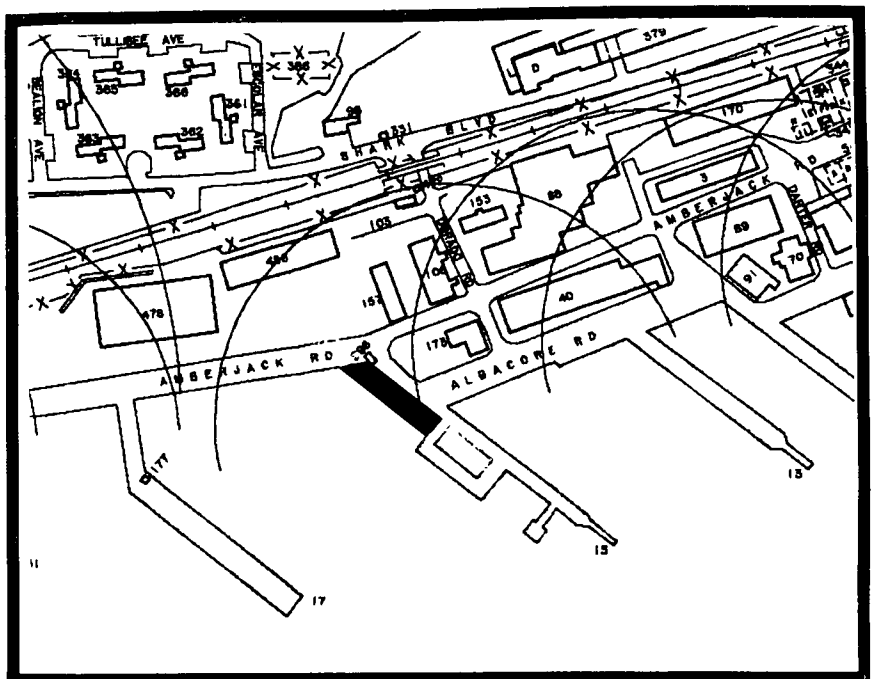
The quaywall is a basic component of the structured waterfront. Repair of the quaywall is necessary to protect support facilities such as waterfront roads and underground utilities, as well as, provide berthing for service craft. The existing quaywall has deteriorated to a point where likelihood of collapse requires expedient corrective action.

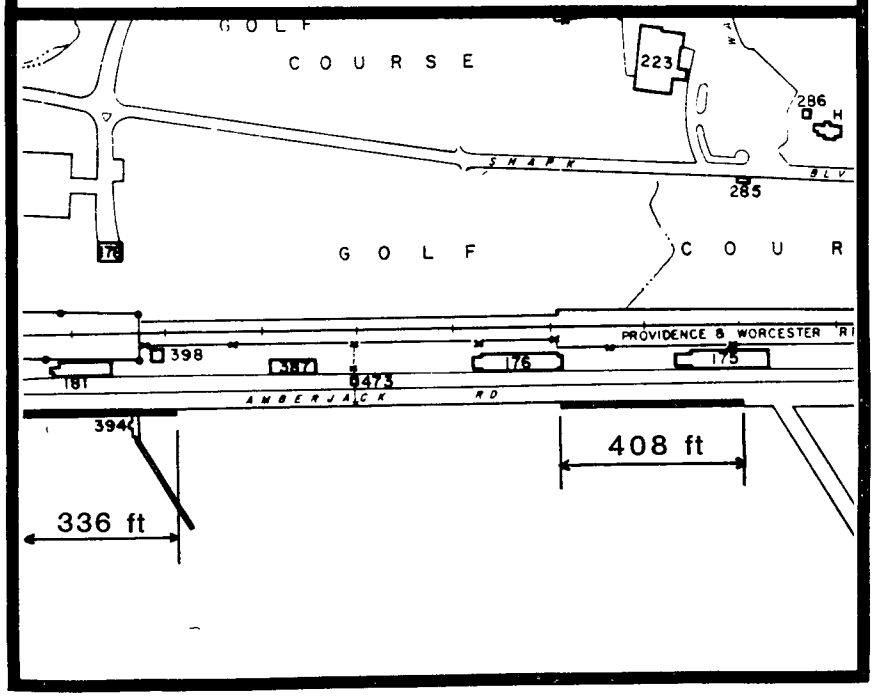
SITING CONSIDERATIONS:

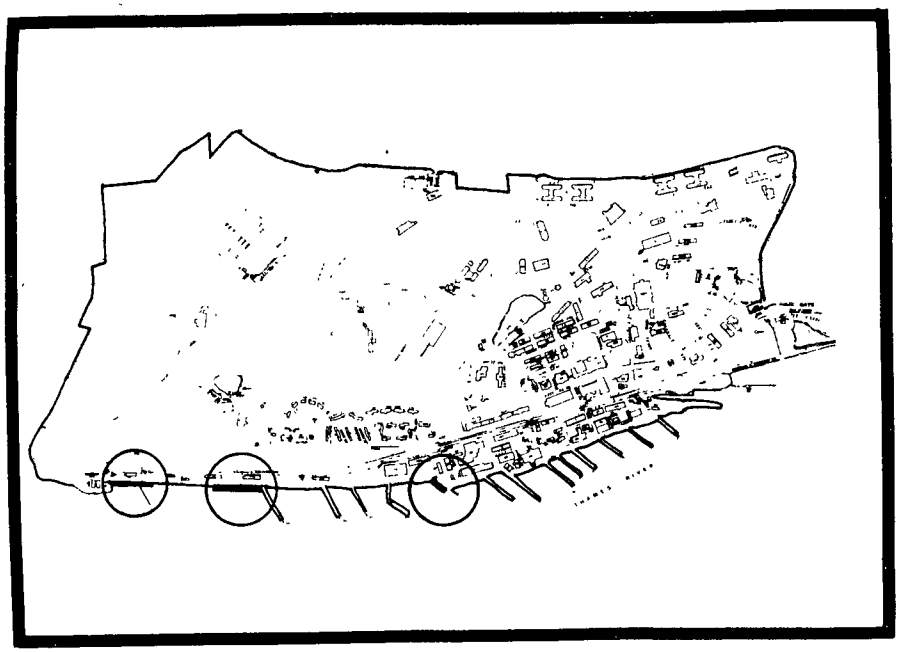
Construction will occur within a coastal zone and will require a coastal zone consistency determination in accordance with Coastal Zone Management Act PL 95-583.

DESIGN CONSIDERATIONS:

None.



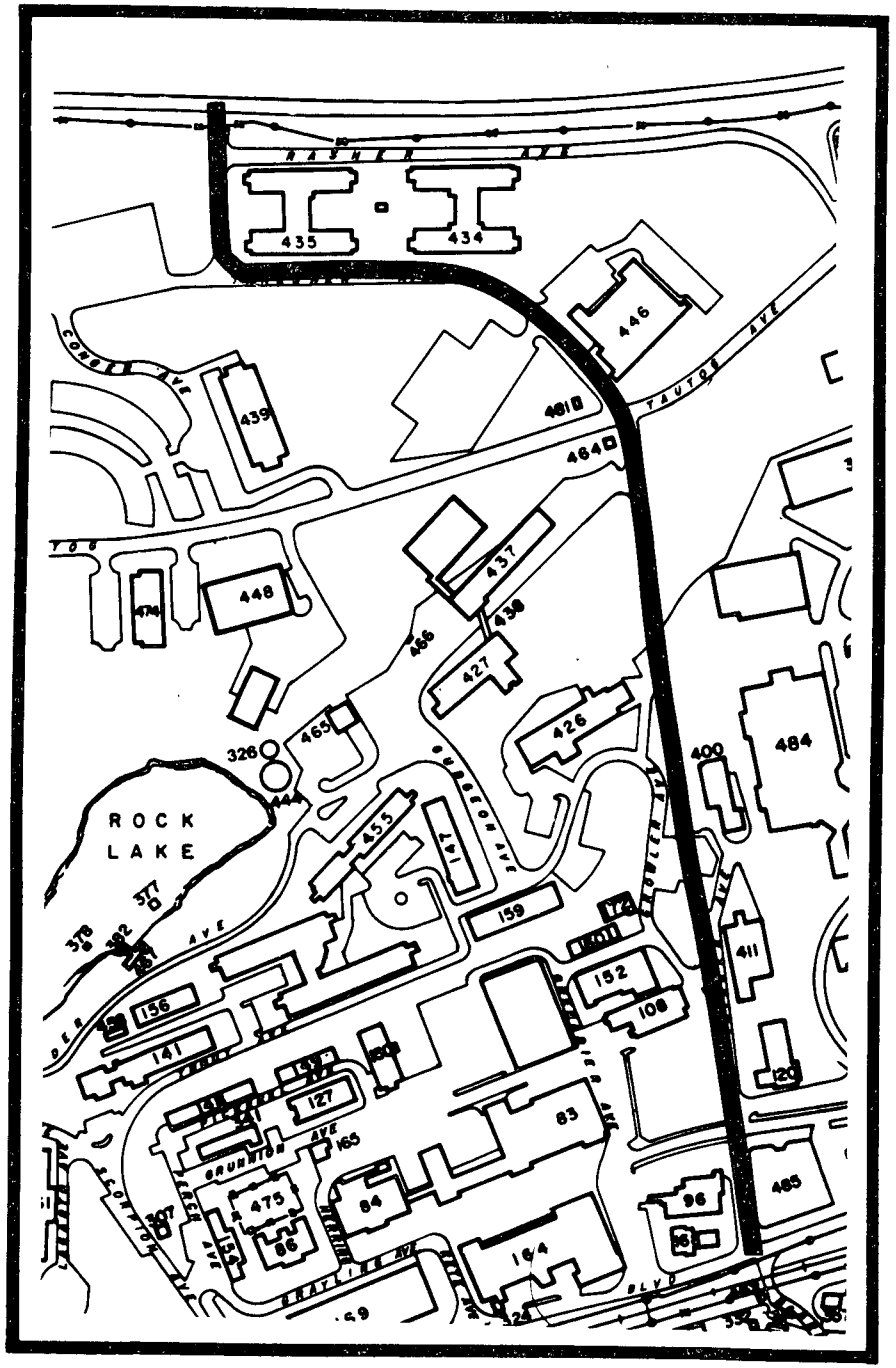


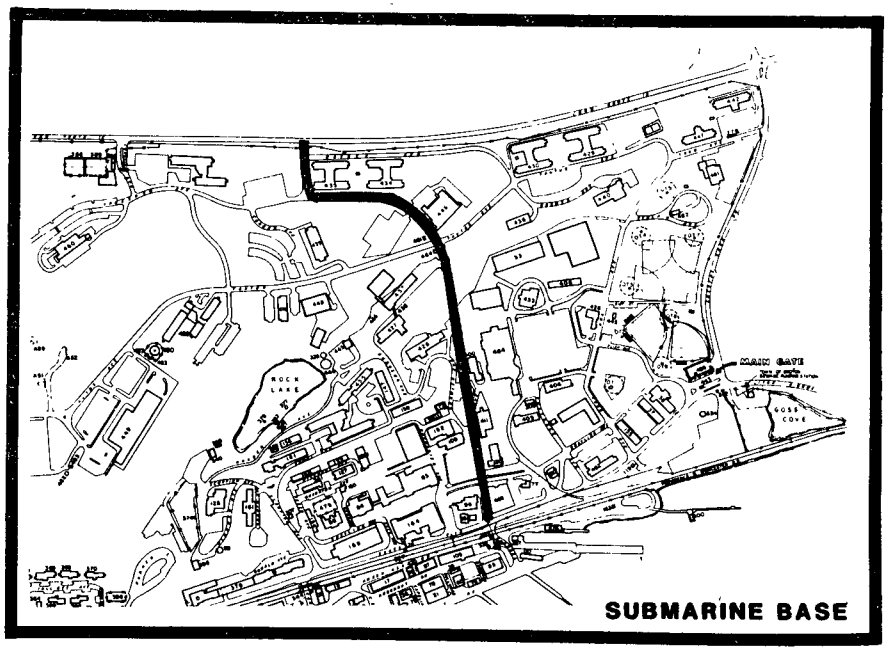


P-413
REPAIRS TO QUAYWALL

COST:
$9,100,000

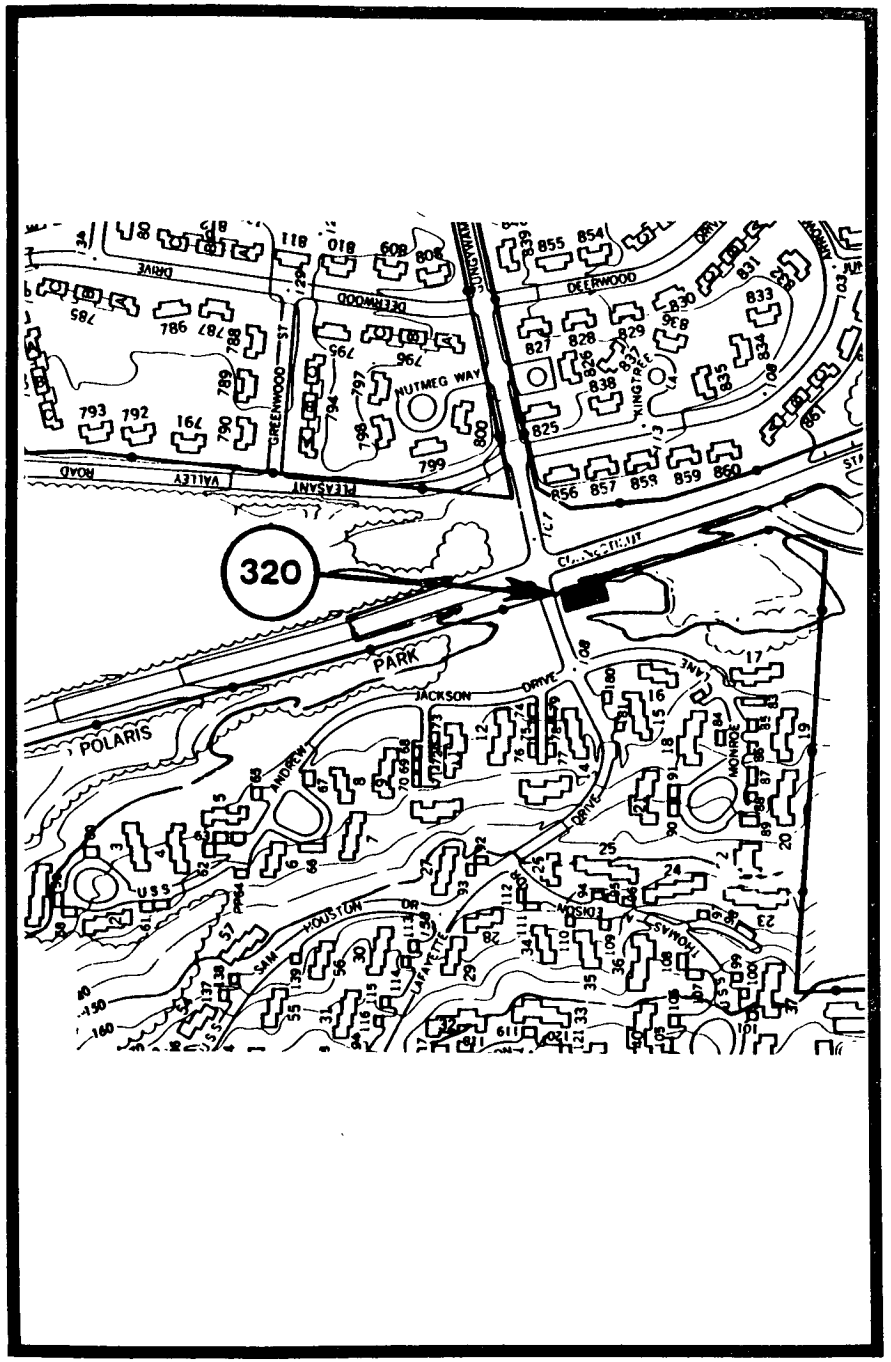
FY 92 MILCON PROJECTS

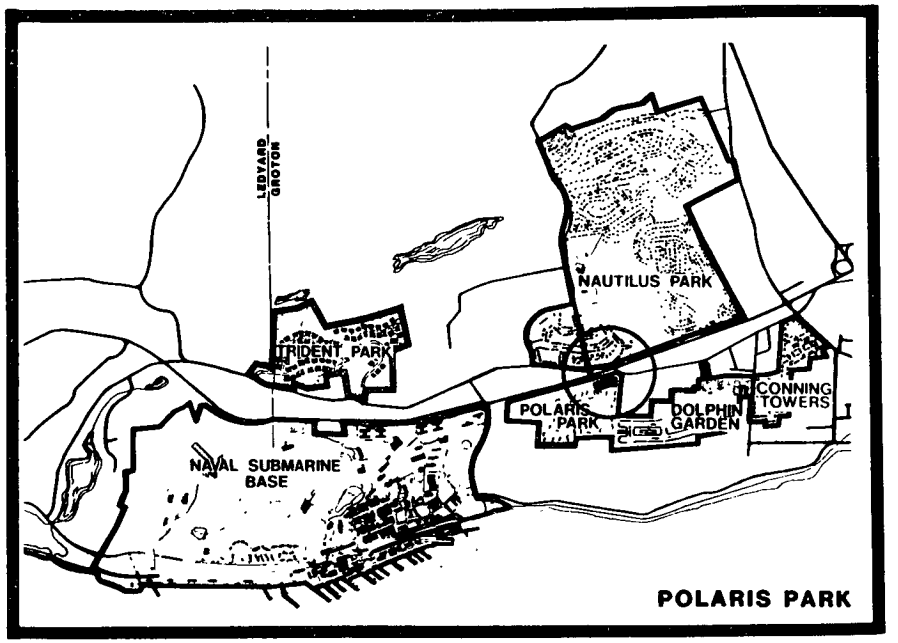




TITLE: P-057 ROAD IMPROVEMENTS
COST: $2,690,000

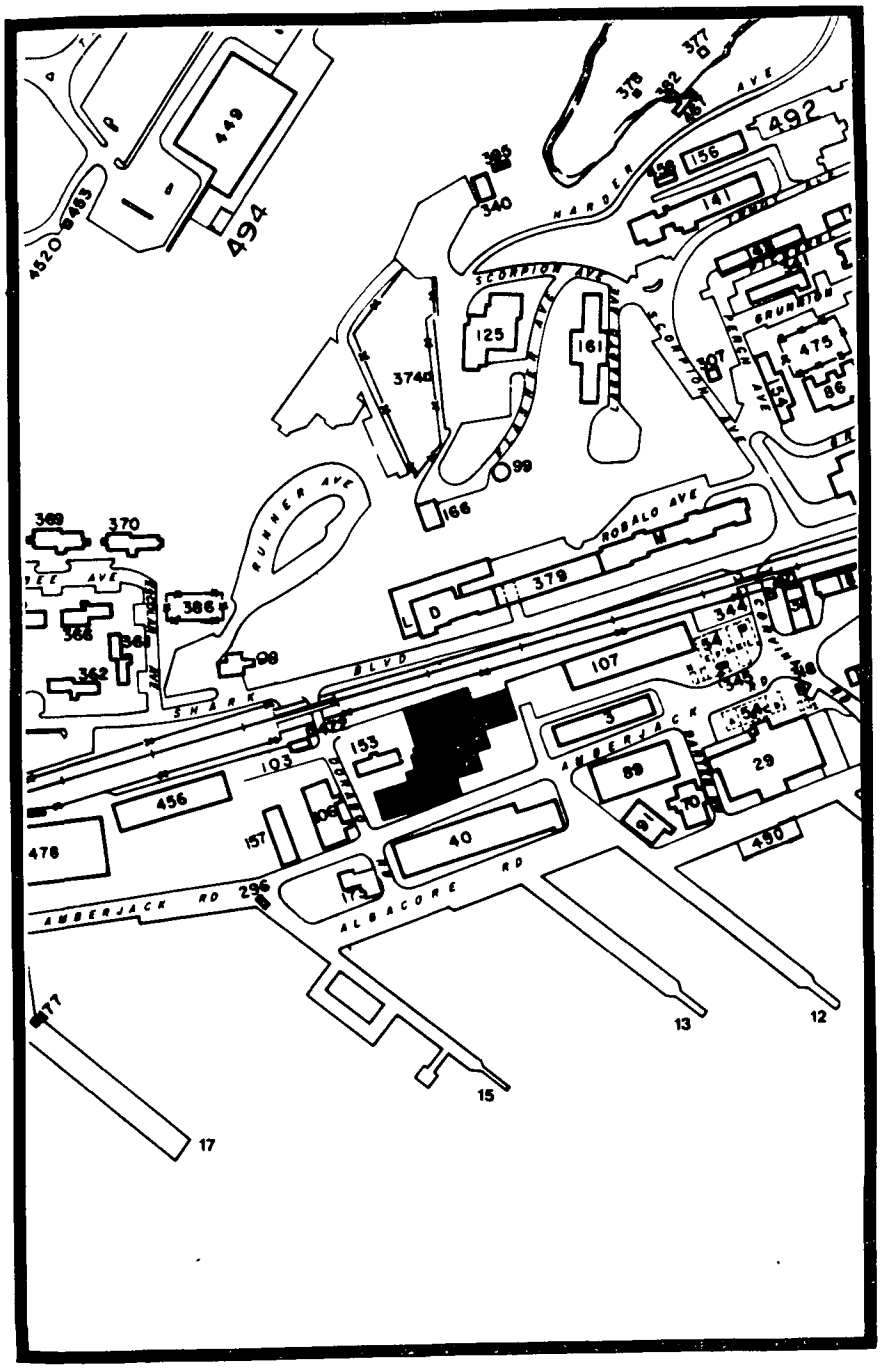
This project will construct a connector road between Tautog Avenue and Shark Boulevard which includes intersection improvements at Shark, Grayling, Grenadier, Growler and Gudgeon Avenues. Also included in the project is the relocation of Drum Avenue, a new gate at Route 12, improvement of Thresher Avenue between Drum Avenue and Tautog Avenue.

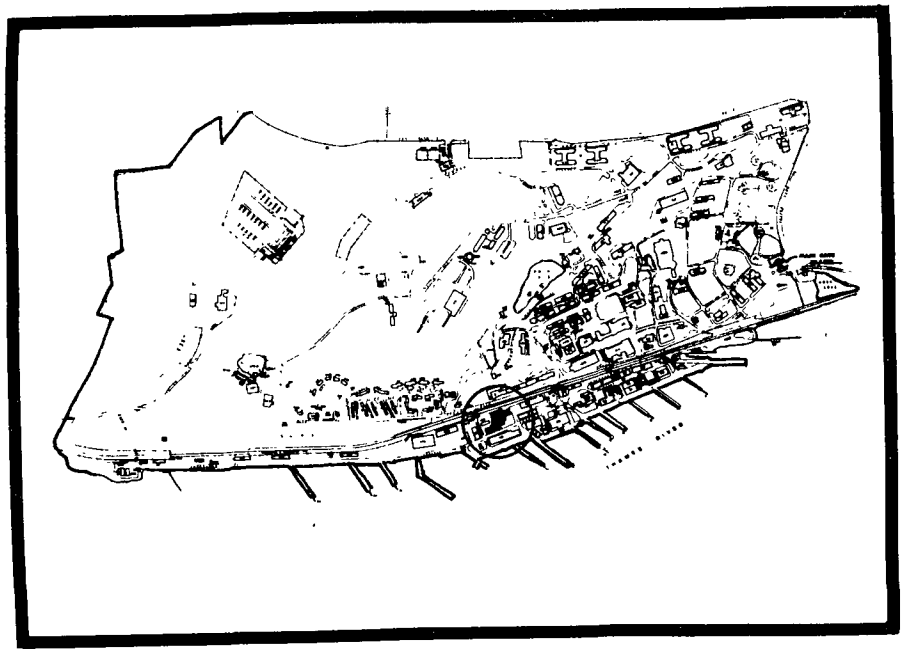




TITLE: P-320 FIRE STATION - POLARIS PARK
COST: $750,000

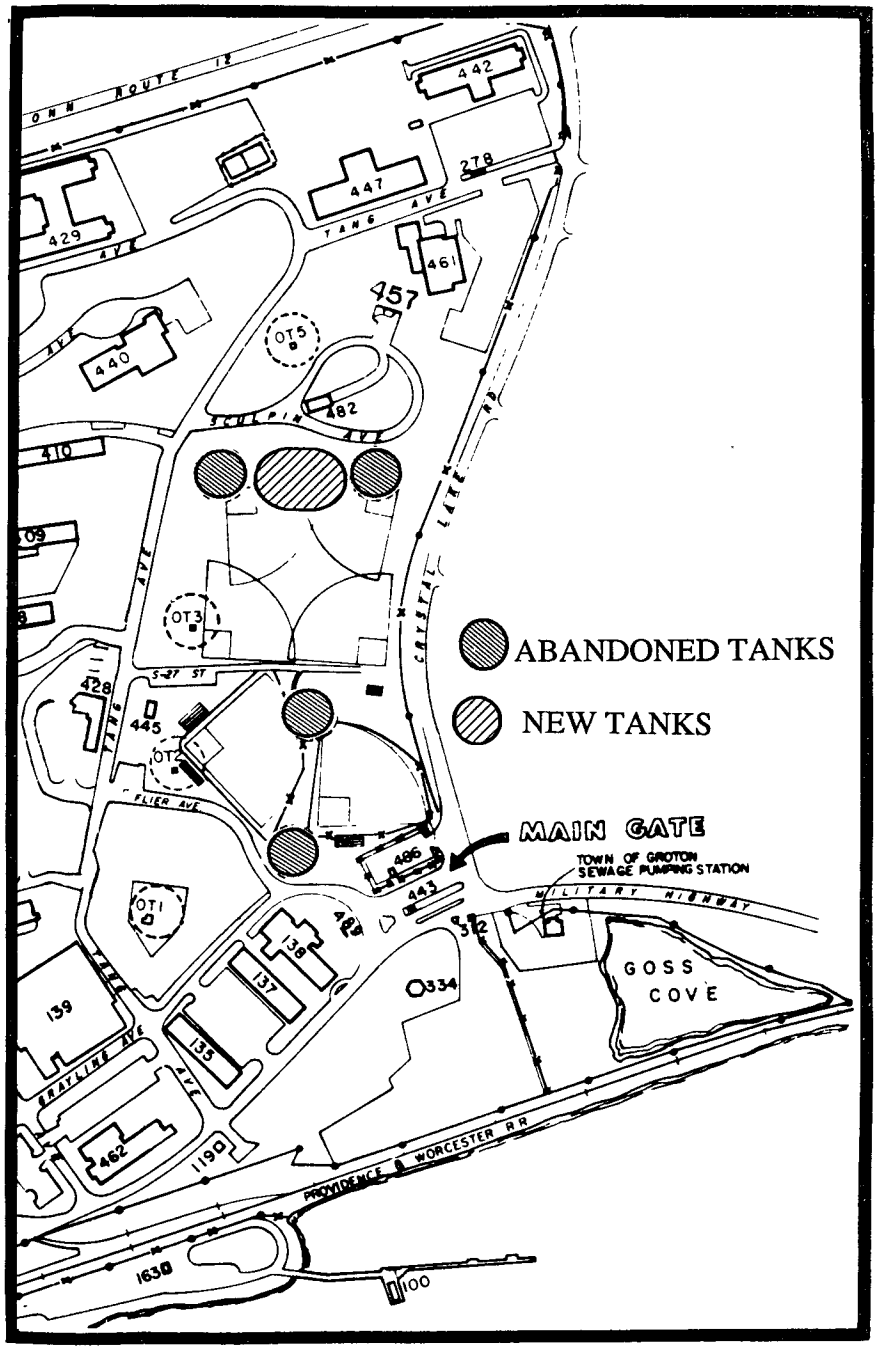
This project will provide a fire station for family housing areas. A single story, wood frame, slab on grade, shingled roof structure provided with fire apparatus, communications, watch room, workshop and maintenance spaces, and personnel support spaces is proposed. Also included are active solar domestic hot water system, fire alarm and protection, and an emergency generator.





TITLE: P-394 SUBMARINE INTERMEDIATE MAINTENANCE FACILITY (5TH INCREMENT)
COST: $6,000,000

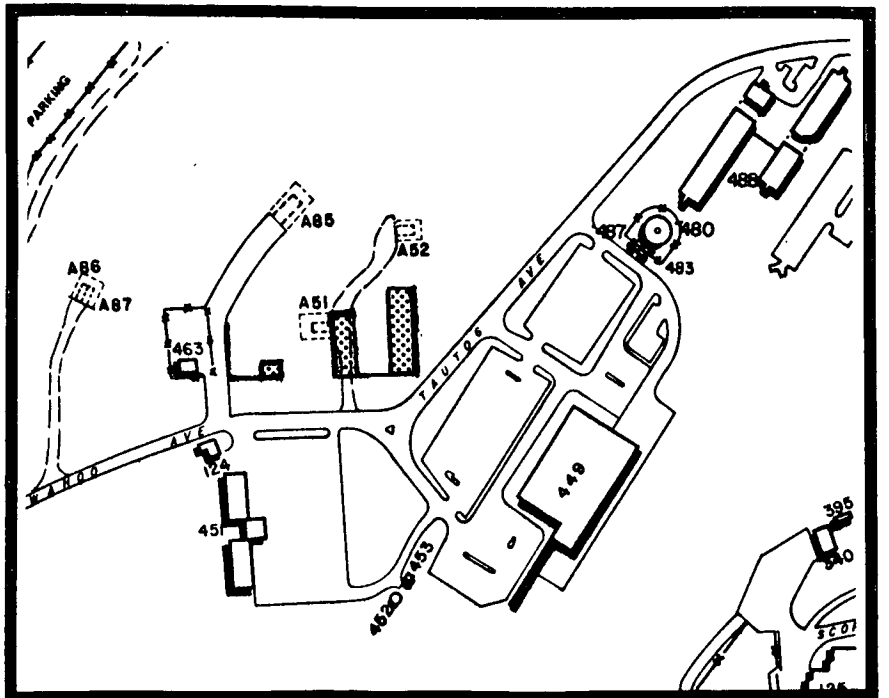
This project will provide alterations and modernization to Building 88 for the Submarine Intermediate Maintenance Facility.

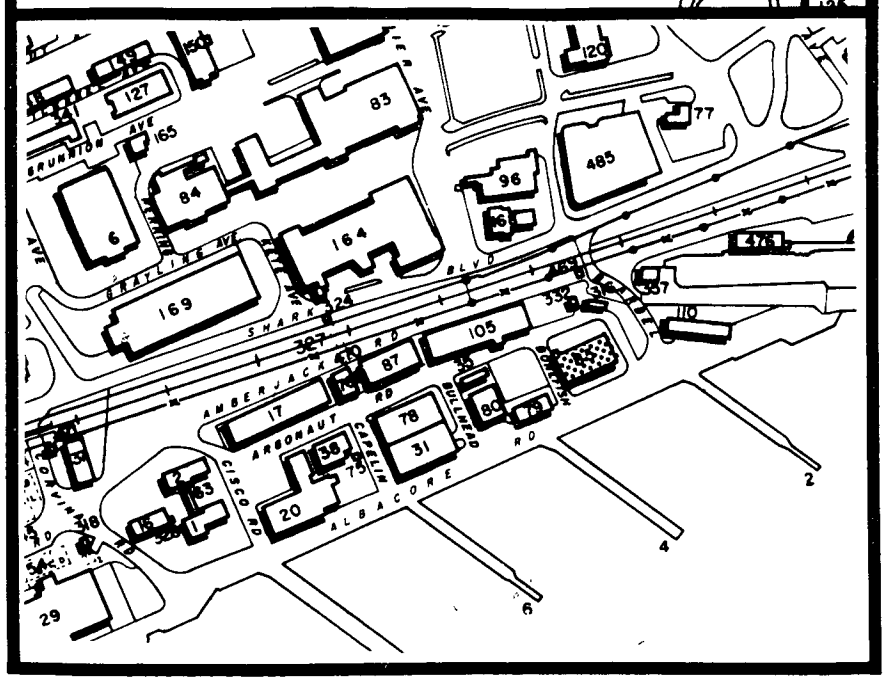


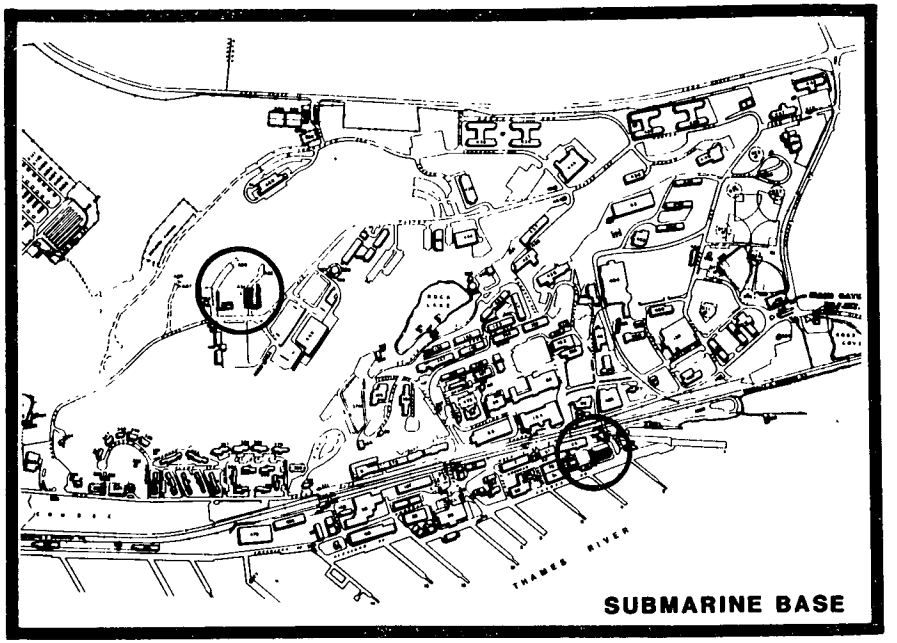
TITLE: P-415 REPLACE UNDERGROUND TANKS
COST: $2,017,000

This project will abandon and replace the existing leaking #2 DFM (diesel fuel marine) tanks. New cathodically protected steel tanks and underground fuel lines will be installed at the same site. Deteriorating #2 defueling lines will be repaired or replaced. New tanks and lines will meet all current state regulations.

FY 93 MILCON PROJECTS

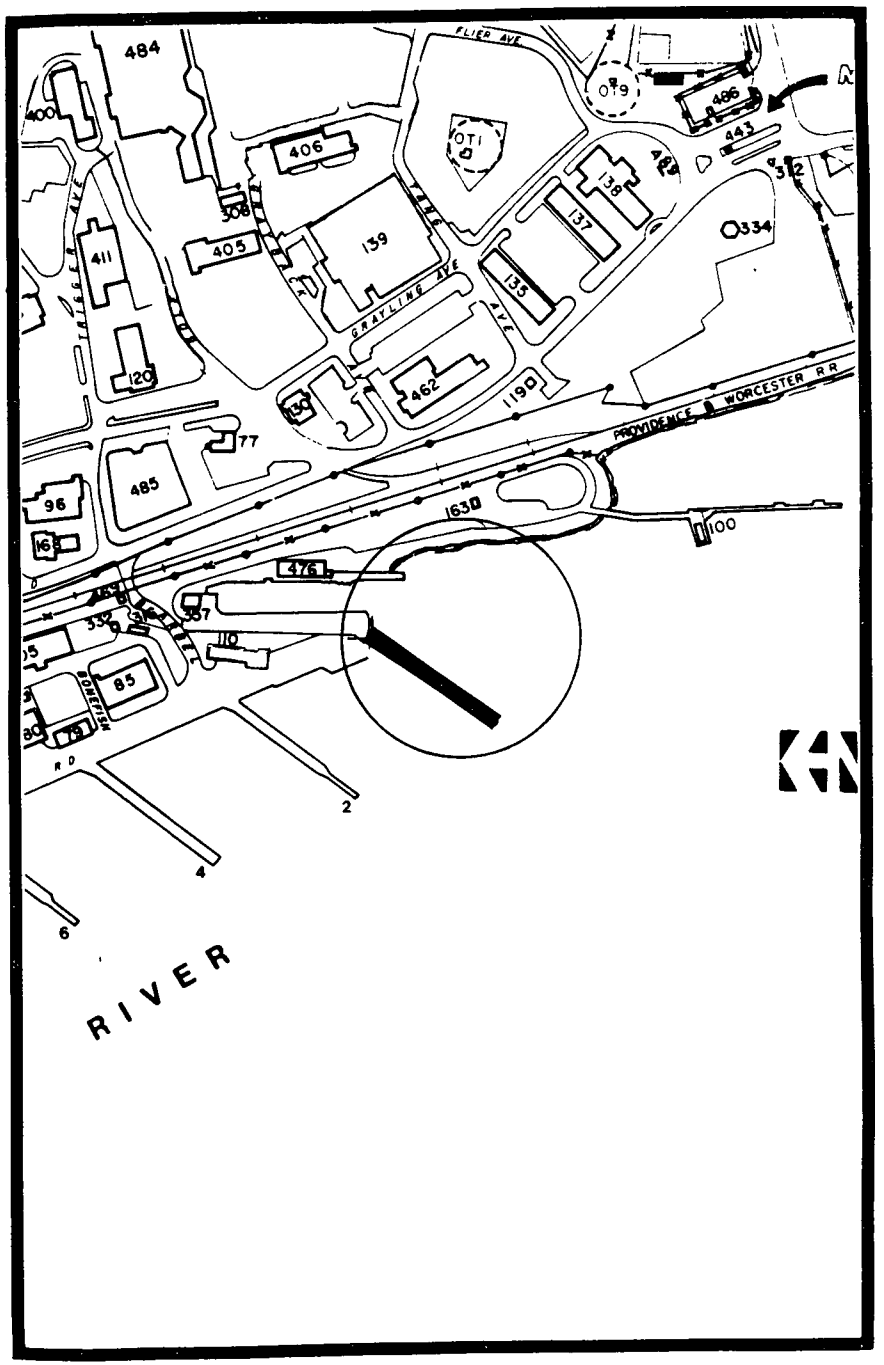






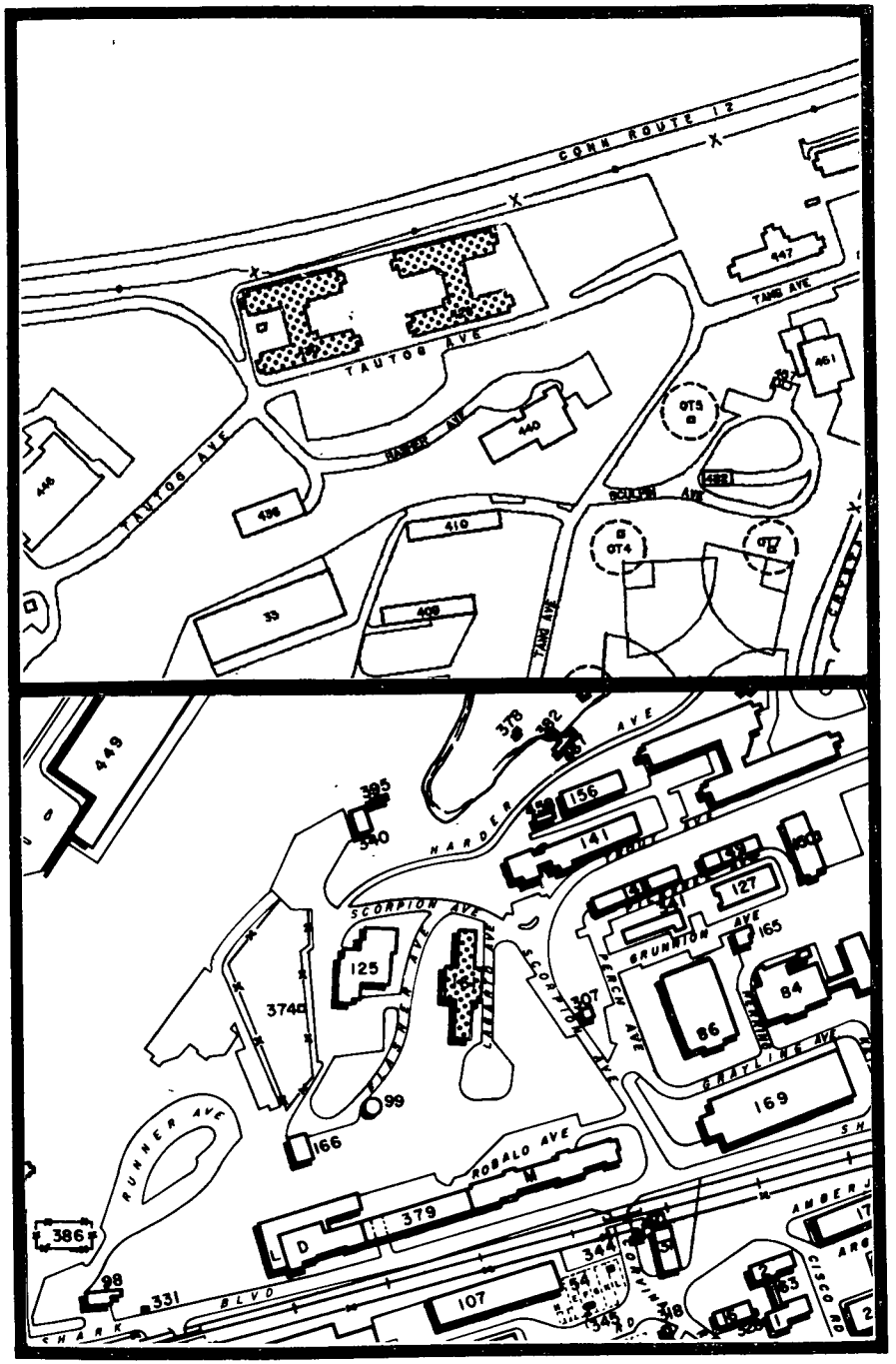
TITLE: P-080 AUTOMOTIVE VEHICLE MAINTENANCE FACILITY
COST: $3,260,000

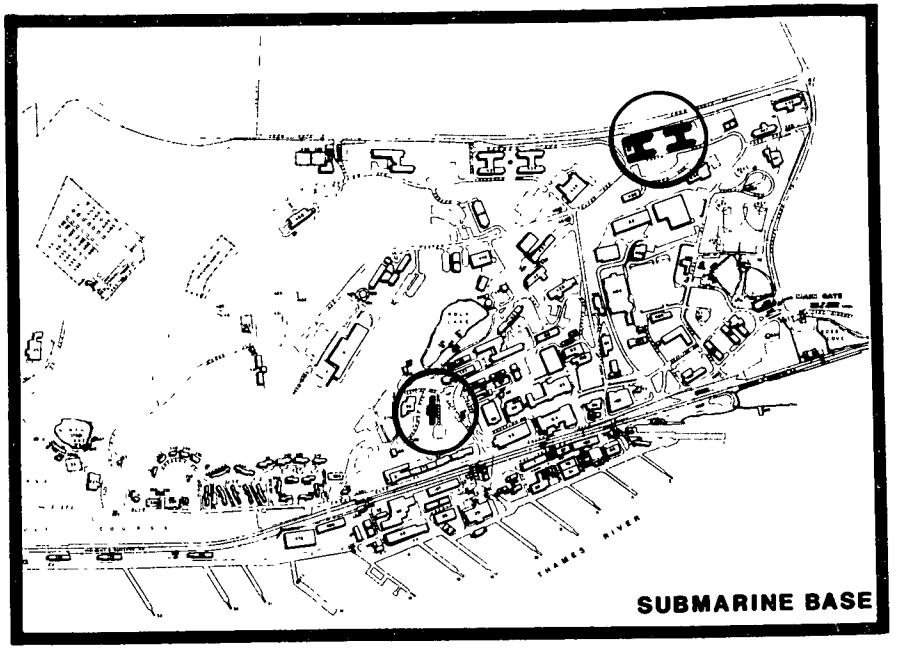
This project will construct consolidated vehicle maintenance and operations facilities. The proposed facilities will provide vehicle servicing areas, refueling vehicle shop, vehicle holding shed, automatic vehicle wash bay, grounds equipment shed, and administrative space. Also included in the project is the alteration and conversion of space in Building 85 to a crane and rigging operations shop. Building 18 and structure GT-1 will be demolished.



TITLE: P-084 REPLACE PIER 1
COST: $7,216,000

This project will construct a new berthing pier with concrete deck, concrete utility trenches, and steel piles with concrete jackets, fender system & fittings, fuel off-loading facilities and hotel servic for submarines. The proposed pier is designed for on SSN 688 class submarine berth and as a fueling pier for bulk fuel delivery. This project also includes the demolition of the existing Pier #1.

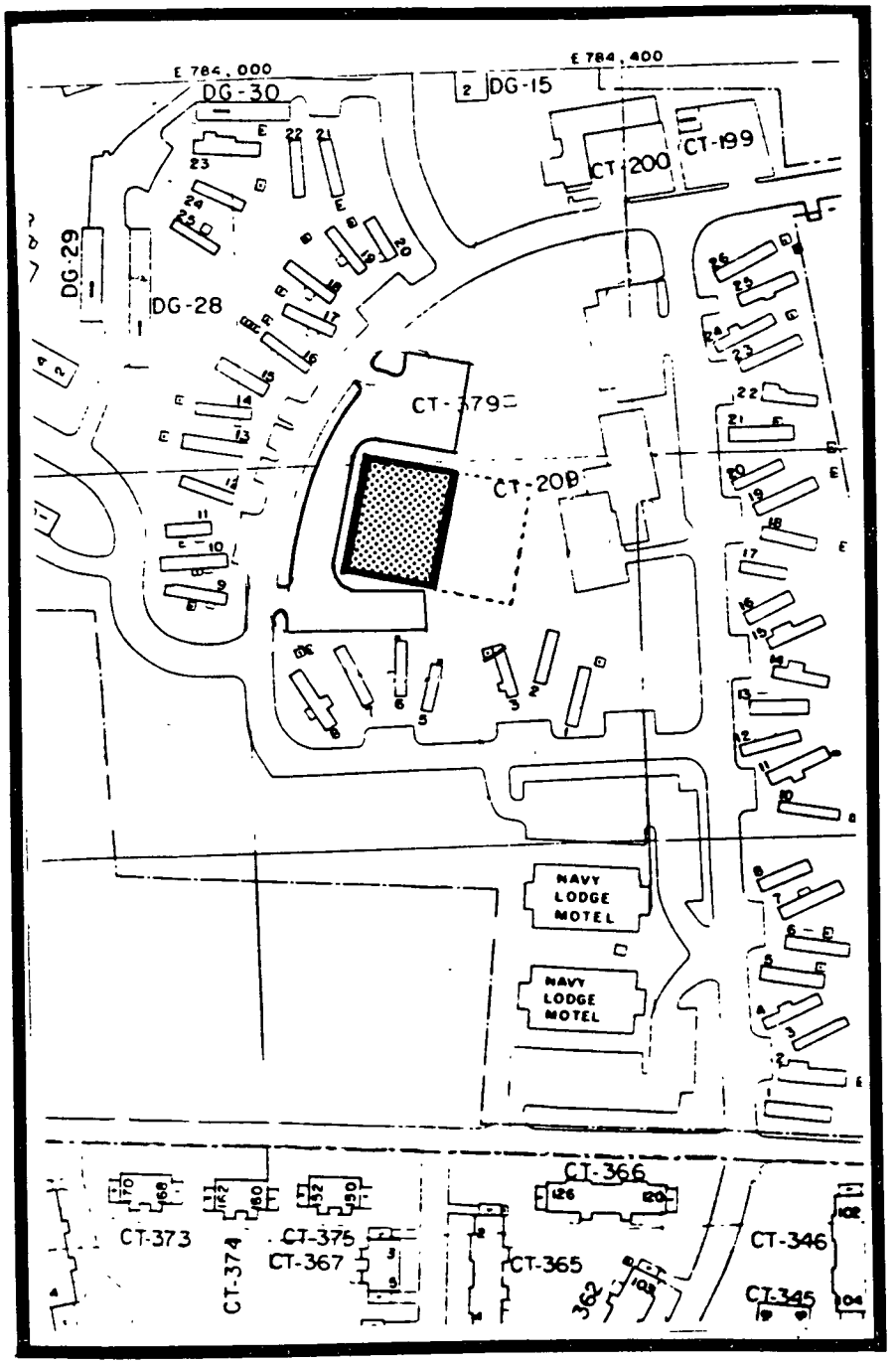


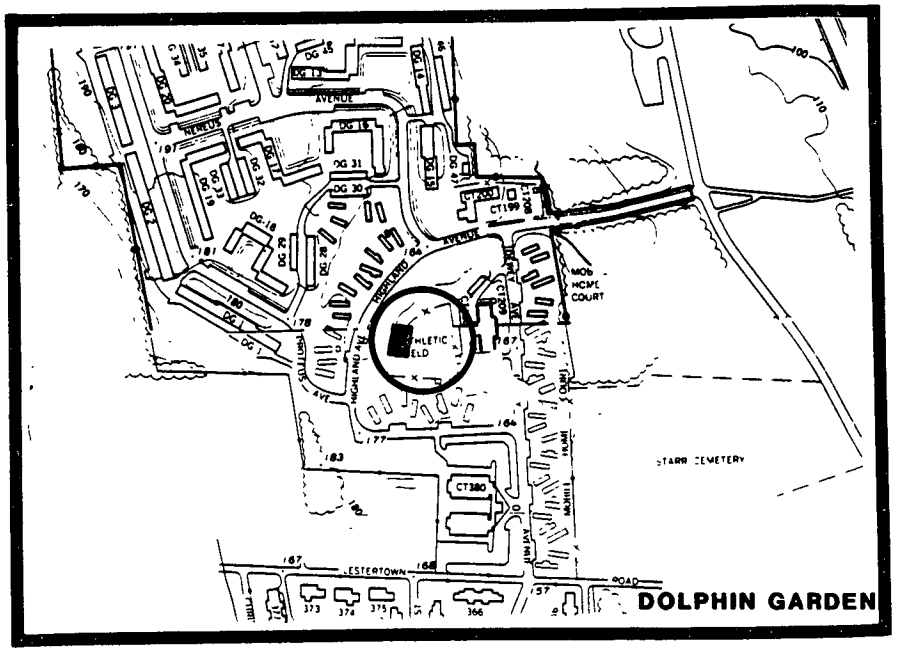


TITLE: P-185 BACHELOR ENLISTED QUARTERS MODERNIZATION

COST: $6,760,000

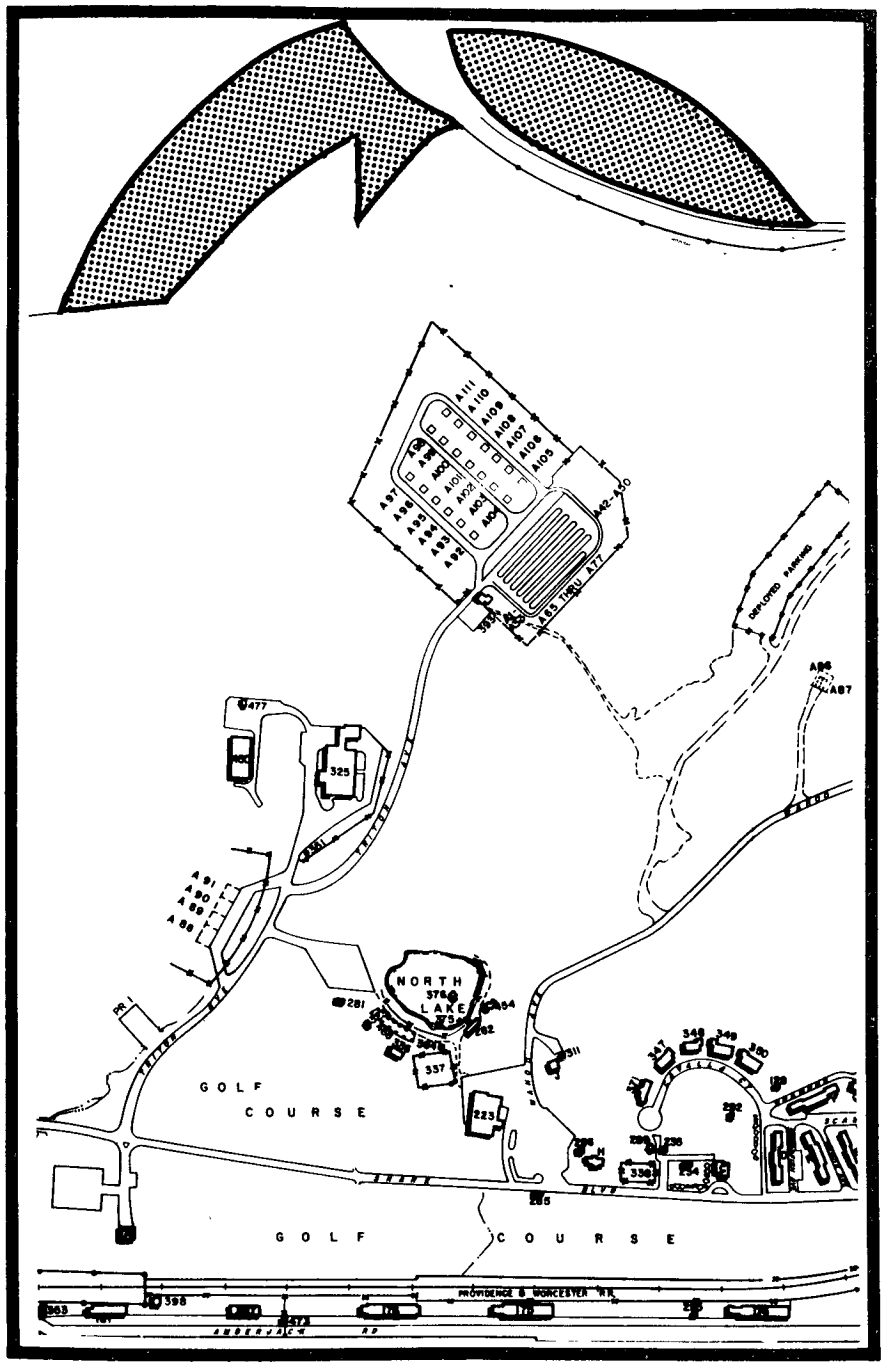
This project will remove partitioning in Buildings 429 and 430 to create open bay berthing for SUBSCOL students. Also, air conditioning, sprinkler systems, insulation, fire alarms and detection systems and intercom systems will be provided in Buildings 161, 429, and 430.

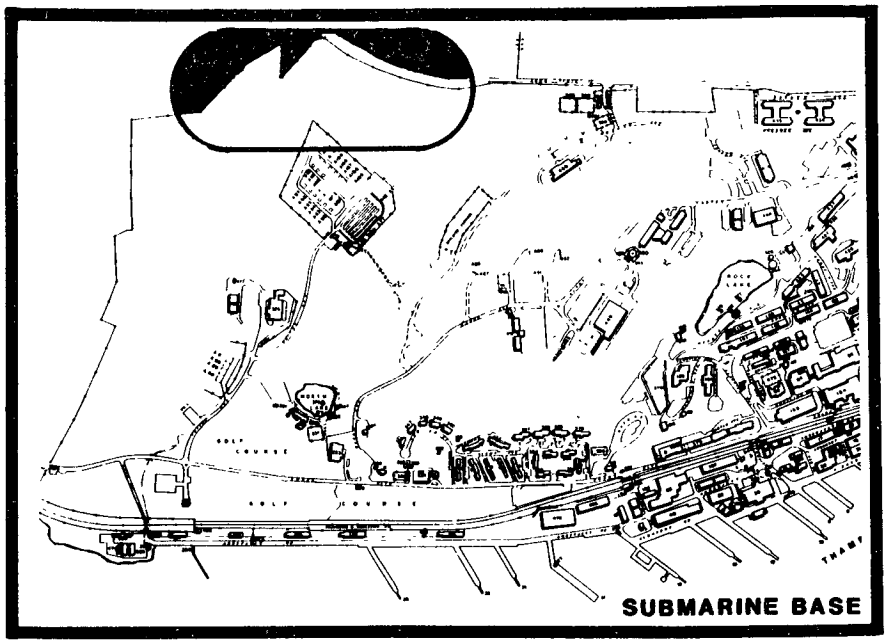




TITLE: P-352 CHILD CARE CENTER ADDITION
COST: $2,080,000

This project will construct a child care center to conform to all applicable State and Federal codes for child care facilities. The structure will contain instructional, play, food preparation and dining, infant care, rest and toilet facilities for children from infants (6 weeks and older) through pre-schoolers with a target capacity of 165 children. The construction will be non-combustible with masonry bearing walls and steel roof framing. The building will receive full fire protection, detection, and alarm systems. Site improvements include a fenced outdoor play area, landscaping, grading, and paved parking for 35 vehicles.

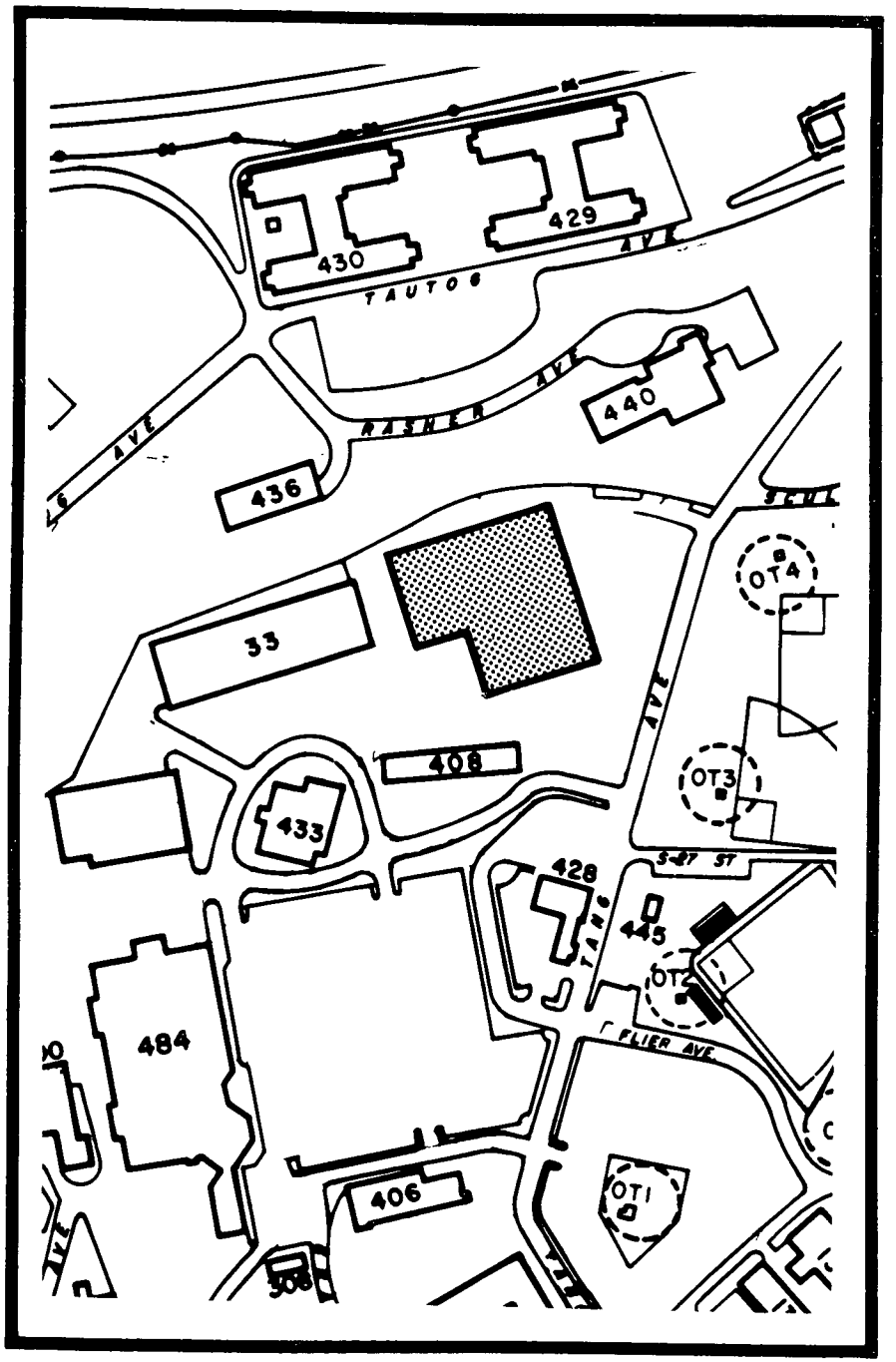


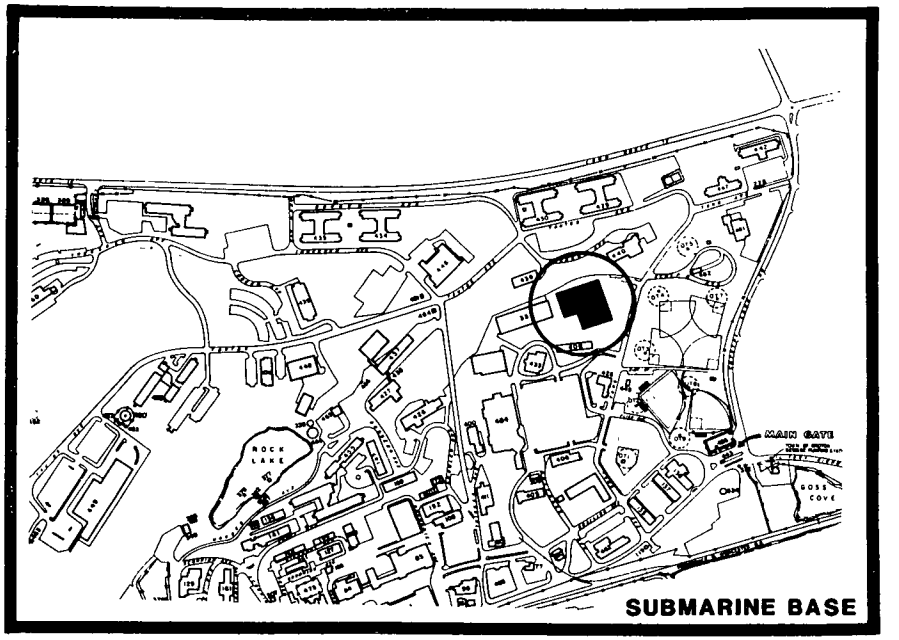


TITLE: P-384 LAND ACQUISITION
COST: $1,400,000

This project will facilitate the acquisition of land in fee title or restrictive easement within ESQD arcs of 1,250 feet from weapons storage/operating areas. This land acquisition is necessary to eliminate the portion of the waiver requirement (CNO Waiver No. SUBASE NLON 2-82) relating to distances to Base boundaries.

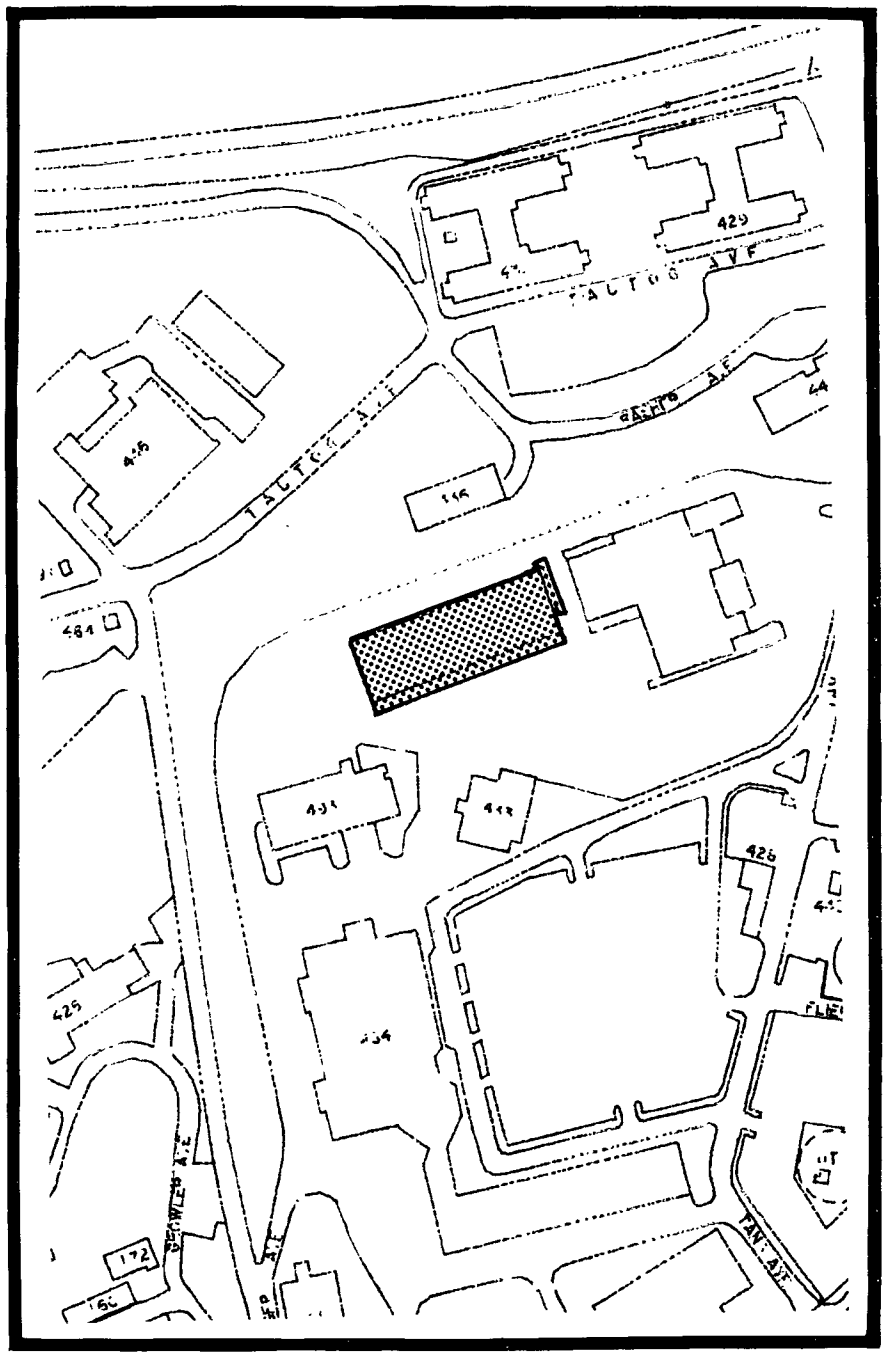
FY 94 MILCON PROJECTS

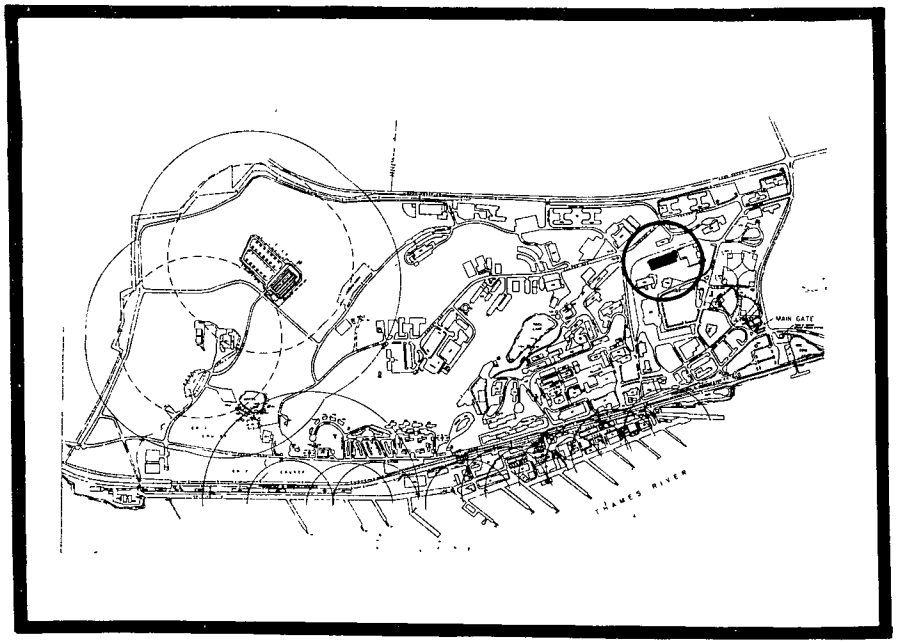




TITLE: P-021 FLEET SUPPORT WAREHOUSE
COST: $7,000,000

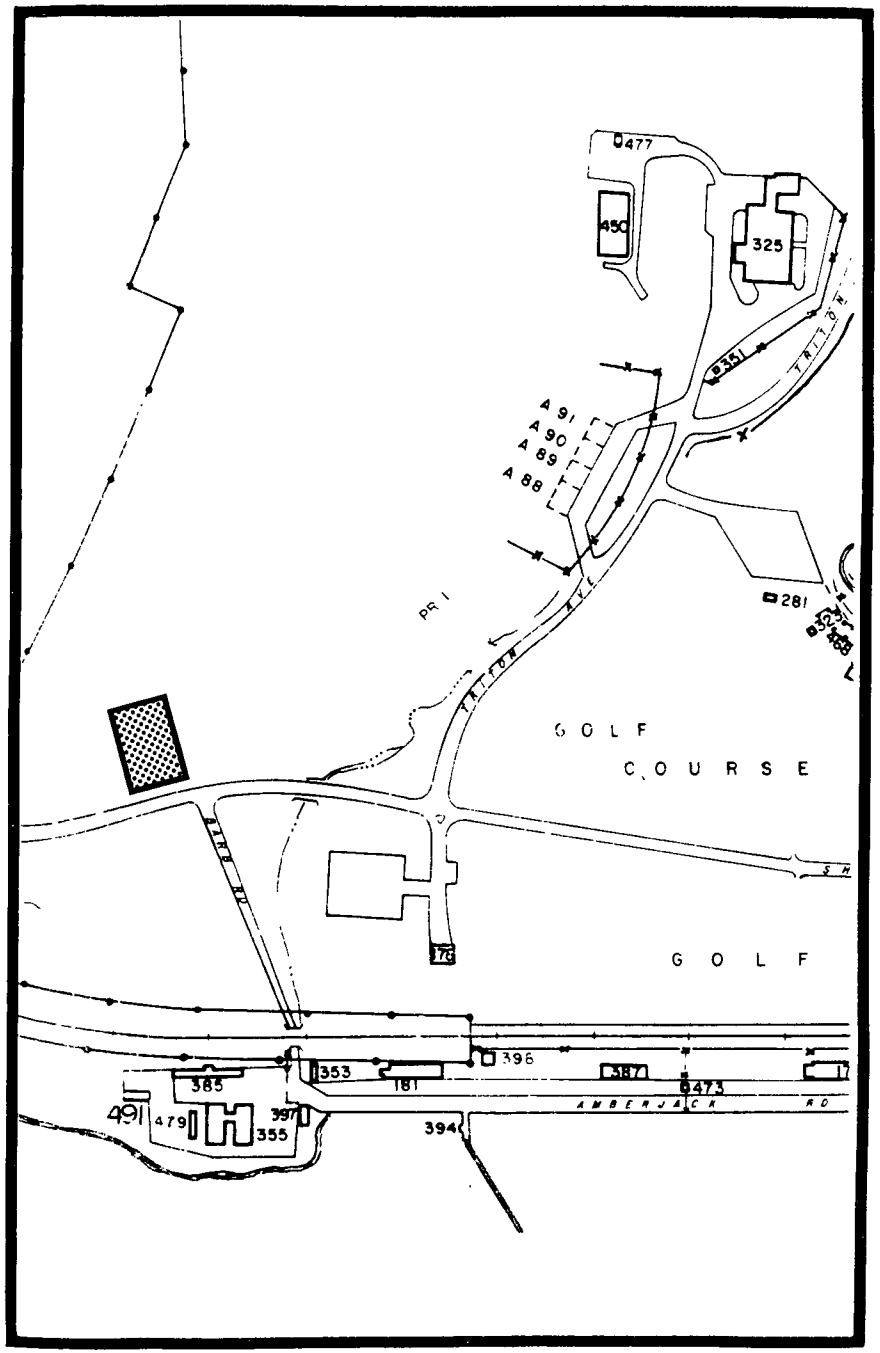
This project will provide warehousing and administrative space for Supply's shipping and receiving functions. The warehouse will contain hazardous flammable storage and administrative space in addition to general warehousing space with enclosed loading docks. Construction consists of structural steel frame with concrete masonry walls and fireproof structural steel frame roof on an elevated concrete floor slab and loading platforms. The project includes heating, lighting, relocation of existing underground utilities, air-conditioning for the administrative space and demolition of Buildings 316, 408, 409 and 410.

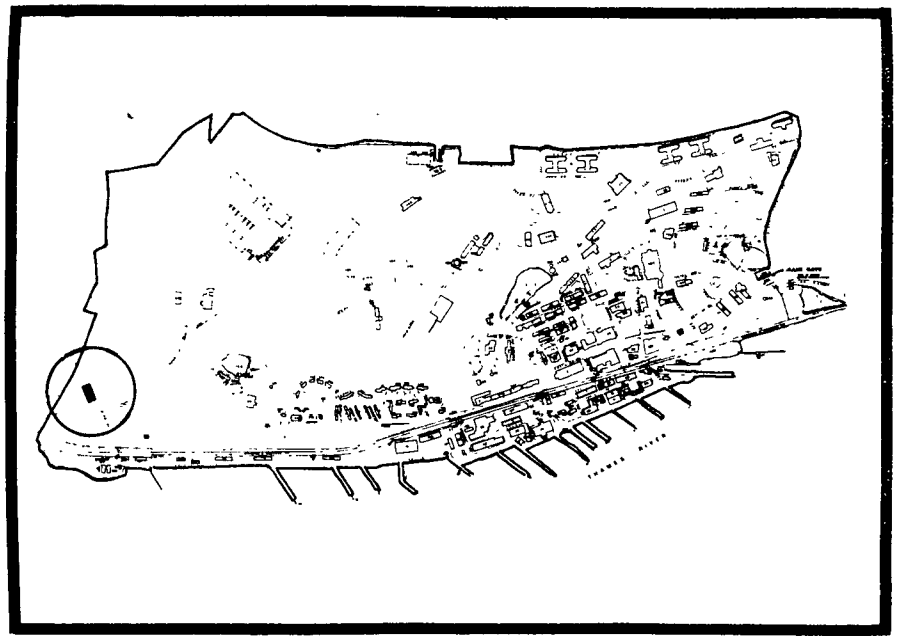




TITLE: P-370 REPLACE GENERAL WAREHOUSE, BLDG. 33
COST: $4,200,000

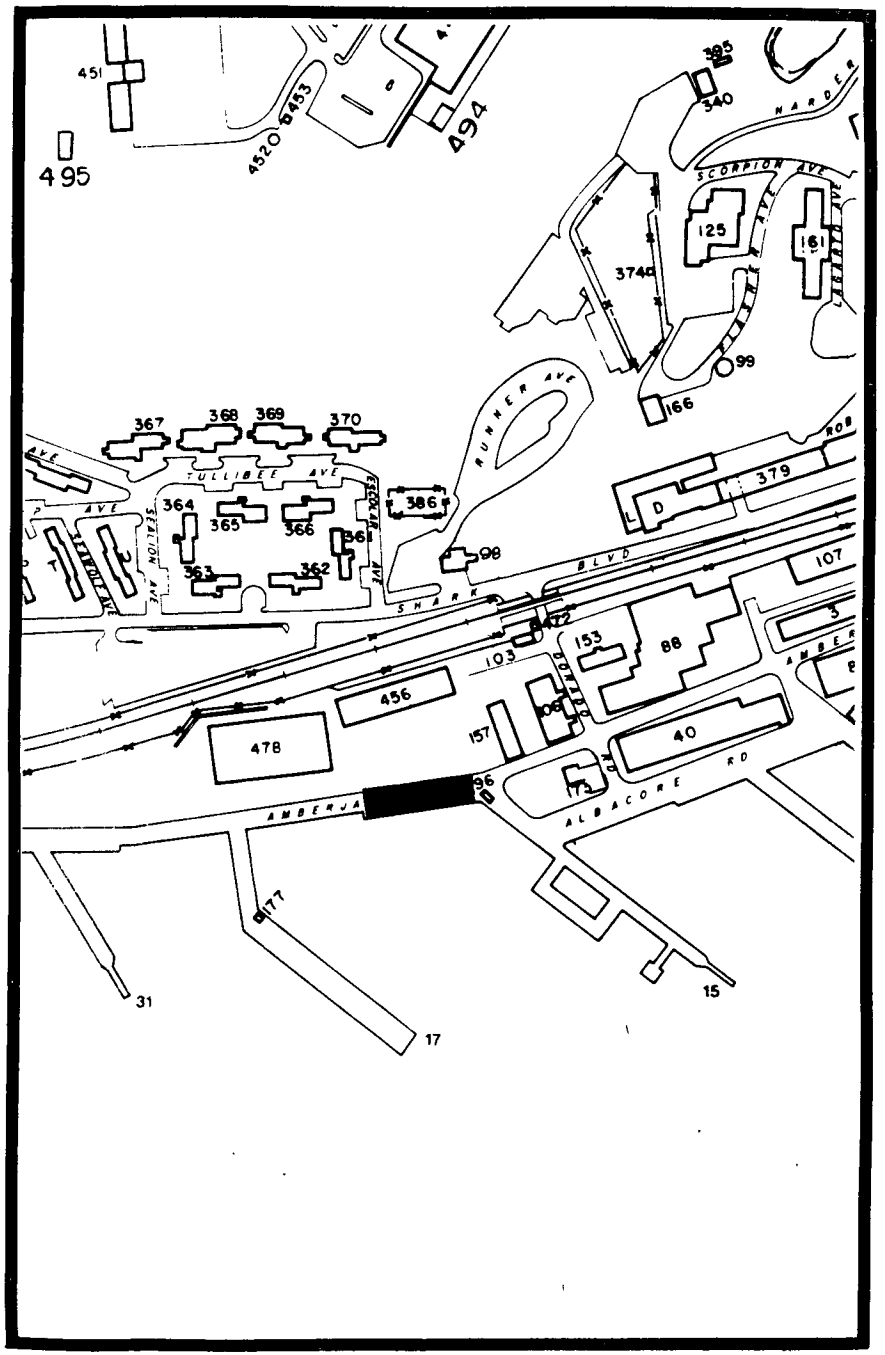
This project will construct a general warehouse of 40,000 SF with 310,000 total cubic feet of storage volume. The Supply Command and Control function will be relocated from the inadequate facility, Building 87, on the lower base to the new warehouse. Also, provided in the project is the installation of a pre-engineered open storage shed (6,000 SF) for bottled gas storage and the demolition of Bldg. 33.

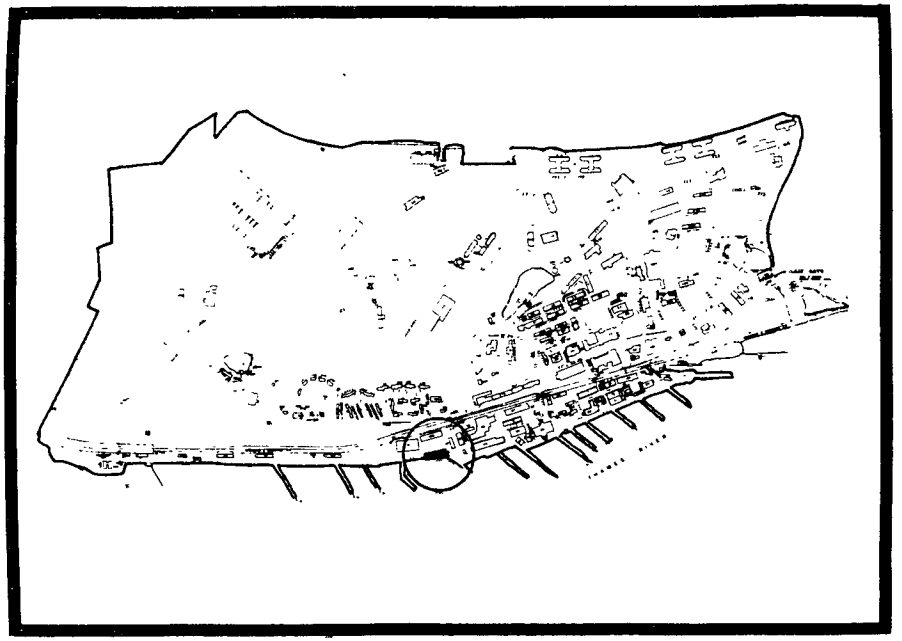




TITLE: P-400 INDOOR RIFLE RANGE
COST: $1,100,000

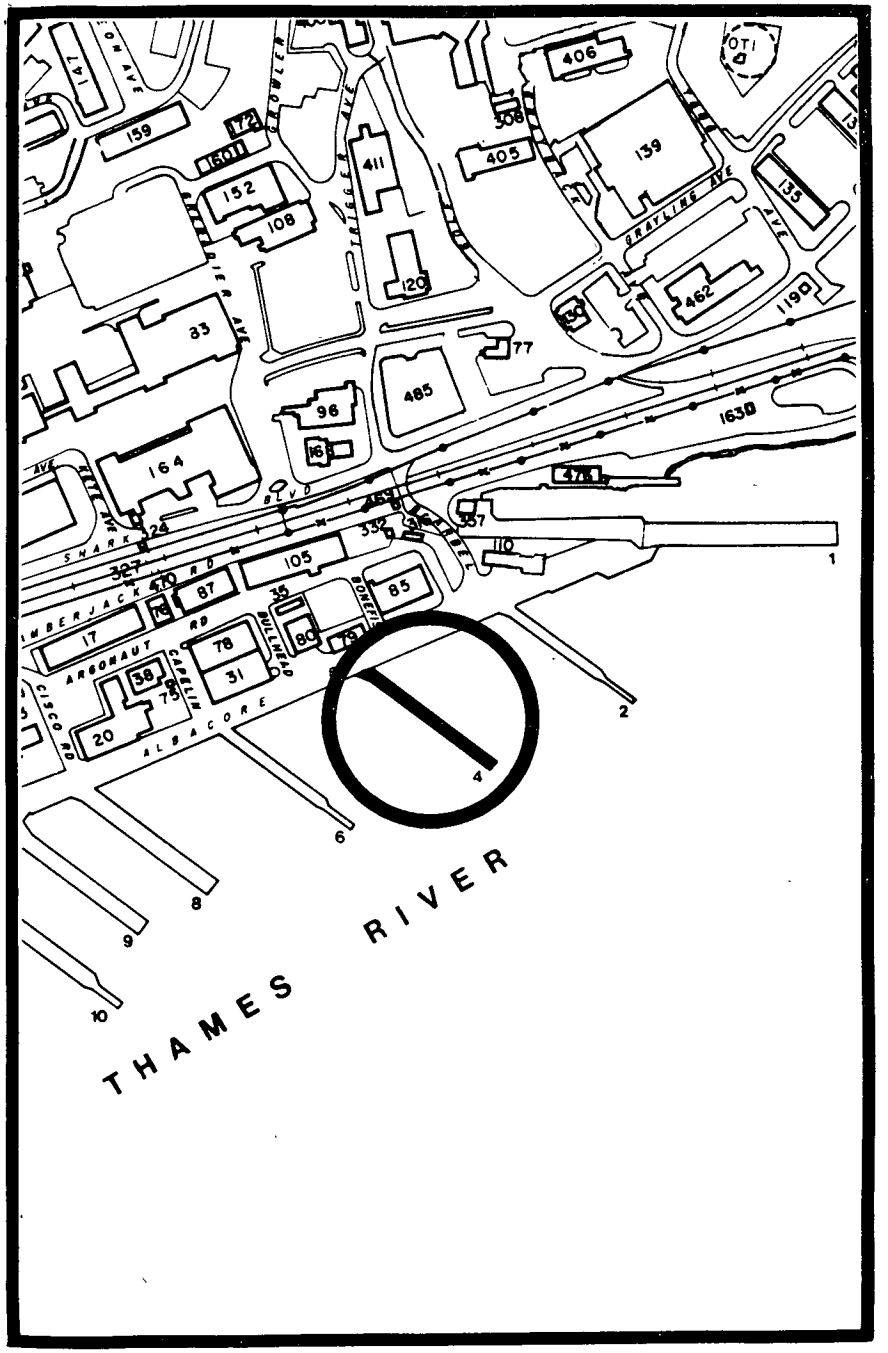
This project will provide an indoor rifle, shotgun, and 45 caliber pistol range.

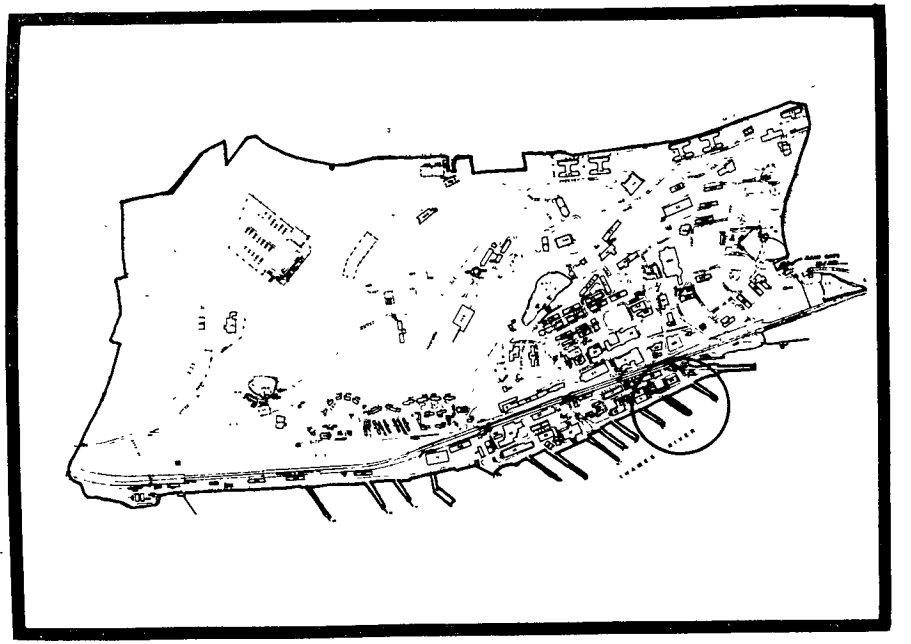




TITLE: P-406 SUPPORT FACILITIES FOR NR-1
COST: $1,140,000

This project provides a new building to replace existing trailers and improvements to support facilities at the NR-1 berthing.

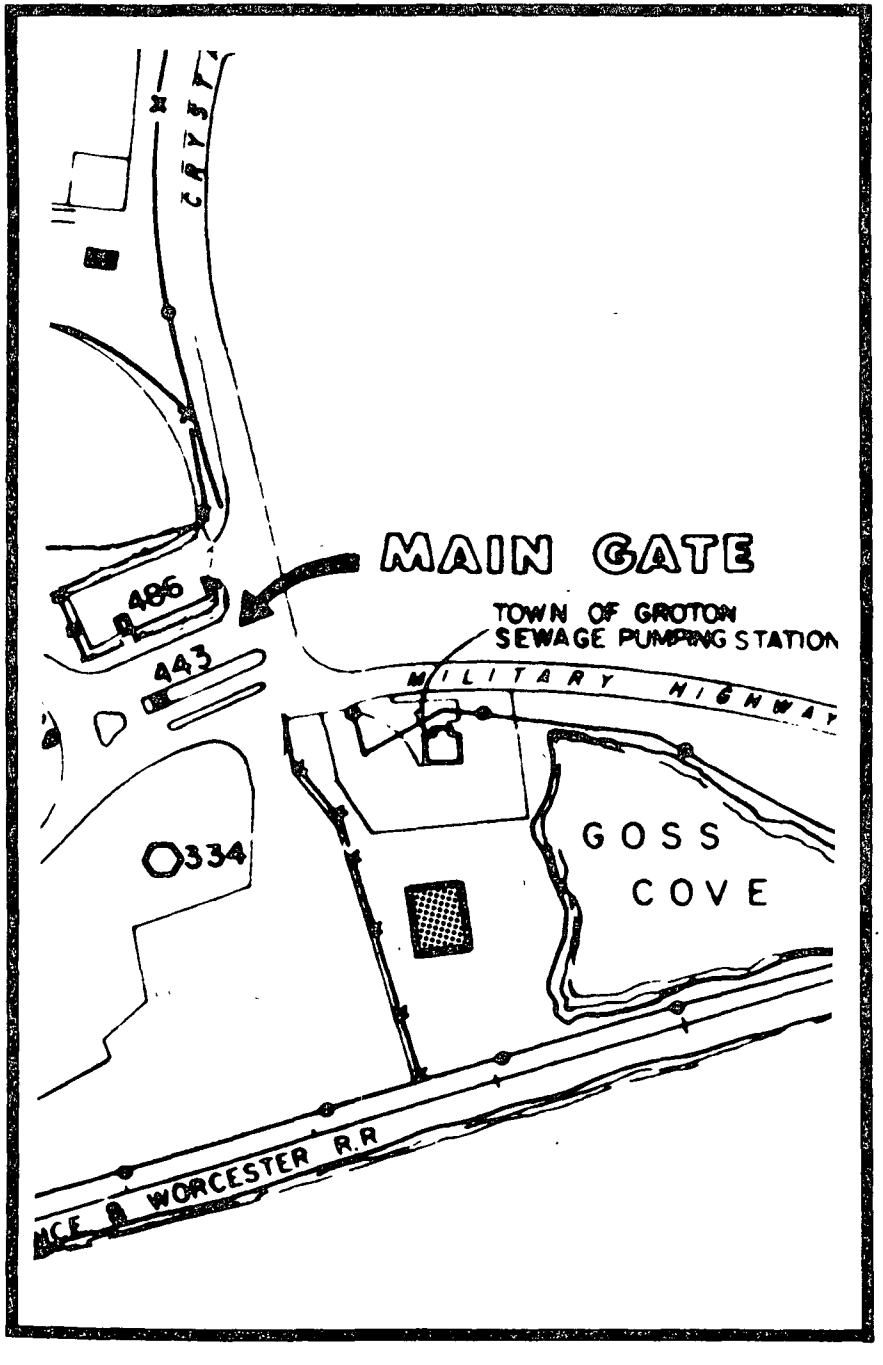


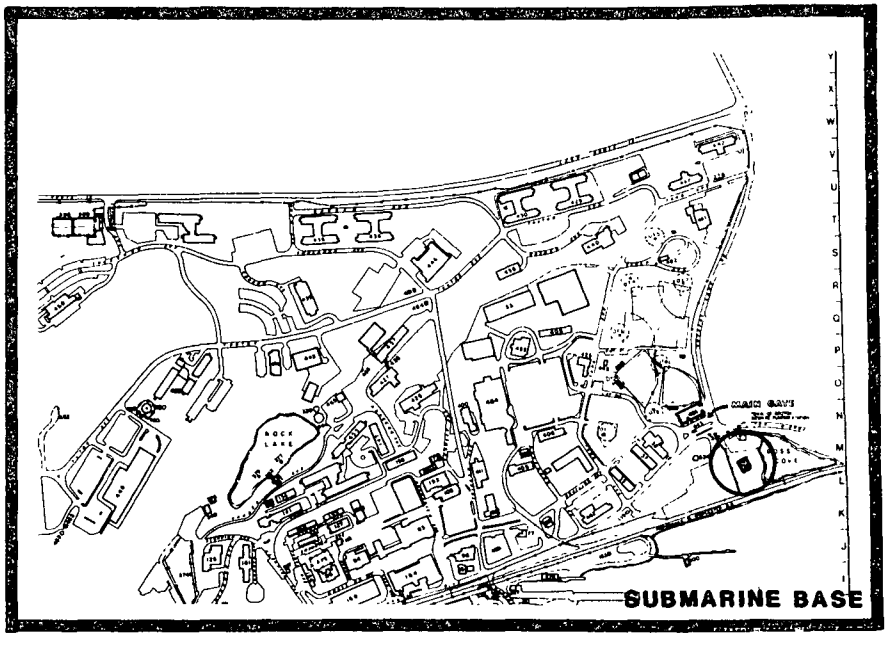


TITLE: P-416 REPLACE PIER #4
COST: $4,331,000

This project will replace the existing wooden pier with a concrete structure for the berthing of small crafts. A recent study has determined the existing pier to be structurally unsound.

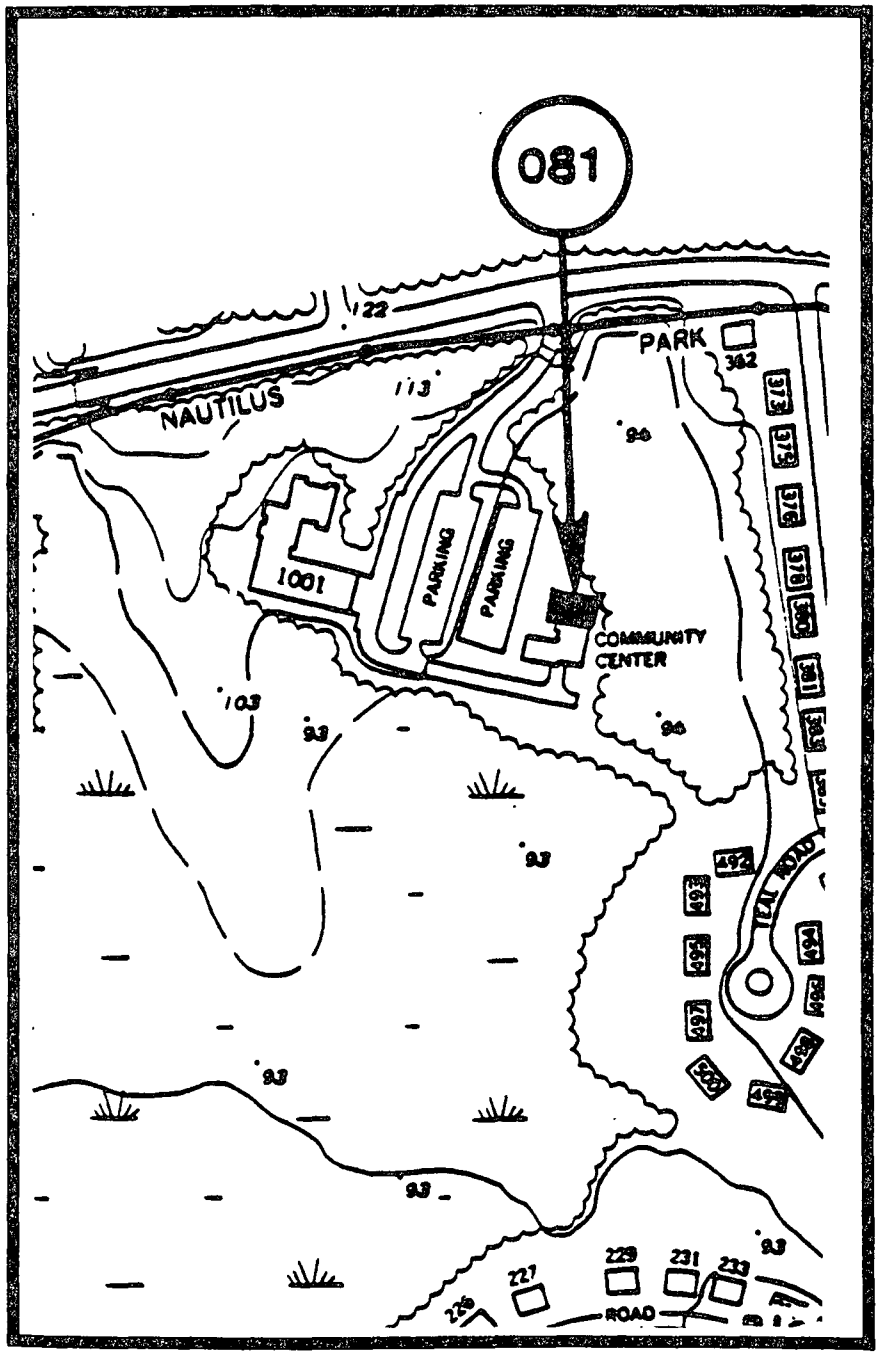
UNPROGRAMMED MILCON PROJECTS

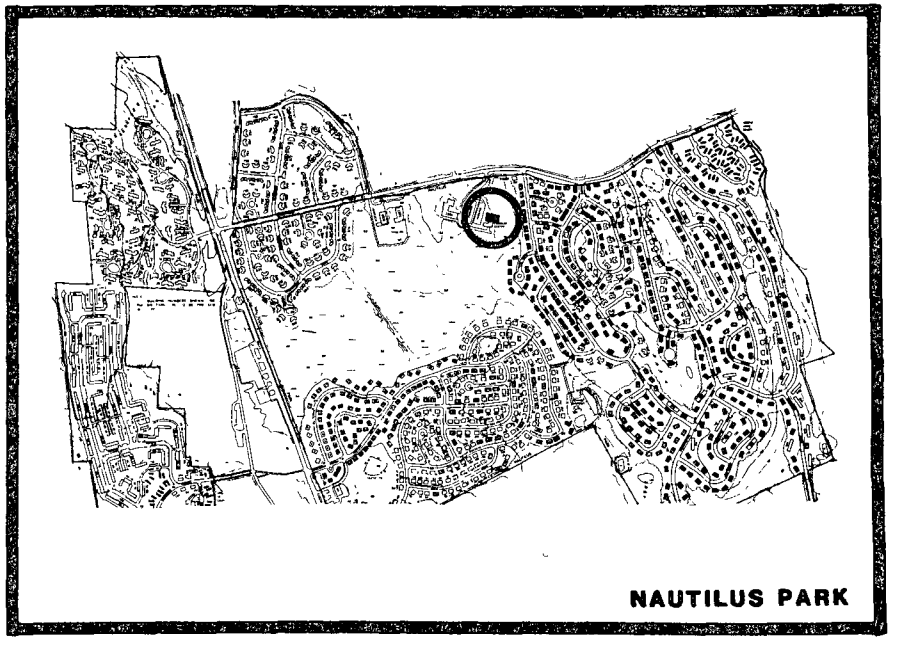




TITLE: P-064 SUBMARINE MUSEUM/ARCHIVE STORAGE
COST: $3,200,000

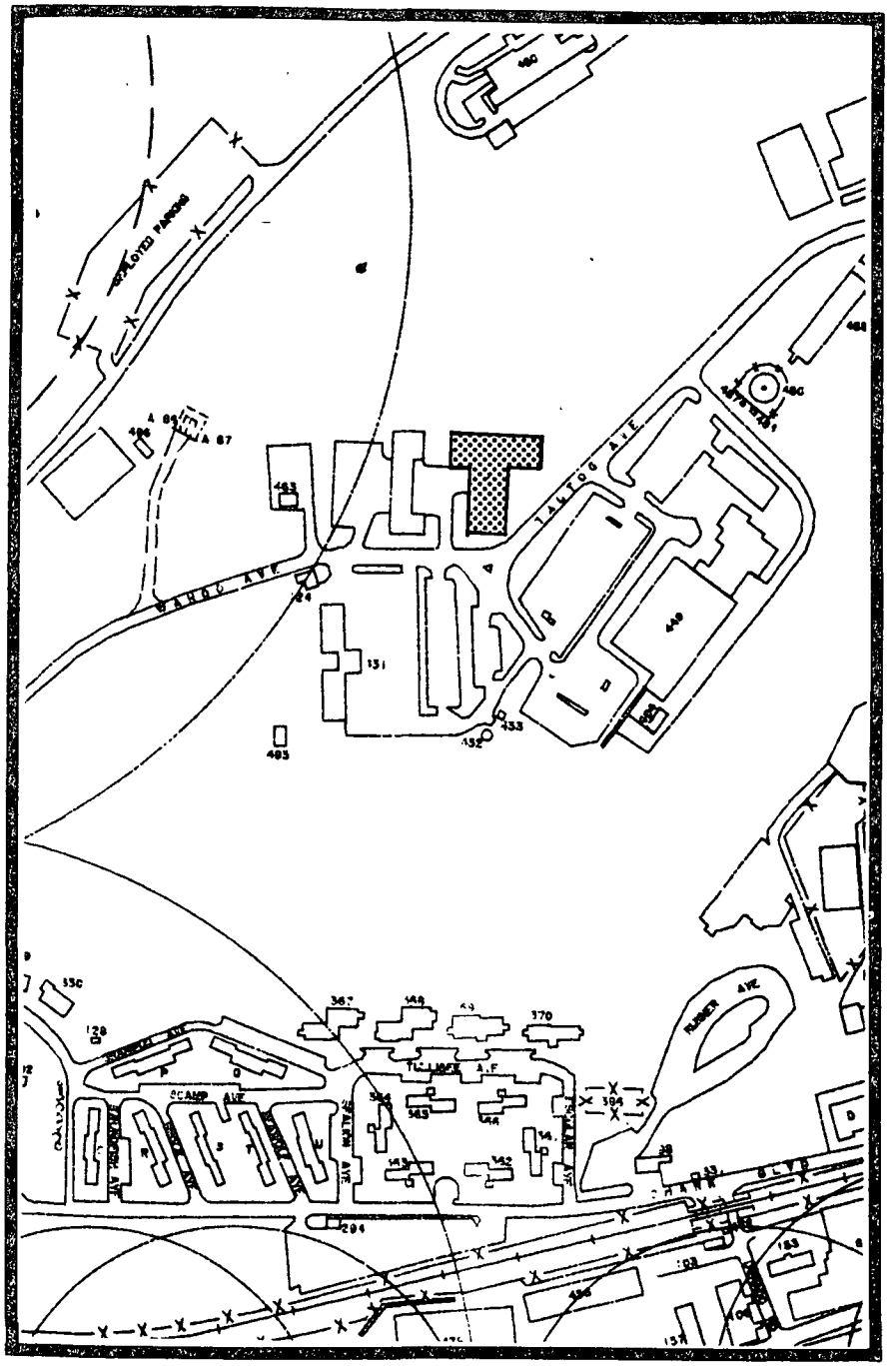
This project will construct an addition to the east side of the Nautilus Memorial Building 571 to allow more space for exhibits and exhibit storage. A pedestrian bridge over the railroad right-of-way between Building 571 and the Nautilus Pier will also be constructed to alleviate the current safety problem resulting from an at-grade pedestrian crossing.

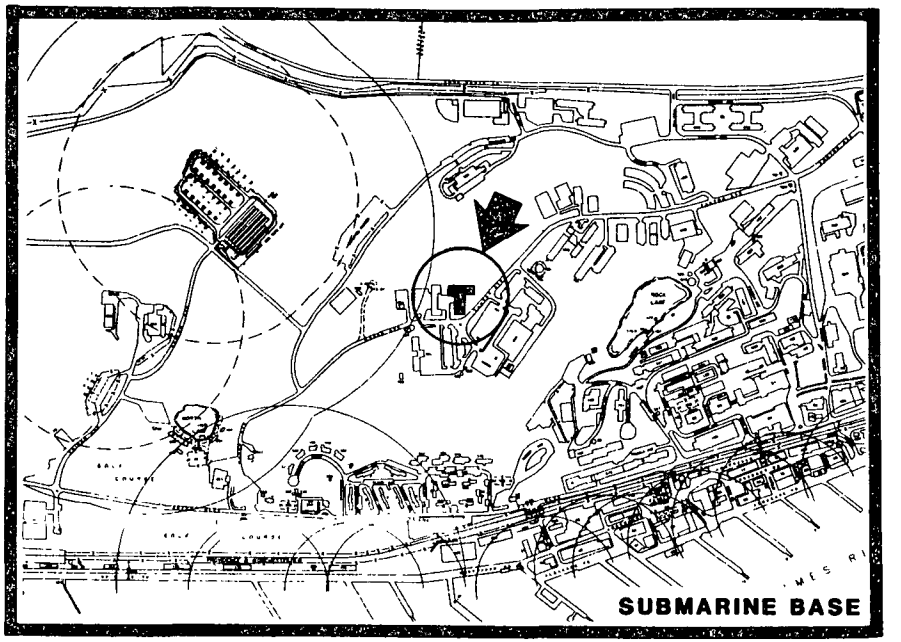




TITLE: P-081 COMMUNITY CENTER
COST: $1,000,000

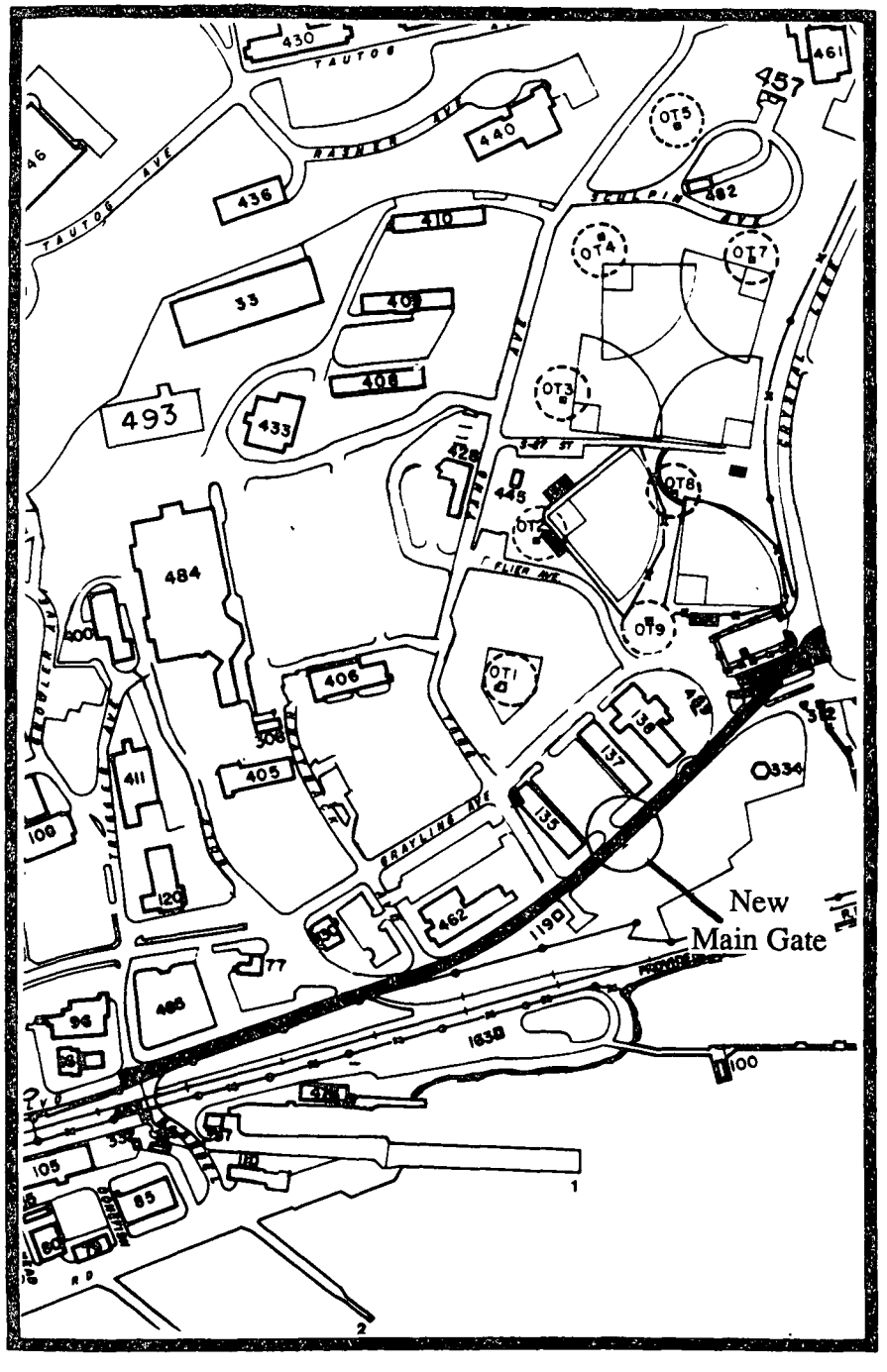
This project will provide an adequate facility for the 6,400 dependent youths at this activity. The new facility will be located in the Nautilus Park Housing area. Construction will include an addition to the existing community center Building 1004. The facility will consist of concrete foundations, floor slab on grade, masonry walls, interior partitions, steel roof joist with built-up roofing. Facilities will provide areas for dancing, games, meetings, minor food service and related youth activities.

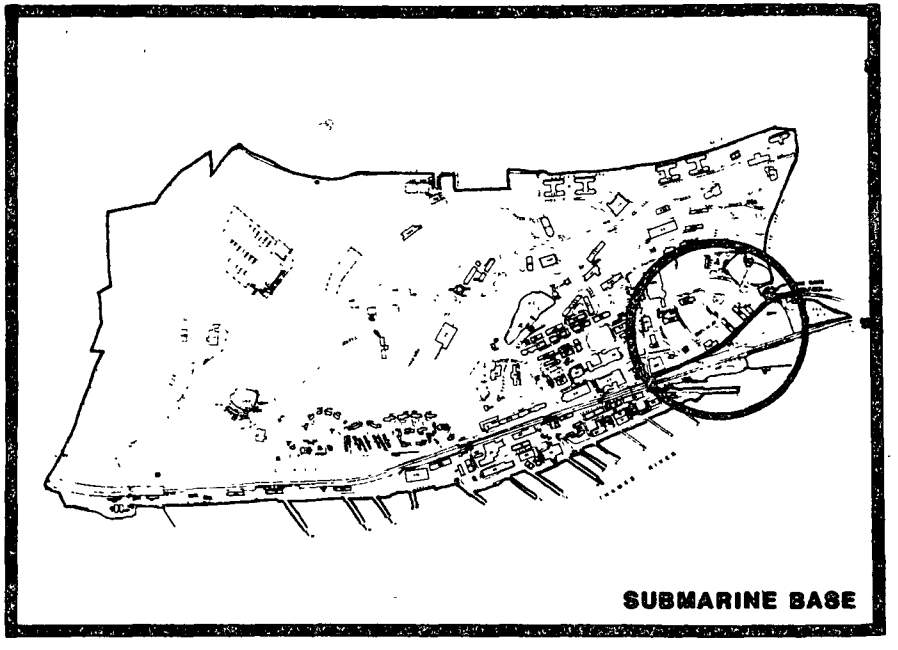




TITLE: P-160 PUBLIC WORKS SHOPS
COST: $3,100,000

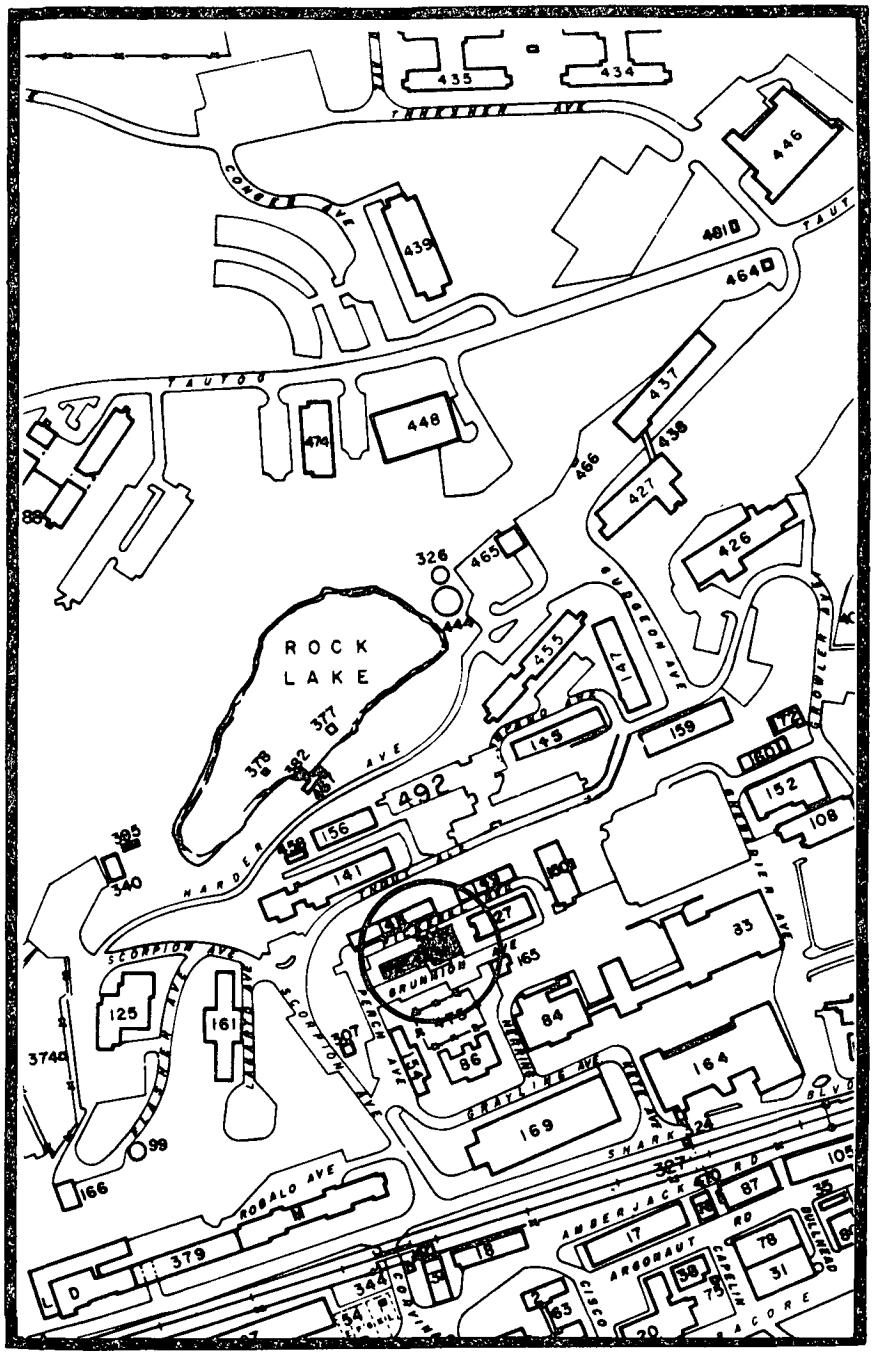
This project will construct a new, two-story, masonry structure in which public works shops and storage will be consolidated. Site improvements will include landscaping and selective visual screening of outdoor storage and equipment parking areas. Also included in the project is the demolition of Buildings 308, 400, 405, and 406.

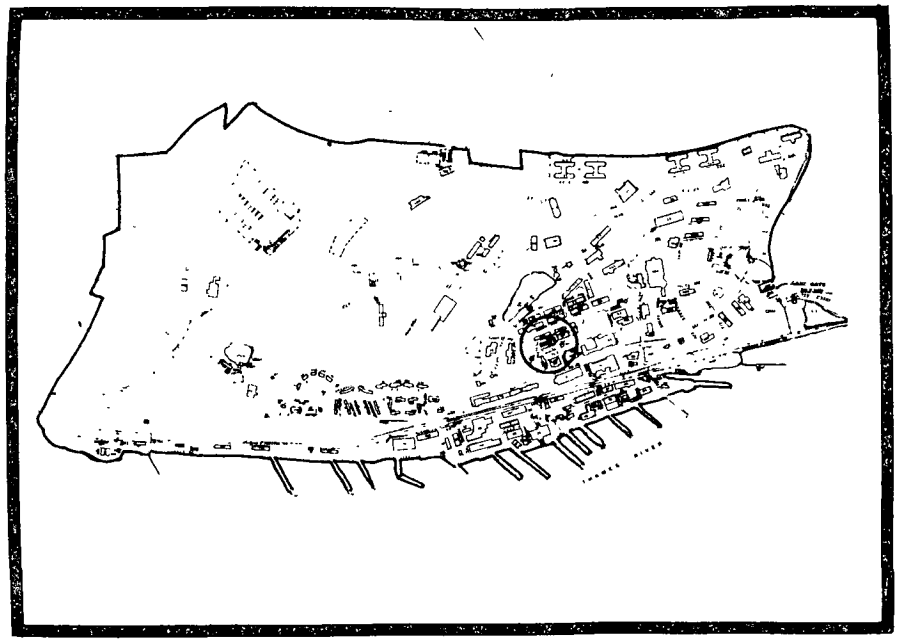




TITLE: P-166 MAIN GATE FACILITY W/LAND ACQUISITION
COST: $4,500,000

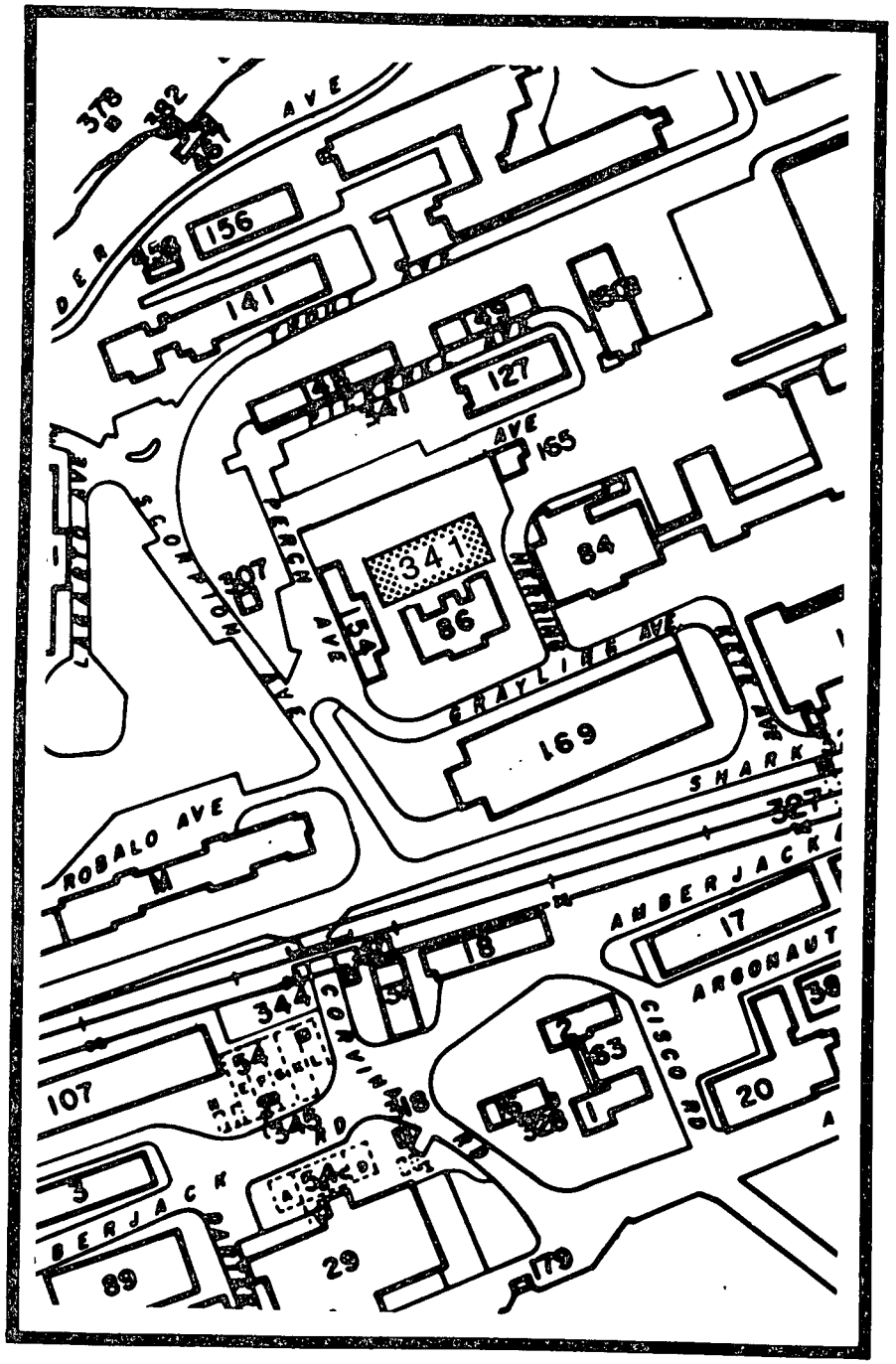
This project will relocate the main gate to th south of Building 462. The project will also include th widening of Shark Boulevard from the new gate to Trigger Avenue. This project will improve base security and traffic circulation.

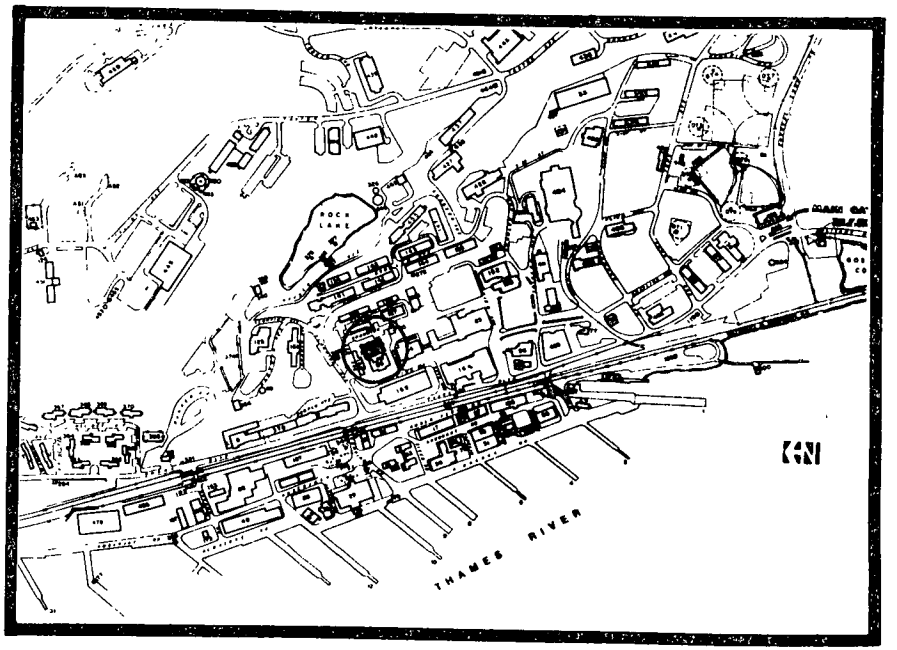




TITLE: P-170 DENTAL CLINIC ADDITION
COST: $7,500,000

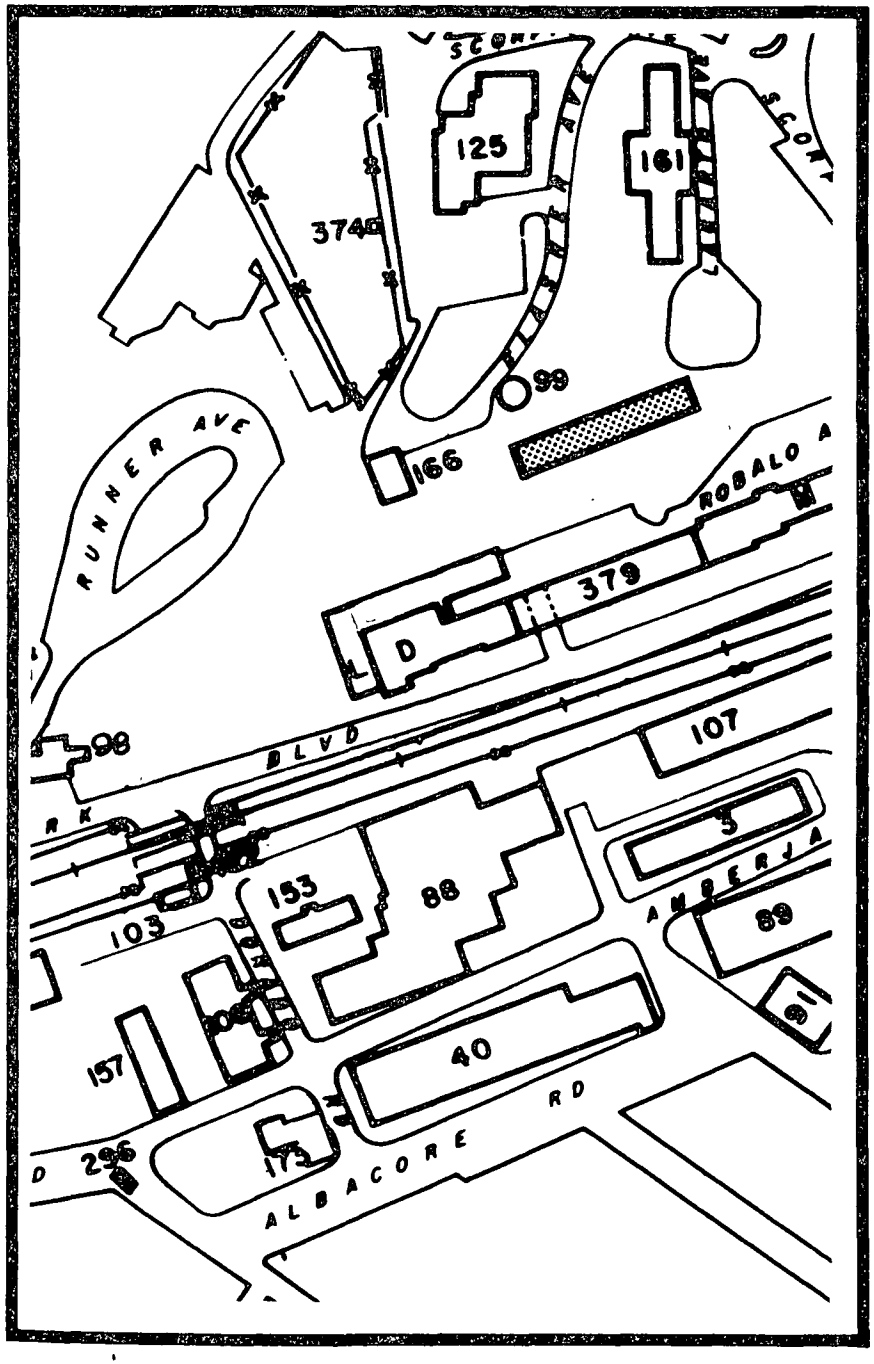
This project will construct an addition to the south end of Building 341. The addition will provide enough operating units to meet the demand for dental services at this location.

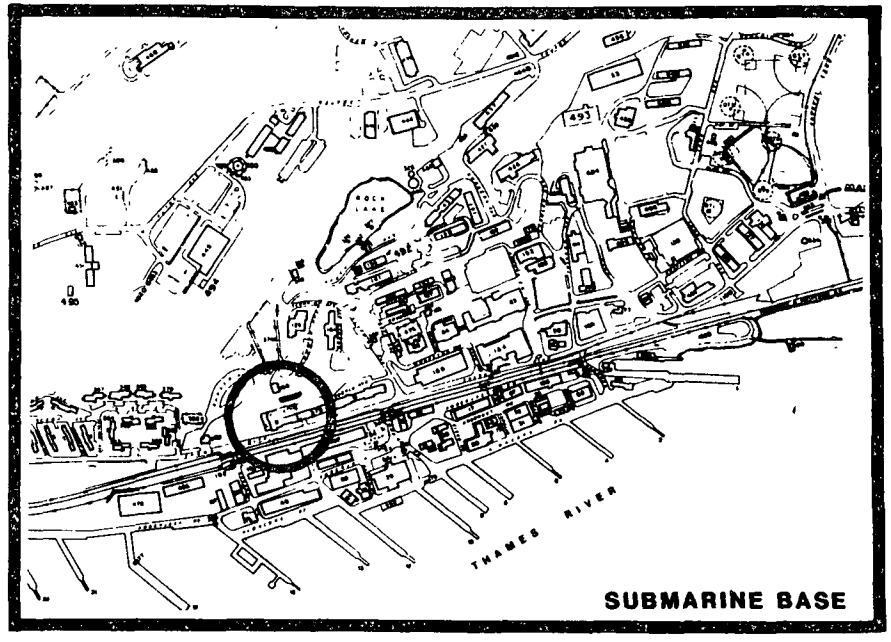




TITLE: P-307 DISPENSARY
COST: $4,200,000

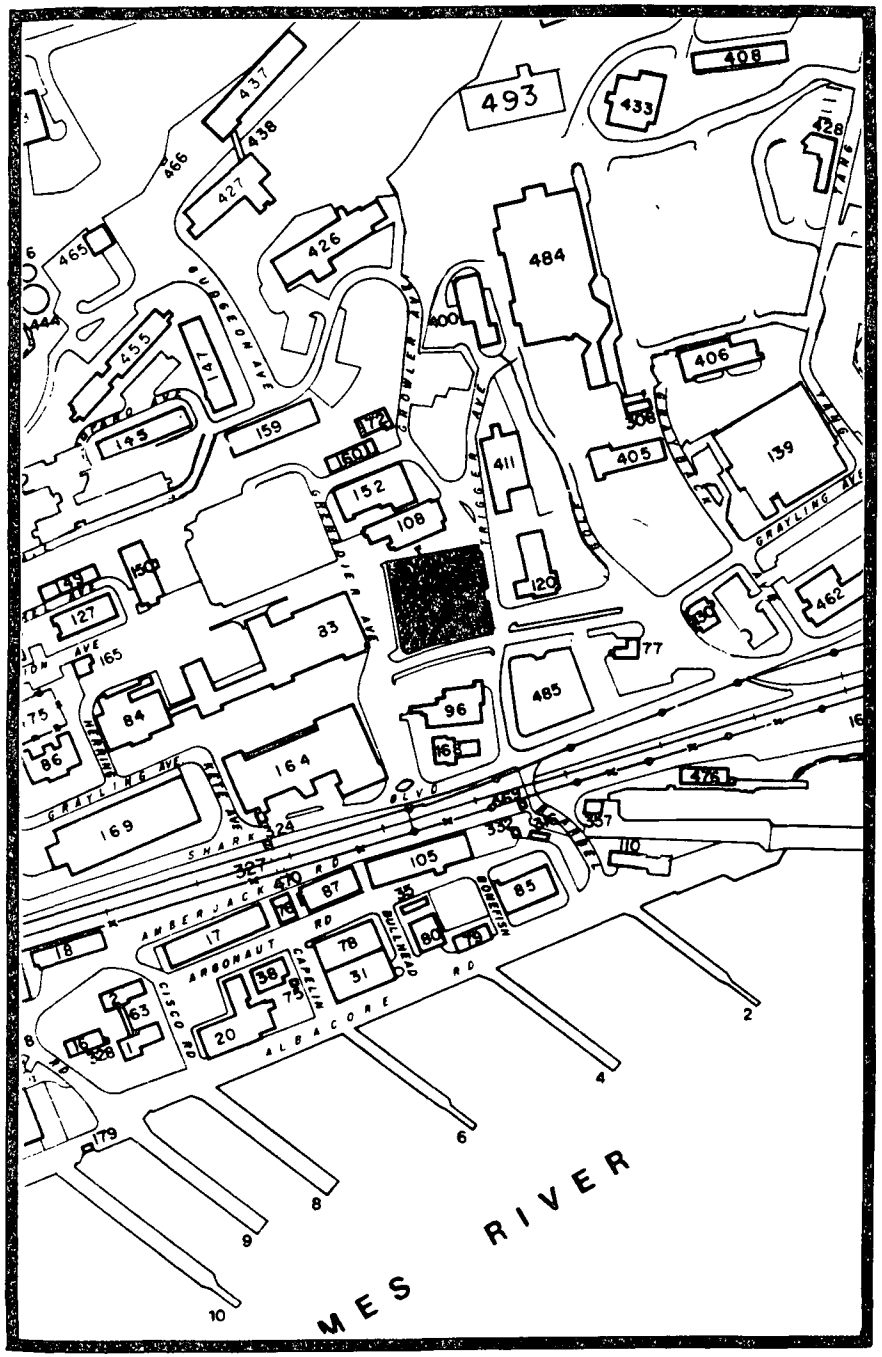
This project will construct a new facility east of Building 86 for dispensary, environmental health and industrial hygiene office.

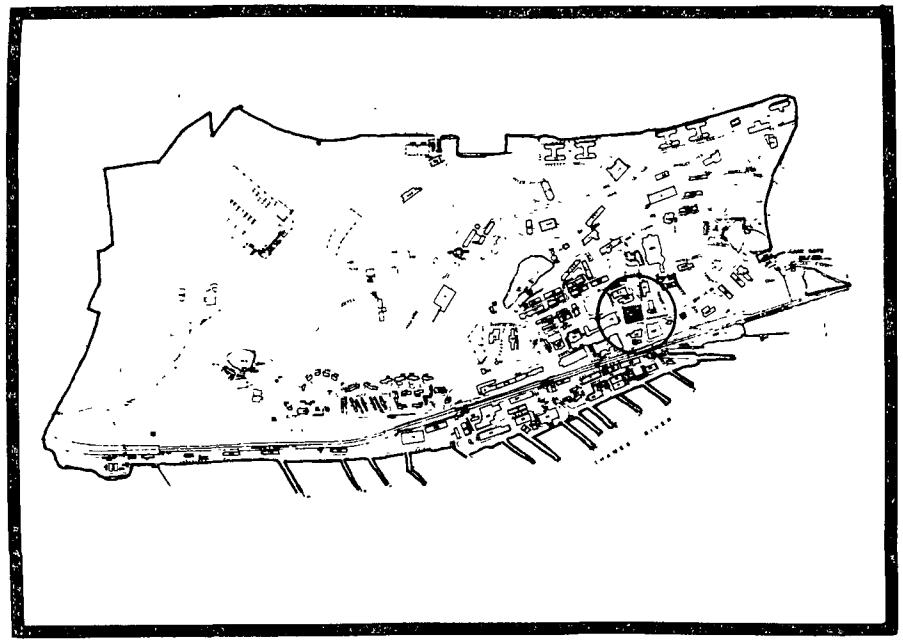




TITLE: P-336 BACHELOR OFFICER'S QUARTERS
COST: $6,000,000

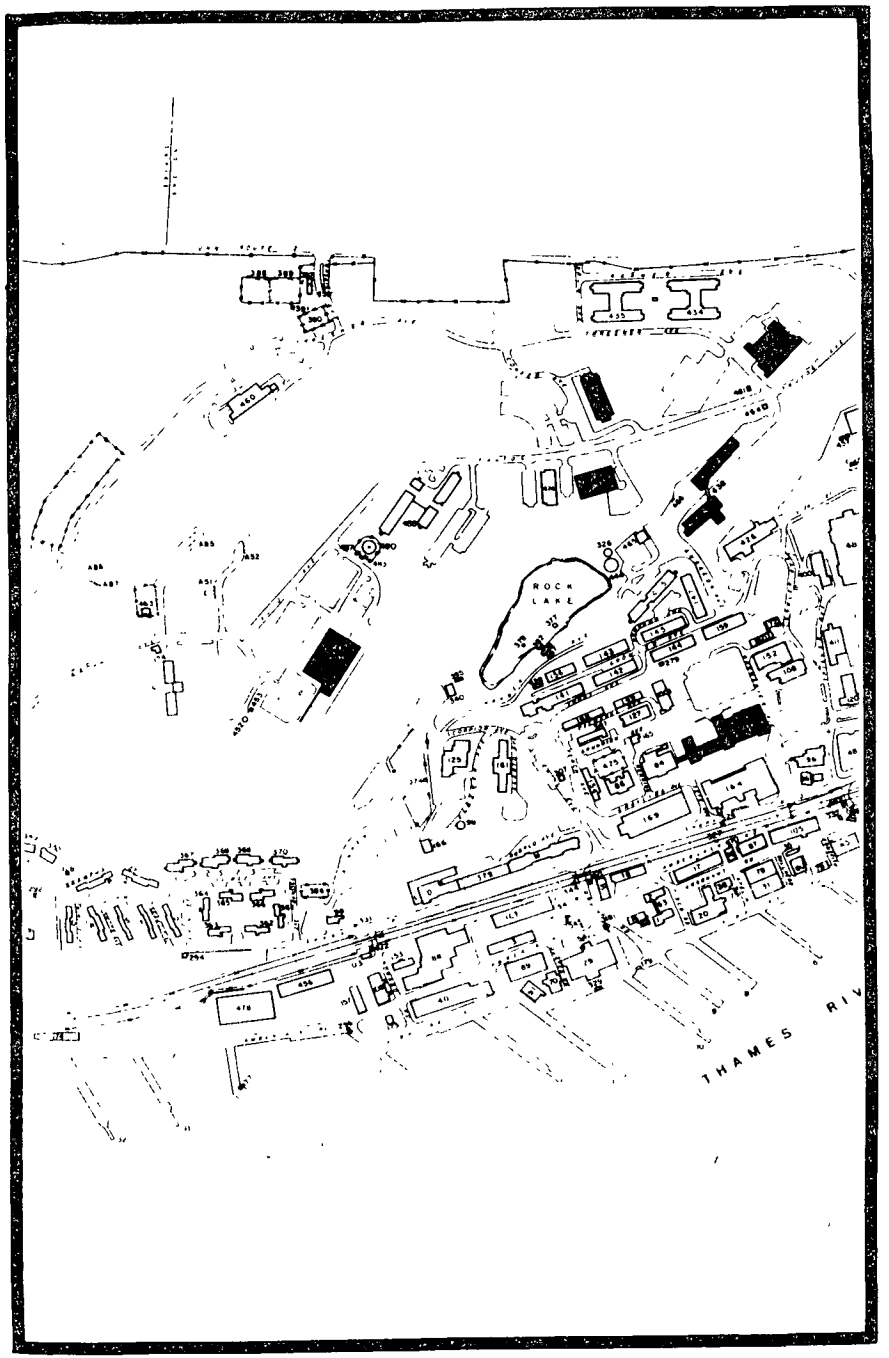
This project will provide a multi-story structure with brick facing on concrete masonry unit walls and precast concrete plank floors and roof on steel framing. The facility will contain a lobby, lounges, laundry room, mechanical equipment and storage spaces, and 157 suites with private living room/bedroom, private bath and pullman type kitchen. Also included are electrical and mechanical utilities, paved parking areas, walks and service roads, rock excavation, landscaping, and demolition of an inadequate quarters (Quarters "L").

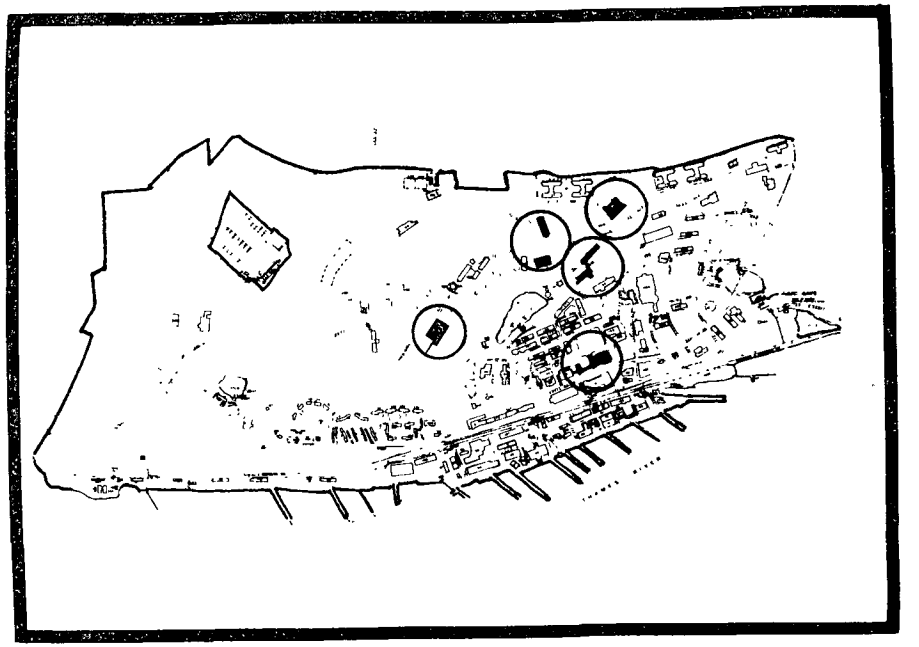




TITLE: P-338 PARKING GARAGE
COST: $2,400,000

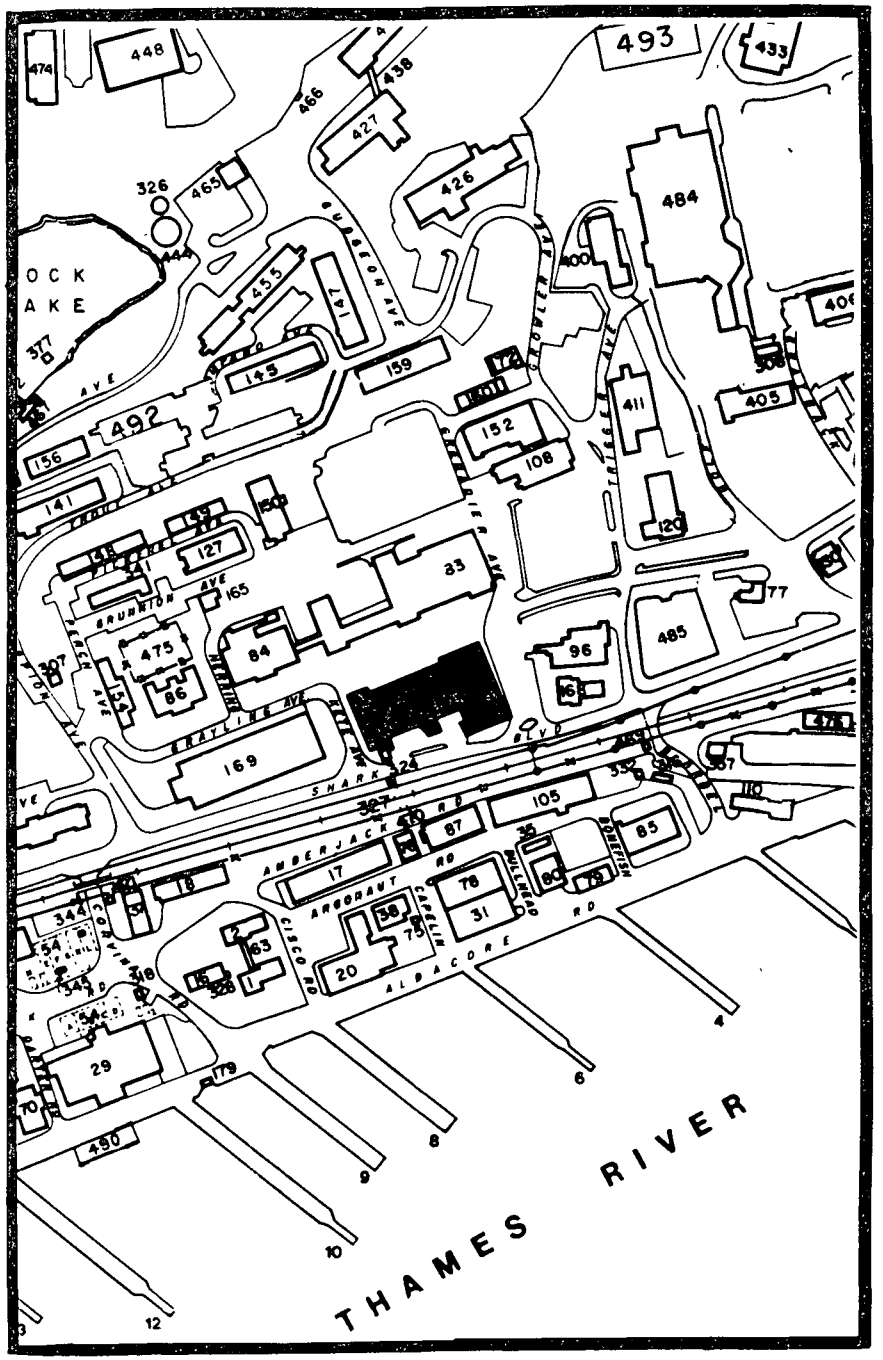
This project will construct a multi-story, 300-car capacity parking garage south of Building 83.





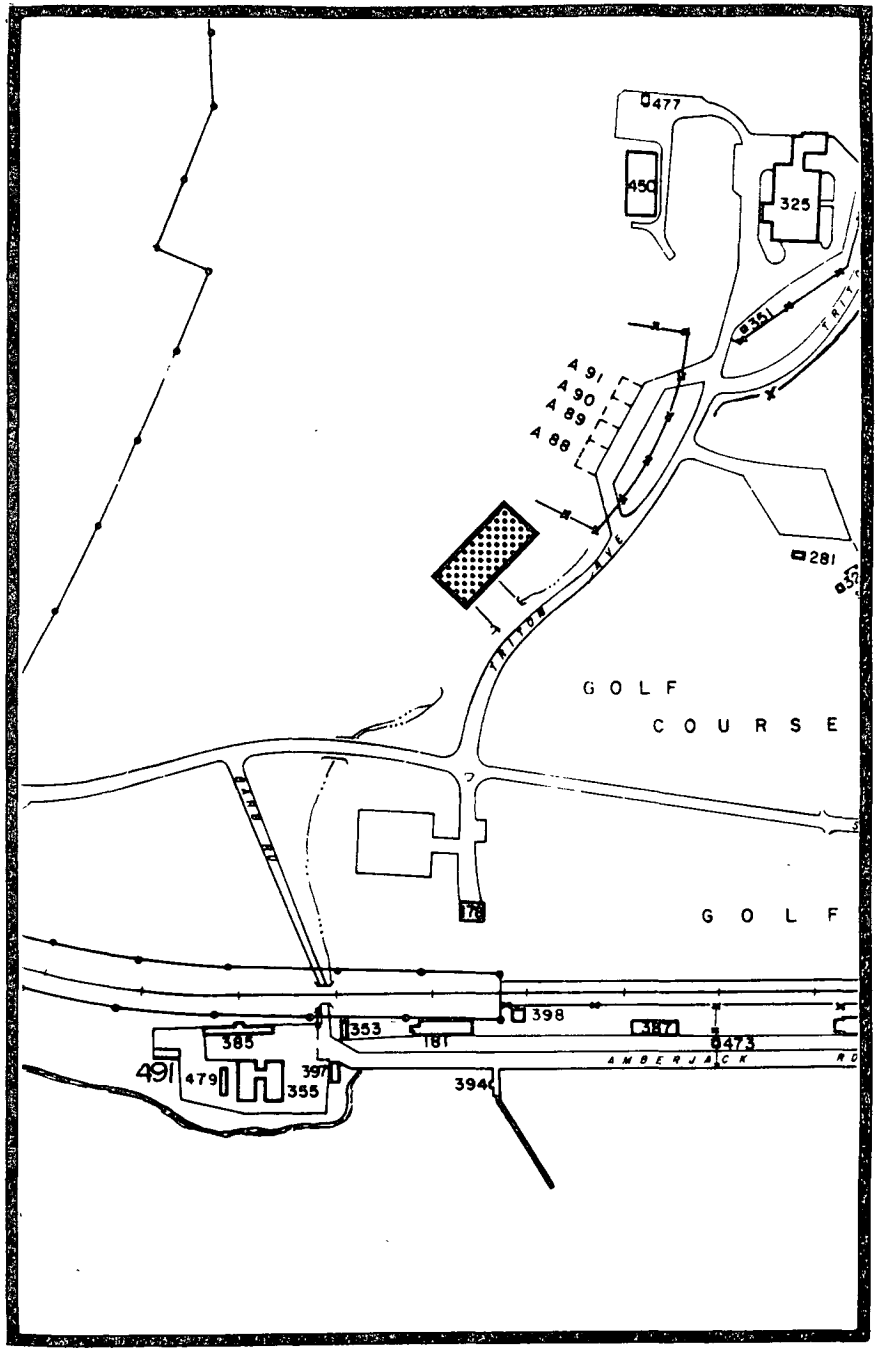
TITLE: P-359 HEATING, VENTILATION & AIR CONDITIONING
COST: $225,000

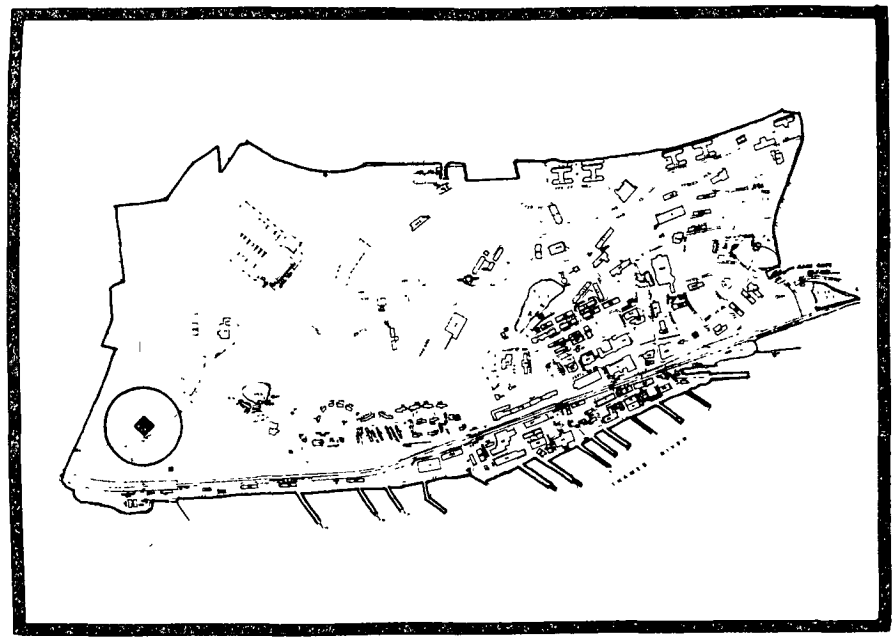
This project will modify the air conditioning systems in nine buildings to increase energy efficiency. Modifications include reducing outside air intake, installing enthalpy economizers, heat recovery cycles, optimal start timers, dead-band thermostats, economizer valves on absorption units and chiller water reset systems, relocation of cooling coils, optimization of hot and cold deck systems and reheat systems, additional controls to sequence coil operation, and modifications to use tower water for cooling in winter.



TITLE: P-378 AIR CONDITION DEALEY CENTER
COST: $1,200,000

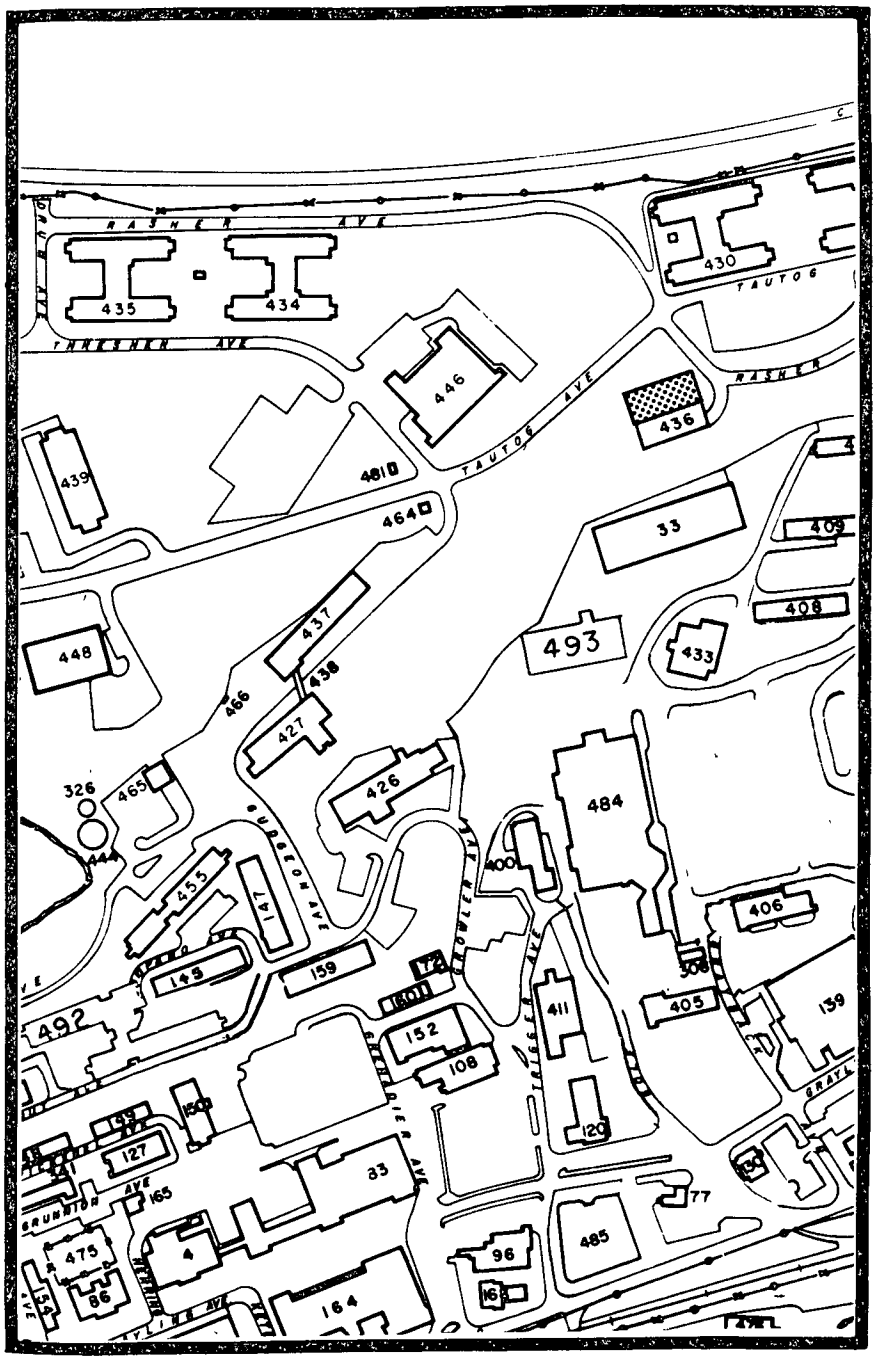
This project provides central air-conditioning systems for the balance of Building 164 which includ s the theater, administration office, library, exchange service outlet, and recreational services spaces.

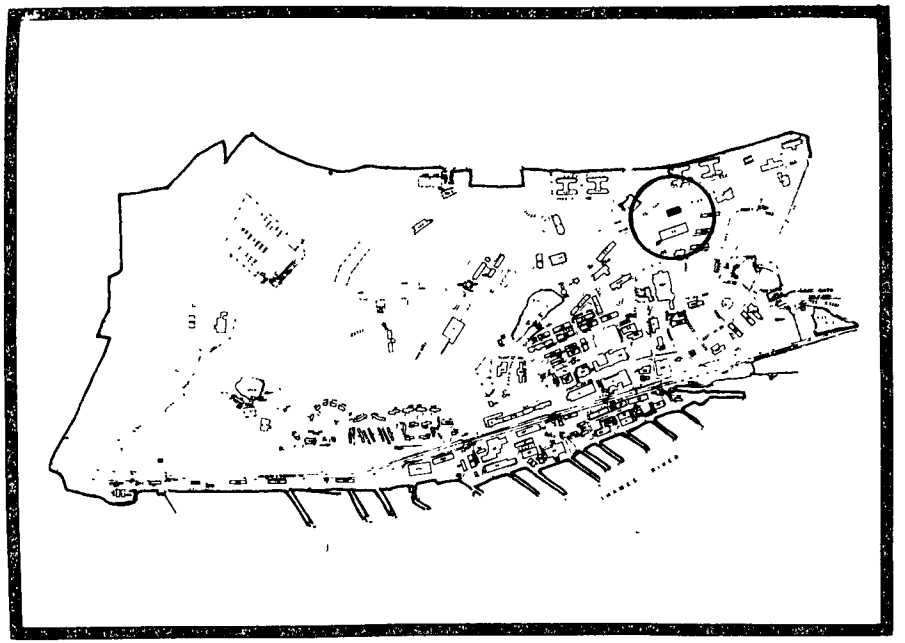




TITLE: P-383 PRIVATE VEHICLE PARKING
COST: $600,000

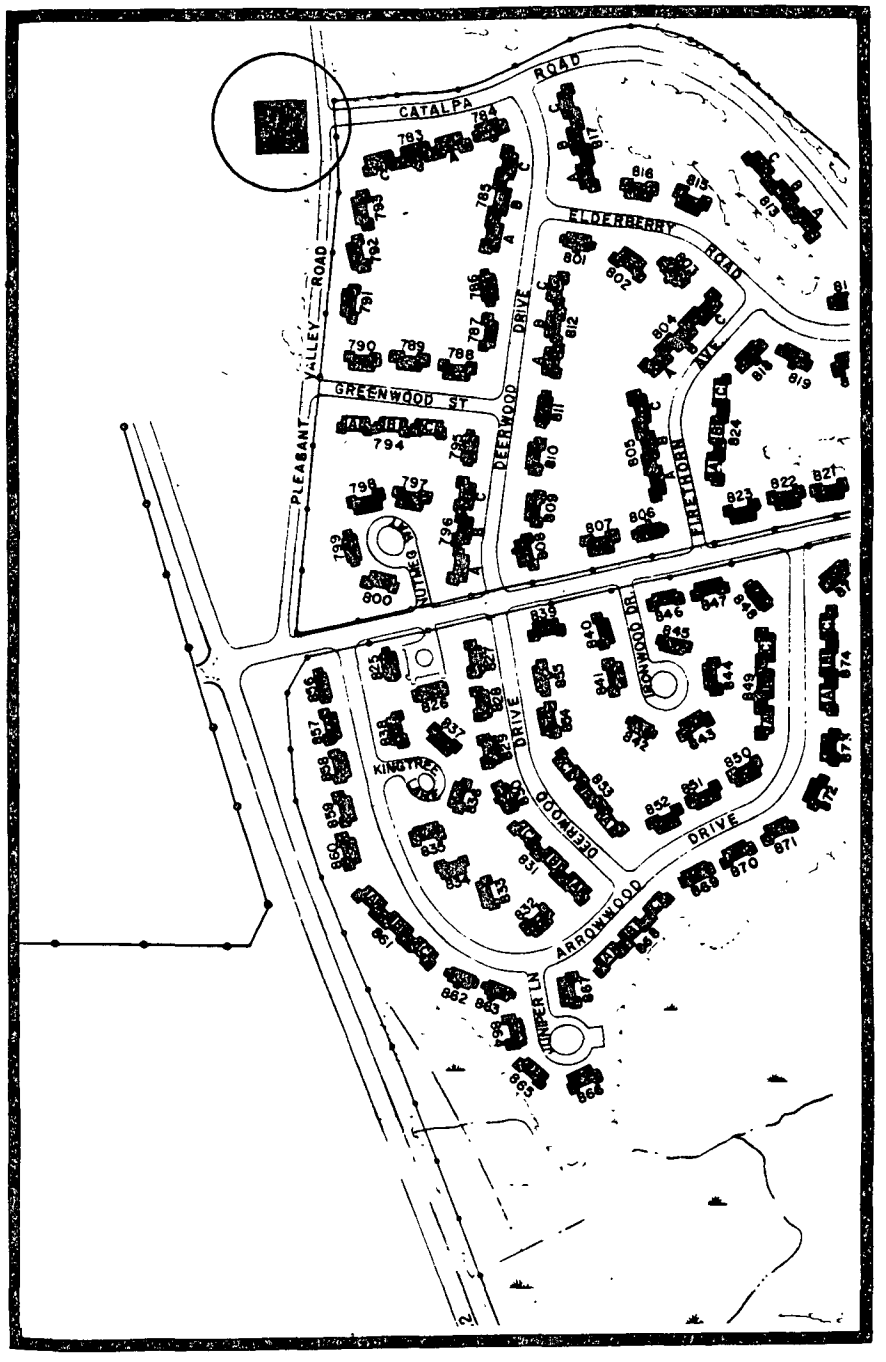
The project will provide new paved private vehicle parking along with associated lighting, drainage, and access driveways and sidewalks. The project is located outside intraline distance arcs from Buildings 325 and 450.

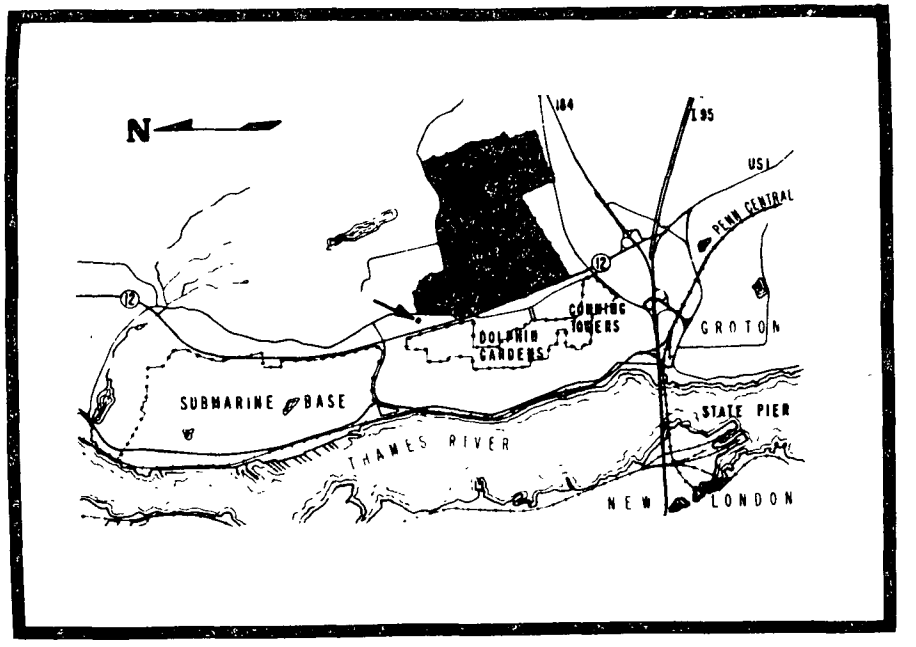




TITLE: P-393 BEQ MAINTENANCE AND STORAGE FACILITY
COST: $833,000

This project will provide an addition to Building 436 to consolidate BEQ maintenance shop, ready issu /shop stores, and general storage functions into on facility.

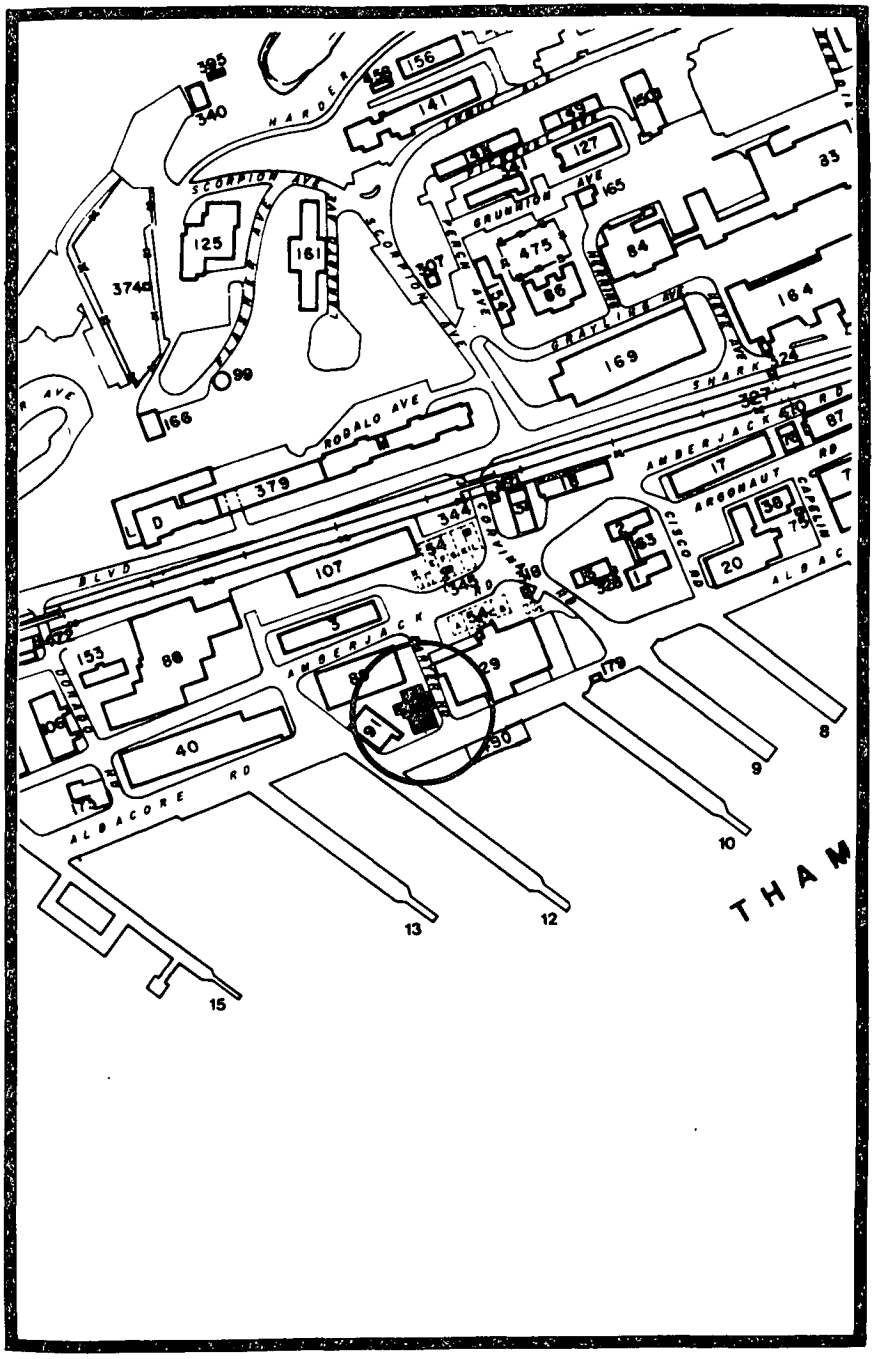


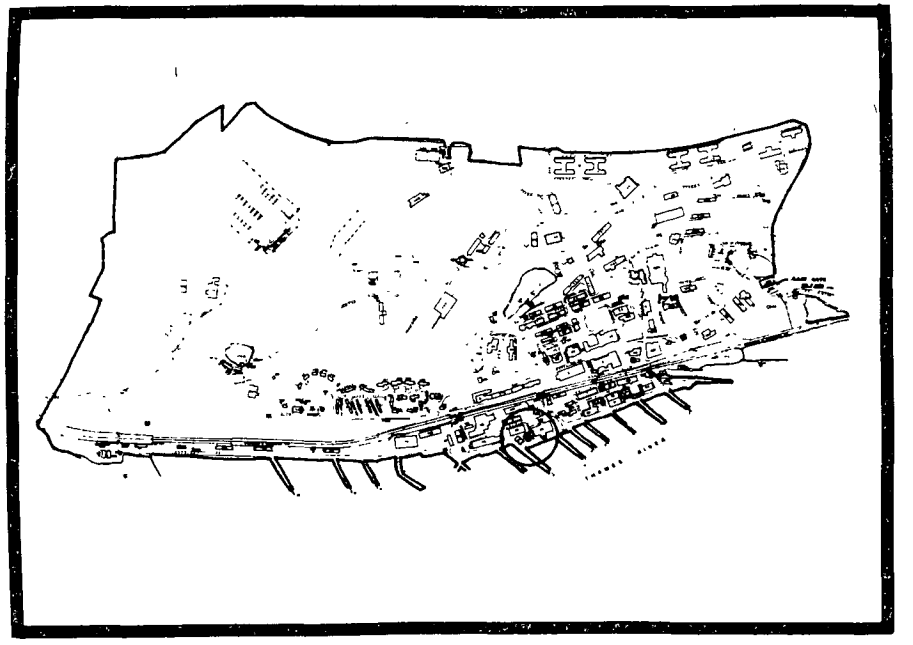


TITLE: P-399 FAMILY HOUSING OFFICE AND WAREHOUSE COMPLEX

COST: $1,800,000

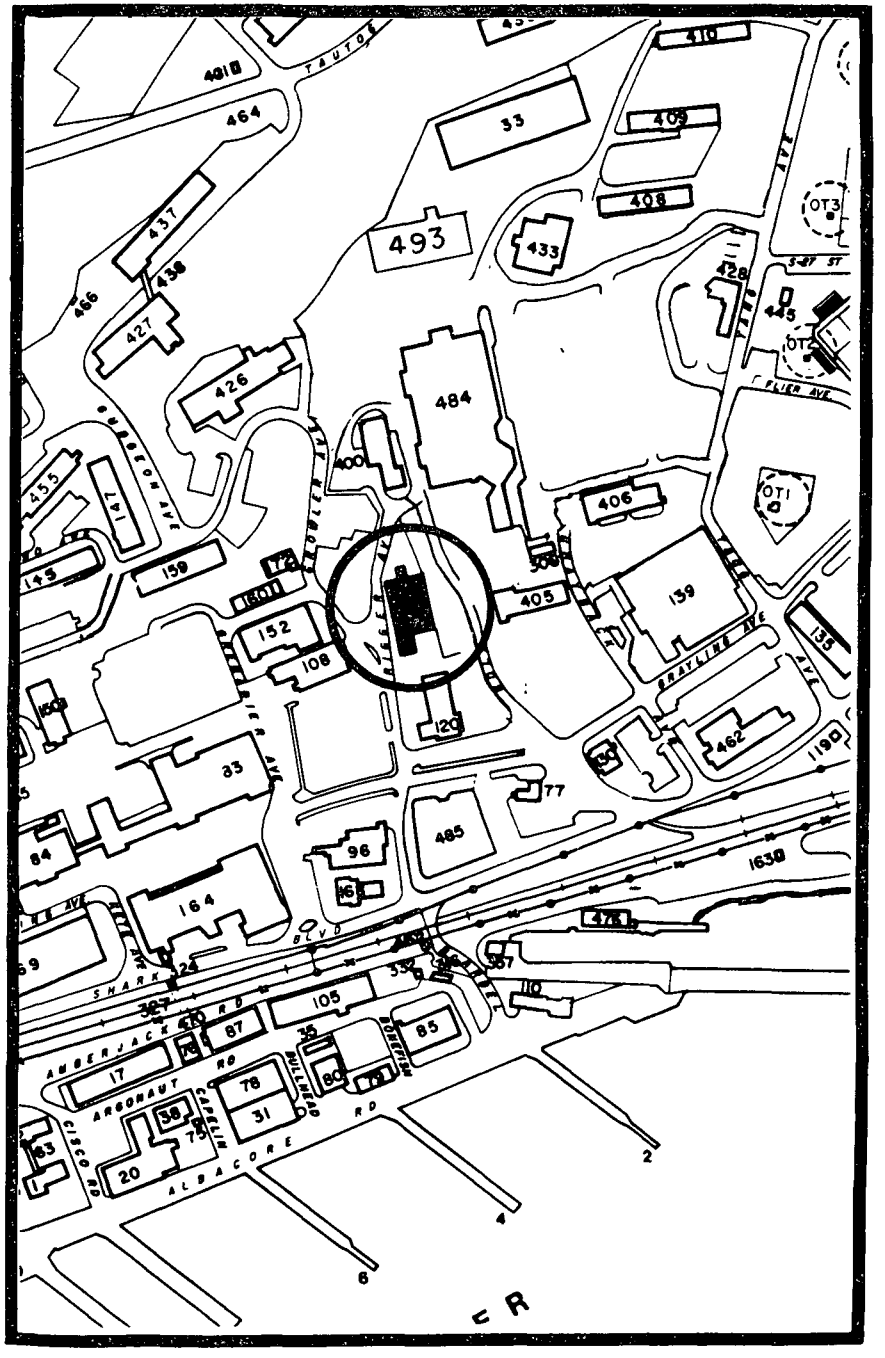
This project will provide a family housing office, self-help store and warehouse. The facility will be steel frame with insulated metal siding, masonry wainscot, built-up roof/insulation on metal deck, concrete floor slab, HVAC and sprinkler system. Privately held land at the project site will be acquired.

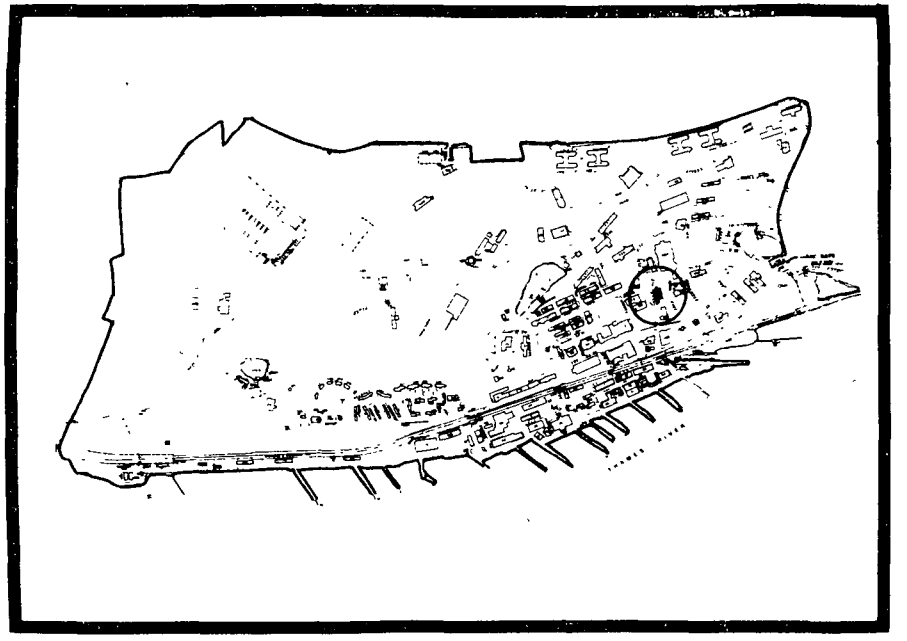




TITLE: P-402 PORT CONTROL FACILITY
COST: $3,090,000

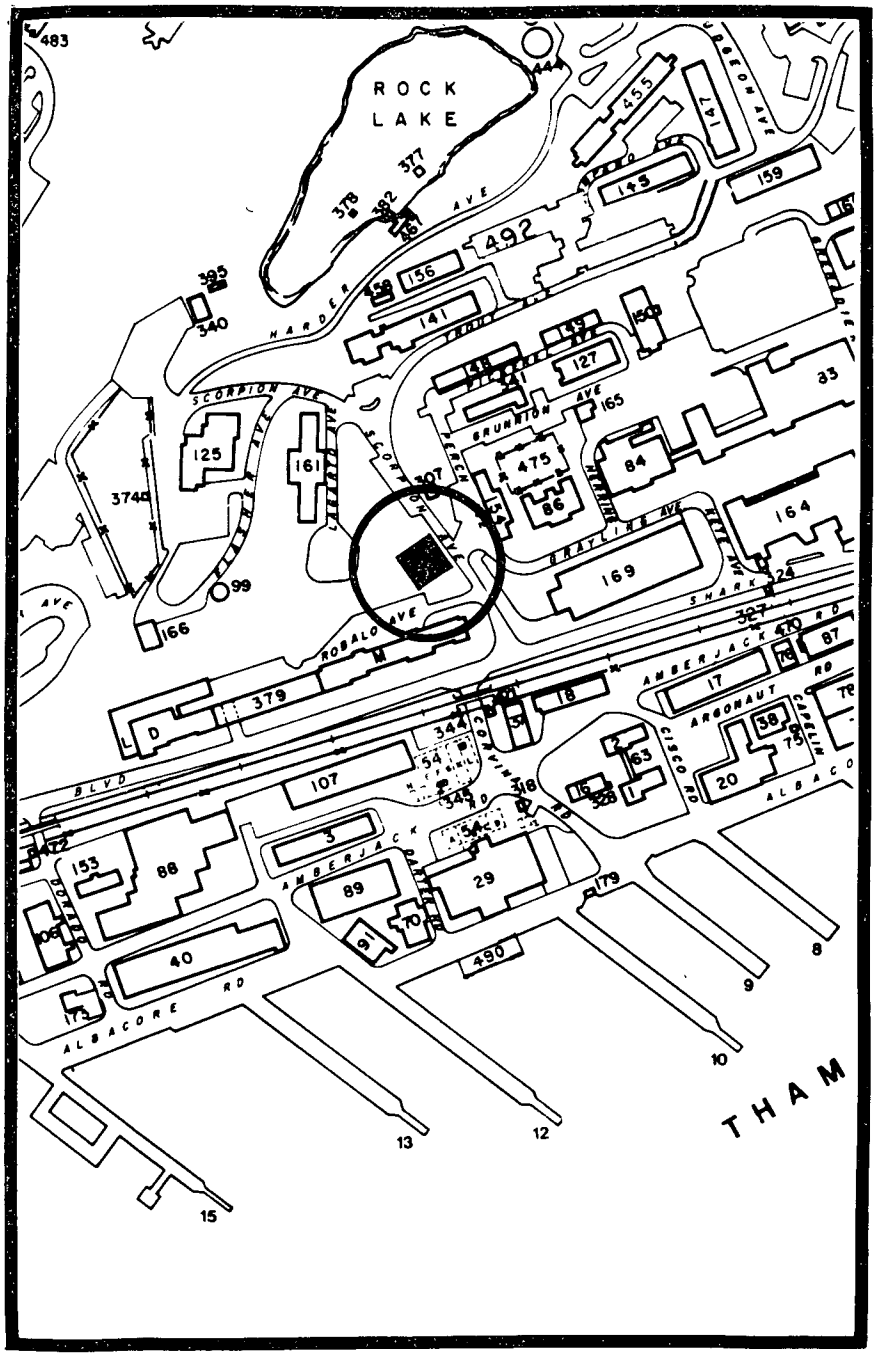
This project will construct a new building with a control tower to consolidate the pier masters and COMSUBGRU TWO operations in one facility to allow efficient operation of this military port.

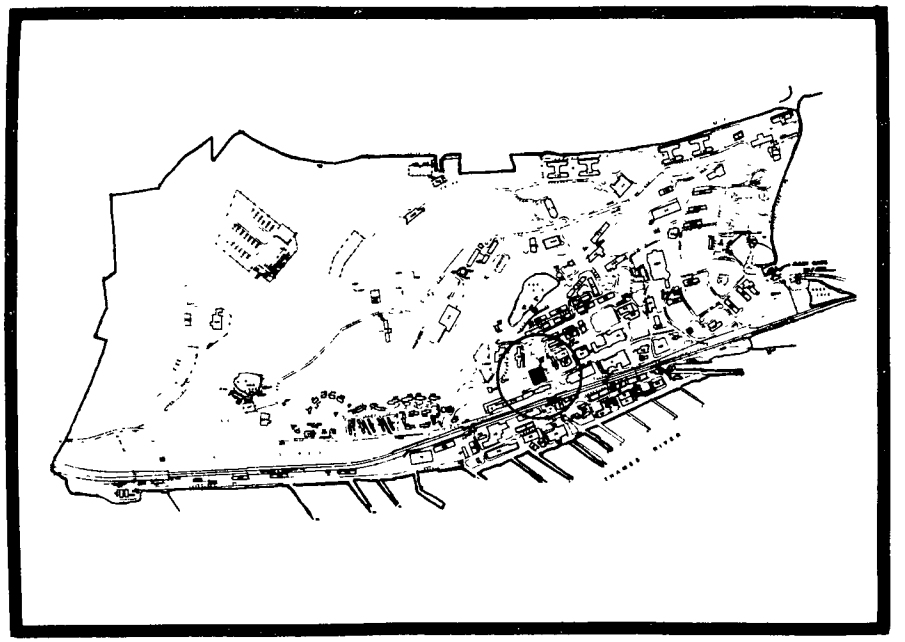




TITLE: P-404 INDOOR SWIMMING POOL
COST: $3,500,000

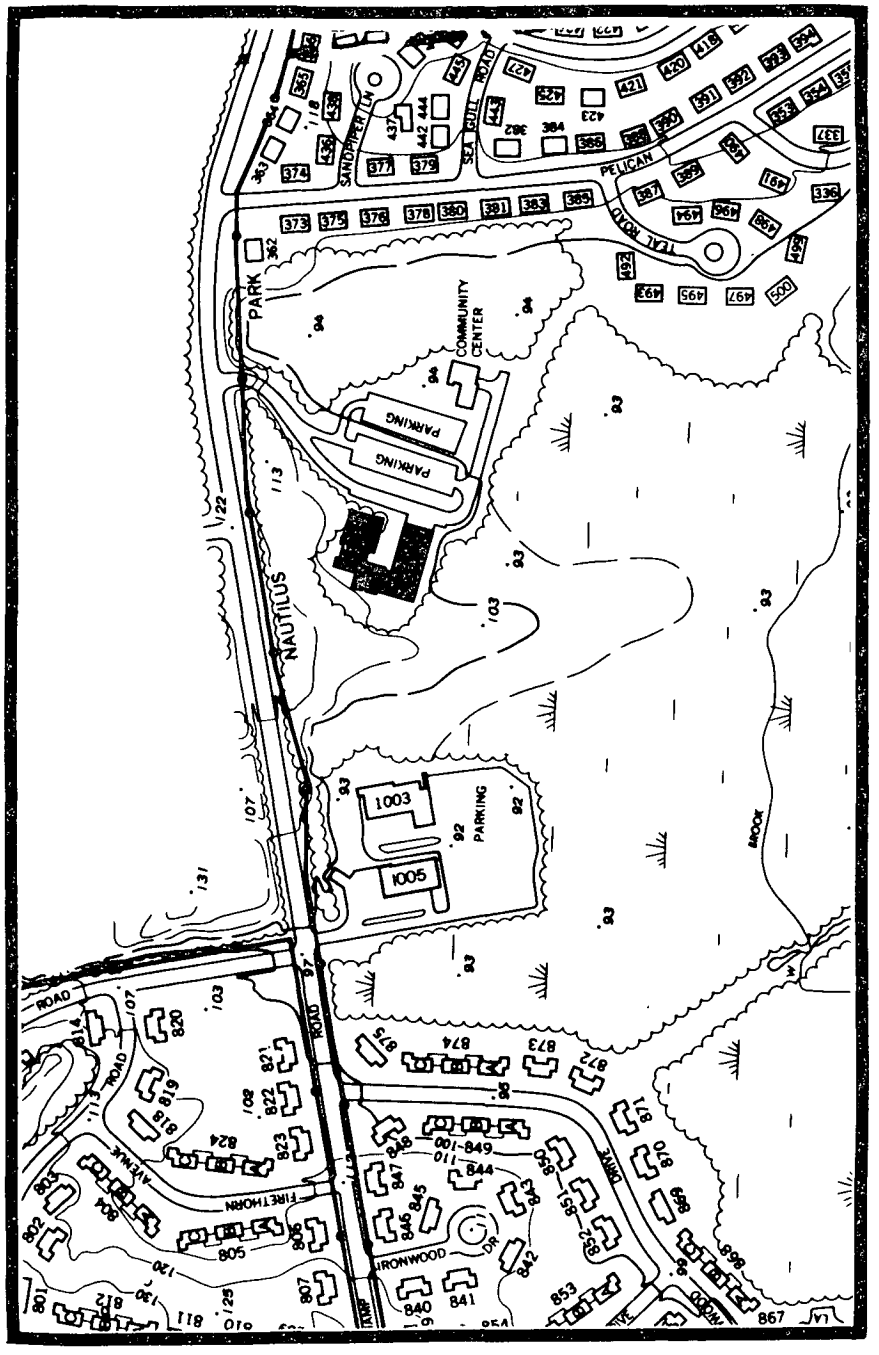
This project will provide a replacement indoor pool on the site of the existing, inadequate indoor pool. Project includes the demolition of the existing pool.

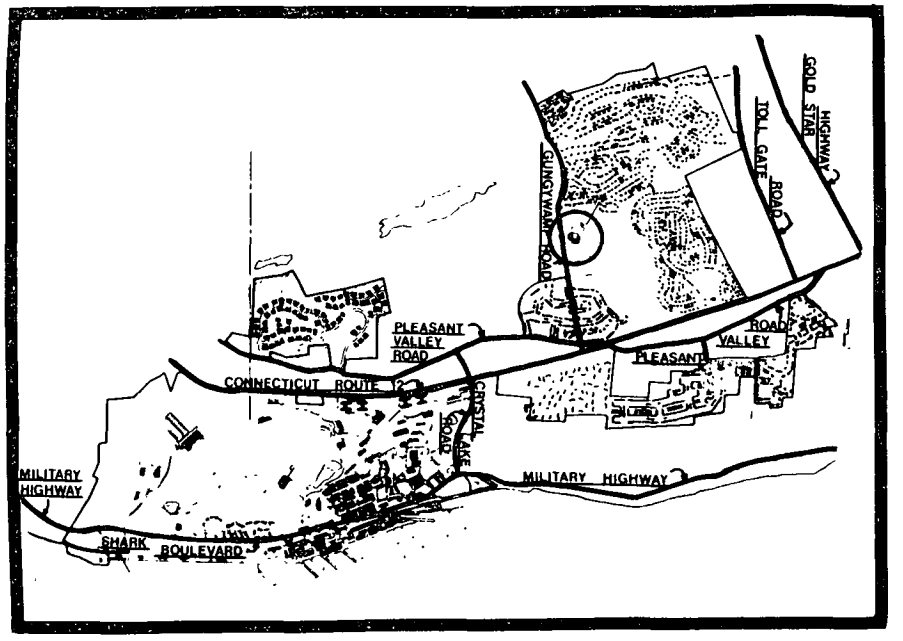




TITLE: P-405 LIBRARY ADDITION
COST: $1,500,000

This project will provide a new library to replace the existing inadequate facility.





TITLE: P-417 ADDITION TO CHAPEL FOR RELIGIOUS EDUCATION

COST: $976,000

This project will provide additional classroom space and meeting room space to alleviate the need to rent classroom space in the community.

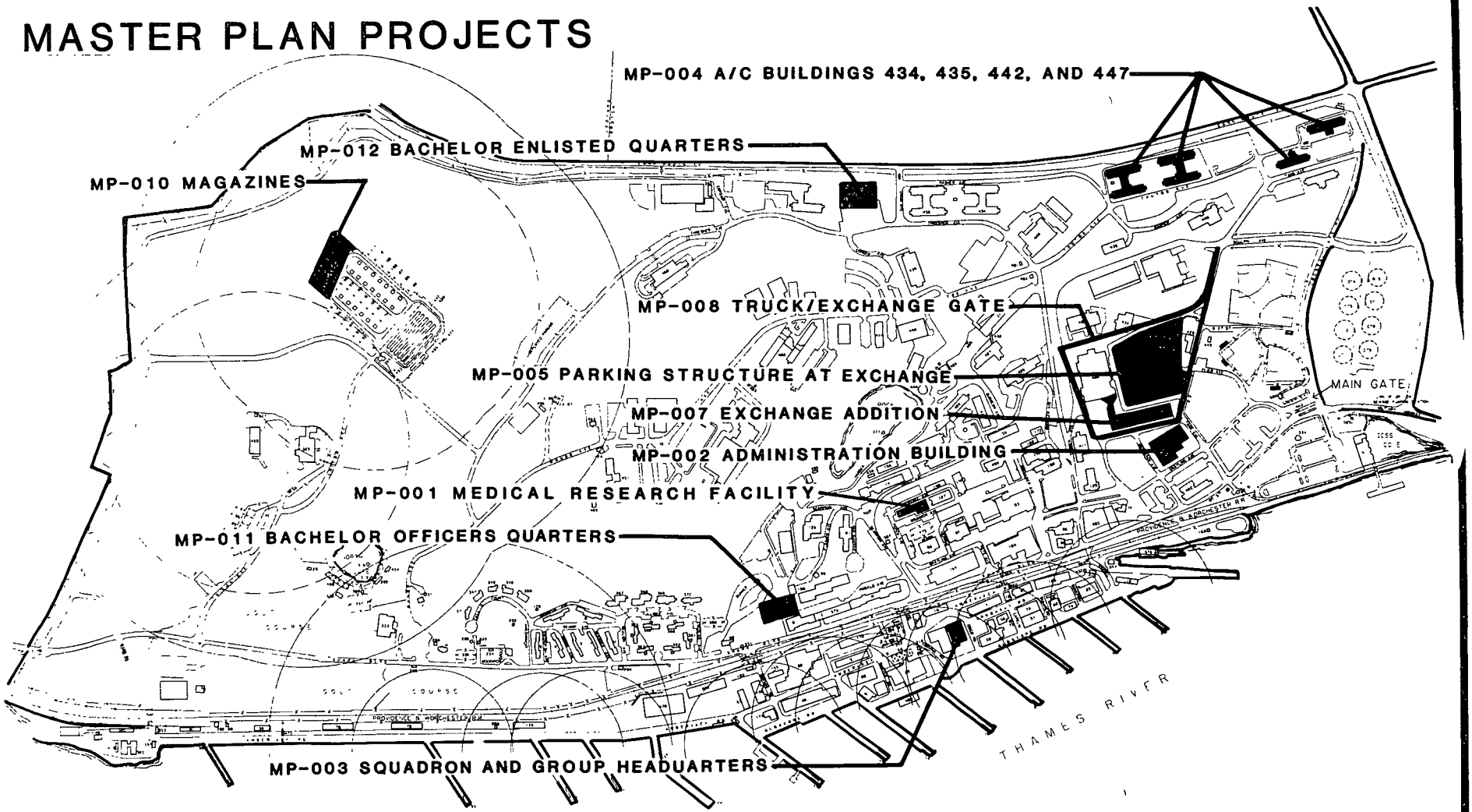
MASTER PLAN PROPOSED PROJECTS

MASTER PLAN PROPOSED PROJECTS

The following are projects recommended by the Master Plan. These projects are viable solutions to current deficiencies. Their implementation will satisfy facility requirements as well as improve functions at the SUBASE.

PROJECT NUMBER	TITLE	COST ($000)
MP-001	MEDICAL RESEARCH FACILITY	9,000
MP-002	ADMINISTRATION BUILDING	4,500
MP-003	SQUADRON AND GROUP HEADQUARTERS	3,000
MP-004	A/C BUILDINGS 435, 434, 442, AND 447	4,000
MP-005	PARKING STRUCTURE AT EXCHANGE	4,000
MP-006	PLAYING FIELDS AT FAMILY HOUSING W/LAND ACQUISITION	250
MP-007	EXCHANGE ADDITION	1,500
MP-008	TRUCK/EXCHANGE GATE	900
MP-009	COMMUNITY CENTER PARKING	100
MP-010	MAGAZINES	-----
MP-011	BACHELOR OFFICERS QUARTERS	-----
MP-012	BACHELOR ENLISTED QUARTERS	-----

MASTER PLAN PROJECTS



MP-006 PLAYING FIELDS AT FAMILY HOUSING W/LAND ACQUISITION
MP-009 COMMUNITY CENTER PARKING

200 0 FT 200 400 600 800

PROPOSED LAND USE
MASTER PLAN
NAVAL
SUBMARINE
BASE NEW
LONDON
GROTON, CONNECTICUT

FY 91 NON-APPROPRIATED FUNDS PROJECTS

TITLE: P-349 HOBBY SHOP AUTO BODY REPAIR
COST: $840,000
SCOPE: This project will provide an auto body repair facility of masonry construction on concrete slab with self-contained spray paint booth, central vacuum and exhaust system, air compressors, fire protection sprinklers, oil-fired heating plant, exterior driveway and parking for 12 vehicles.

REQUIREMENTS:

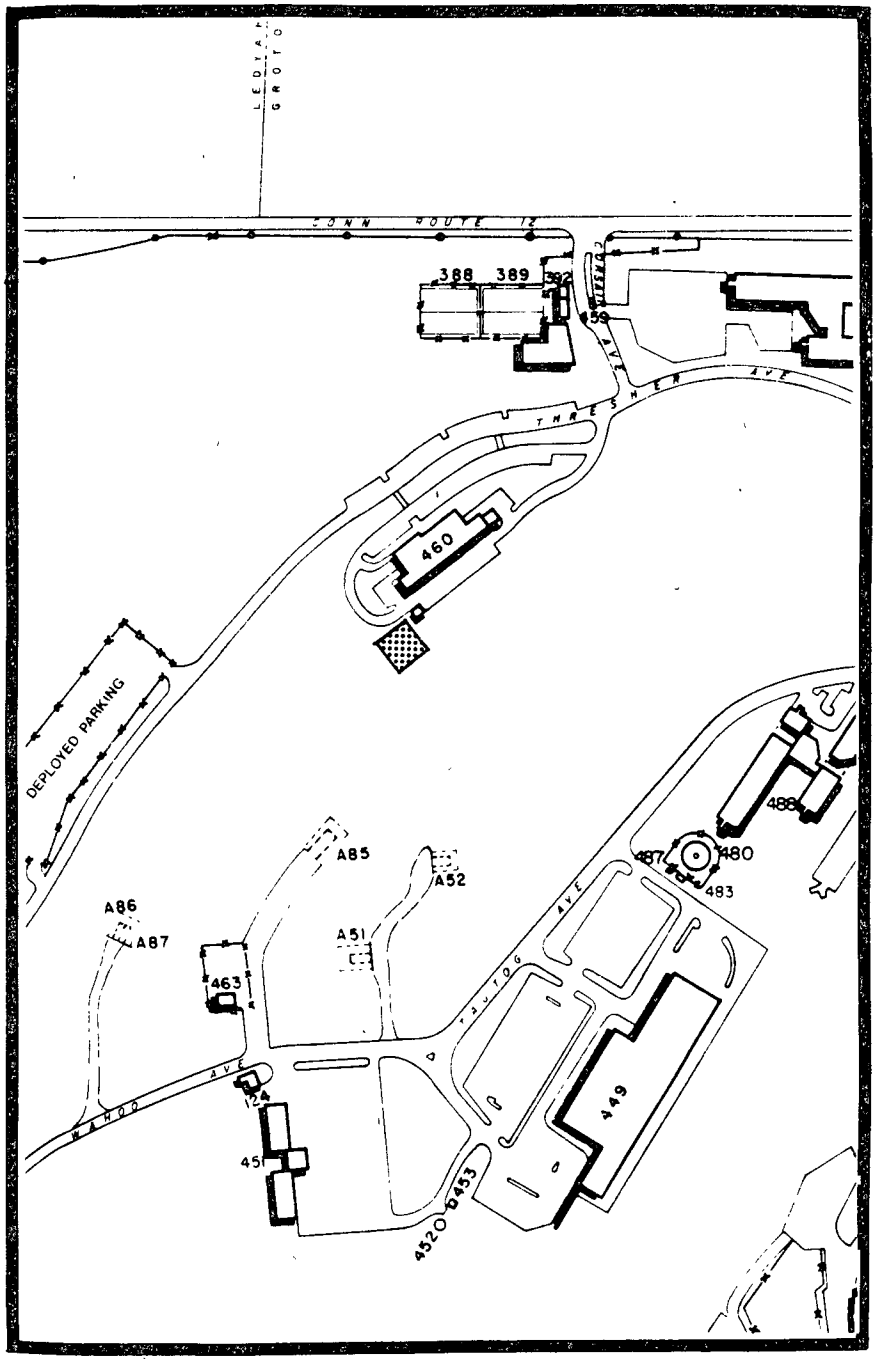
This project will satisfy the demand for such a facility at the SUBASE as well as provide a potential income producing function for support of other morale and welfare programs that cumulatively improve the quality of military life.

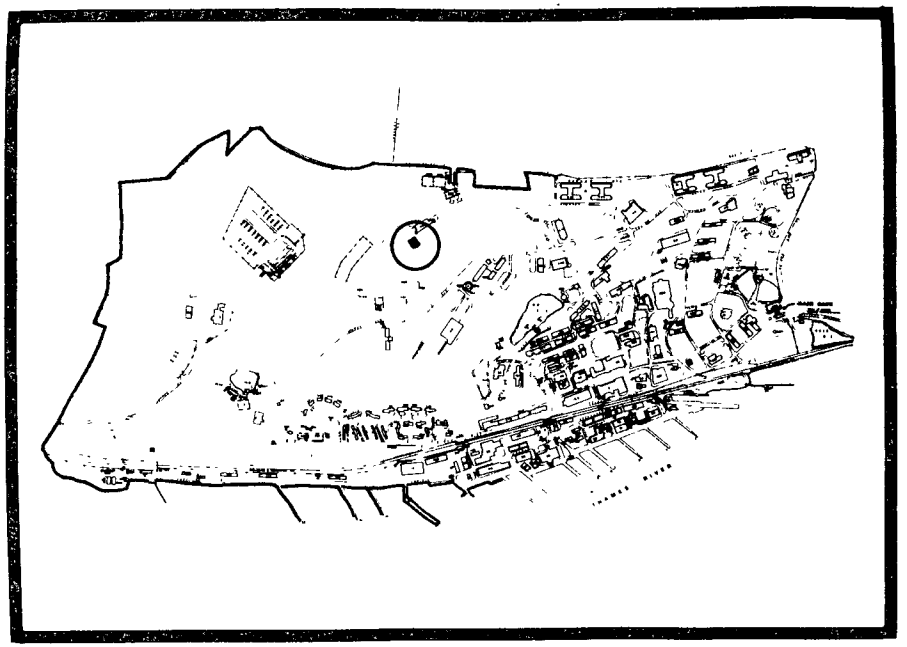
SITING CONSIDERATIONS:

The location of the proposed facility is 500 feet south of an inland wetland which allows enough distance to assure no adverse effects on either wildlife or vegetation.

DESIGN CONSIDERATIONS:

The facility will be located on a site with steep to moderately steep slopes requiring excavation and fill. Also, a culvert will be included to allow for the existing drainage ditch flowing to the inland wetland area.

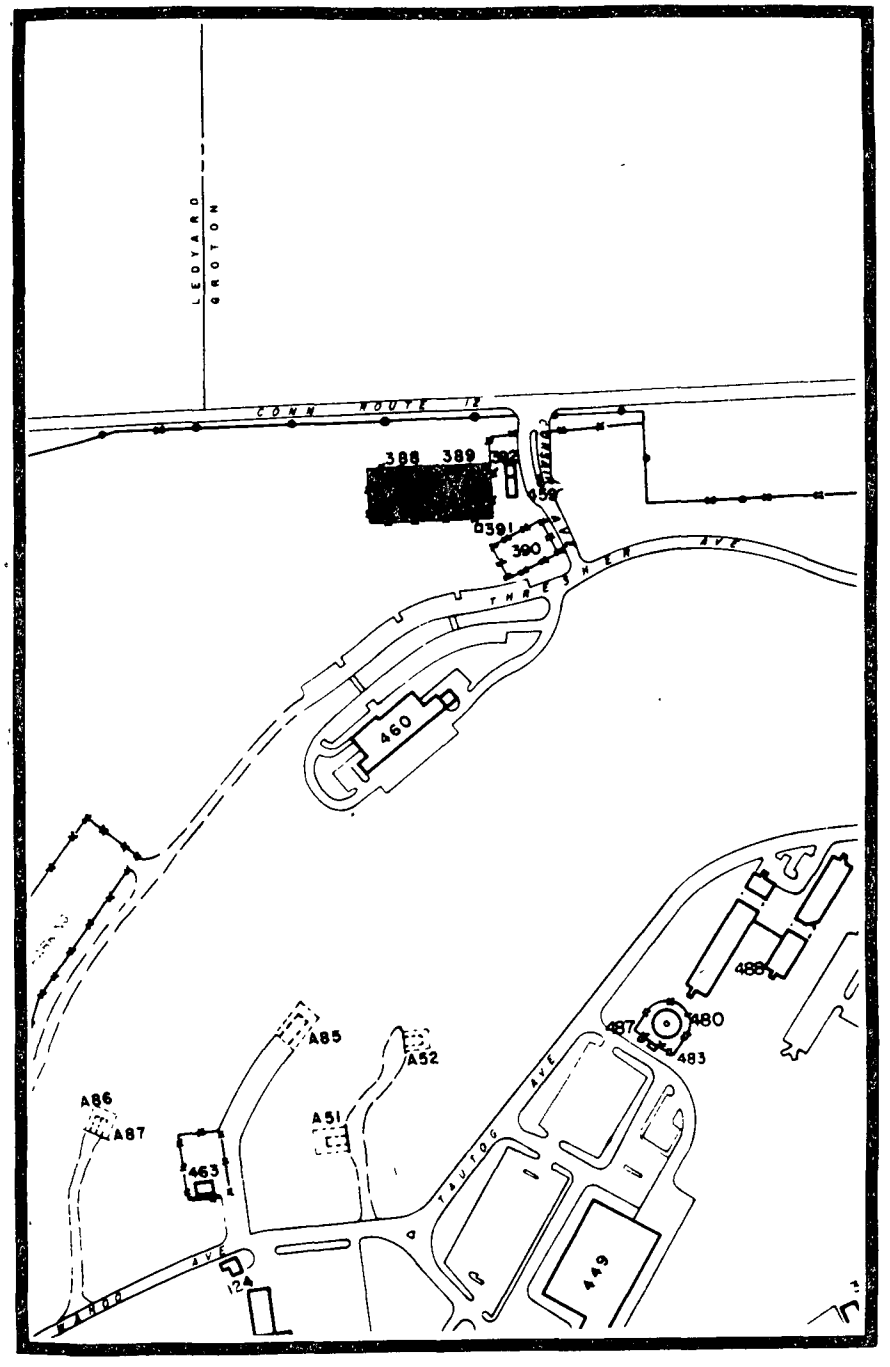


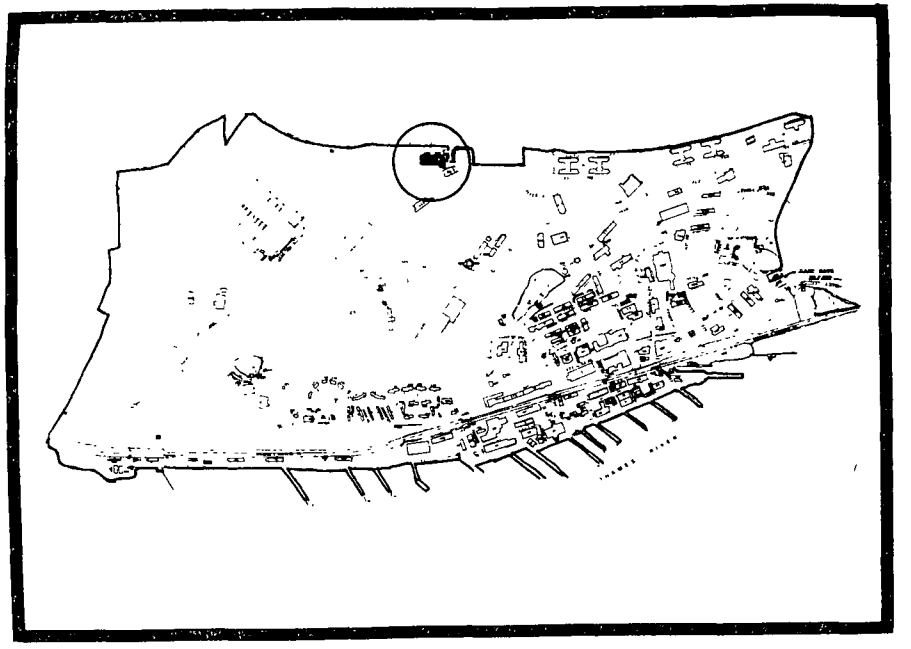


P-349
HOBBY SHOP AUTO BODY REPAIR

COST:
$840,000

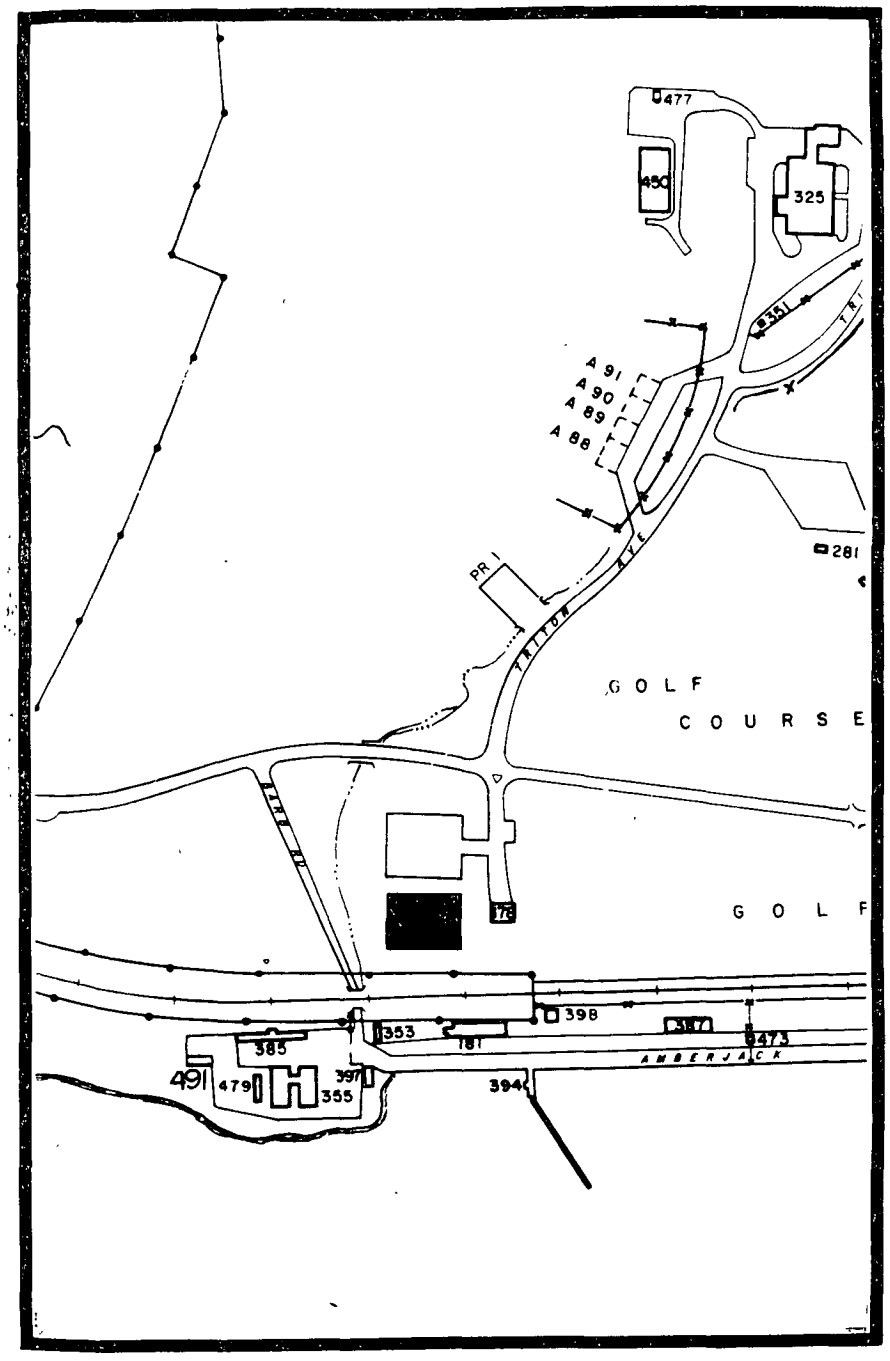
UNPROGRAMMED
NON-APPROPRIATED FUNDS
PROJECTS

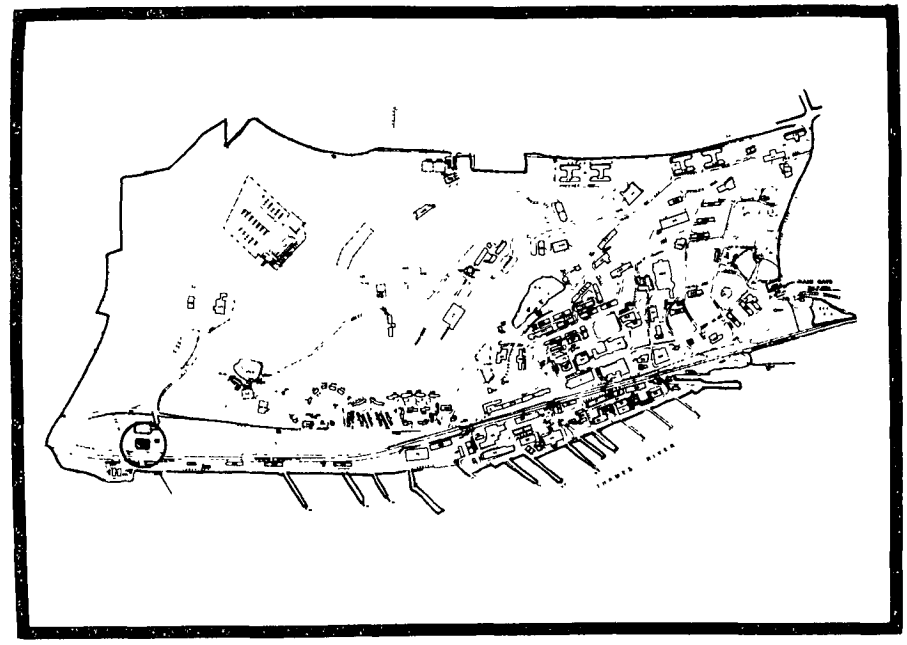




TITLE: P-350 INDOOR TENNIS COURTS
COST: $500,000

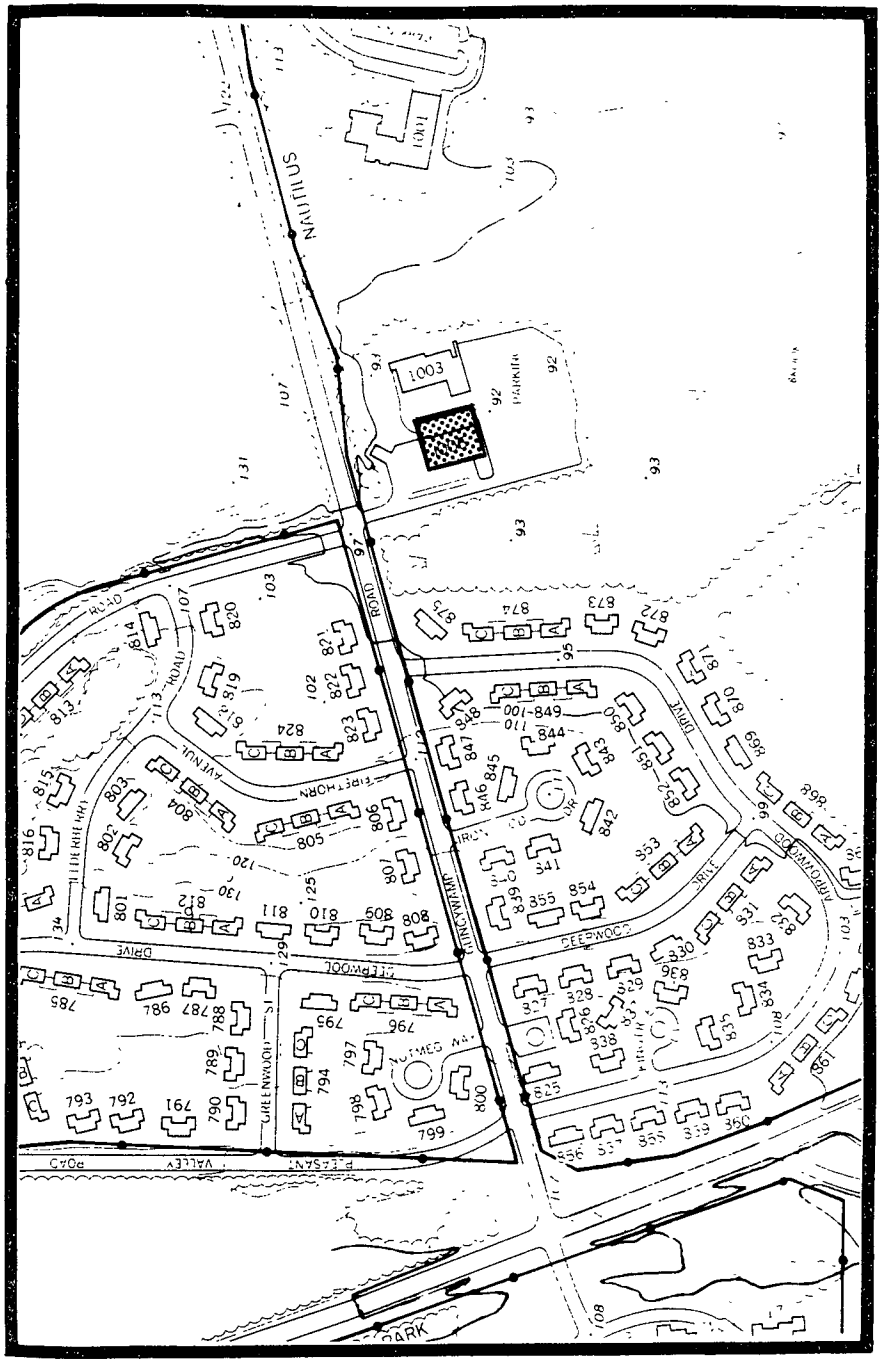
This project will improve and convert tennis courts (structures 388 and 389) at the east gate to an indoor, year round facility with locker rooms and other support spaces.

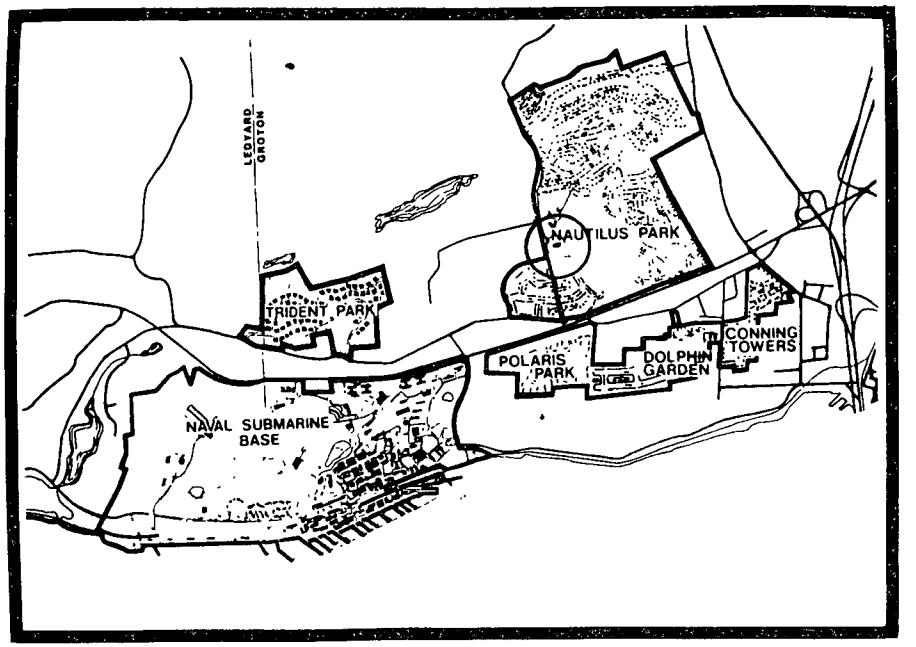




TITLE: P-351 SPECIAL SERVICES MAINTENANCE FACILITY
COST: $500,000

This project will provide a facility which includes a maintenance office, personnel support spaces, and equipment and ready issue storage. A support building for special services maintenance personnel is required to replace the deficient existing facilities. Existing facilities are located in Building 163 and other garden type shelters.





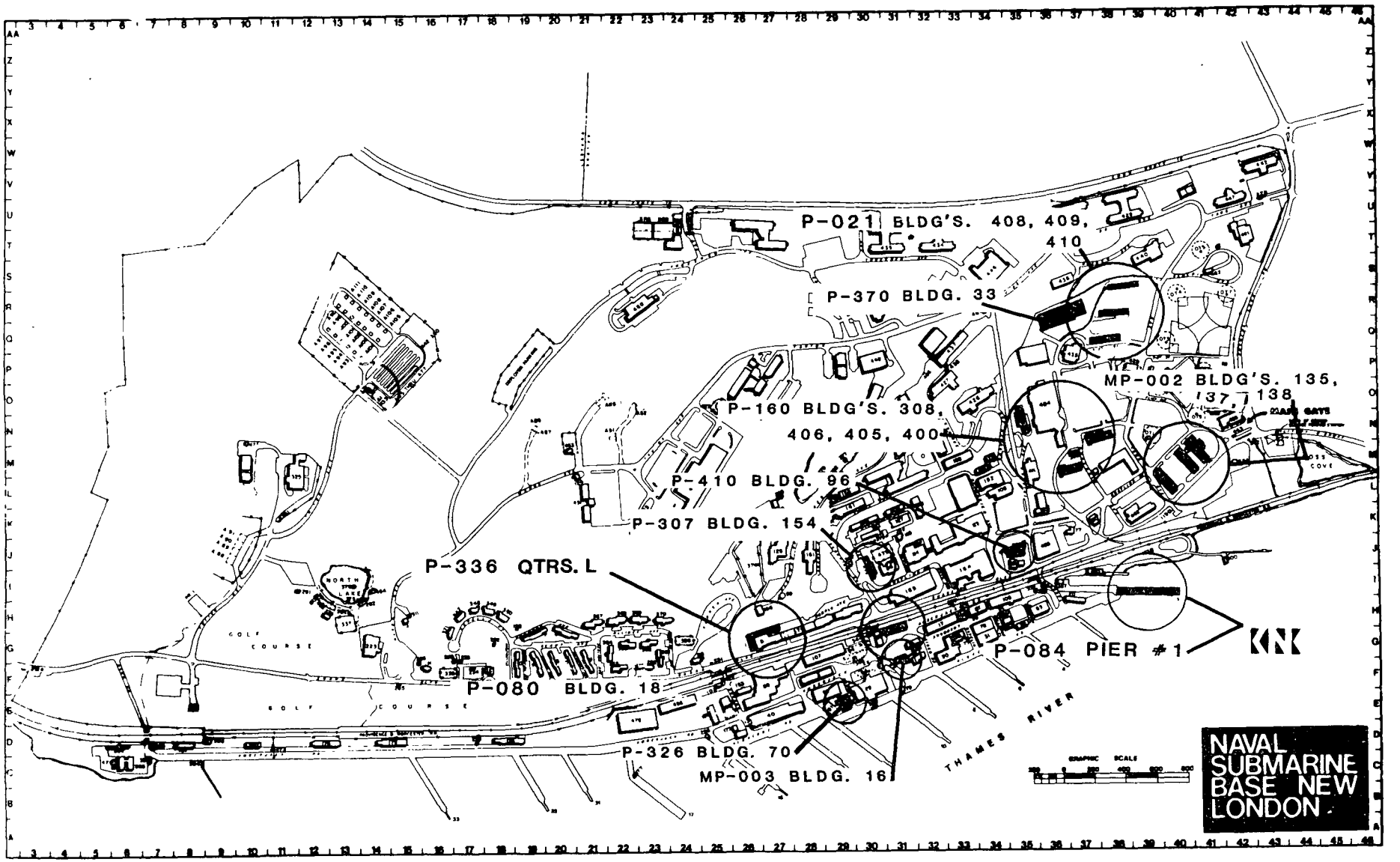
TITLE: P-395 ADDITION TO DOLPHIN MART
COST: $456,000

This project will provide a 2400 square foot pre-engineered addition to the existing Dolphin Mart Convenience Store. The project includes additional power to accommodate new walk-in cooler/reach-in coolers and freezers. The existing Dolphin Mart receiving/backup storage spaces and the retail areas are much too small to accommodate Navy Exchange patrons. The addition will allow for better receiving of Distribution Center vans and the 26 daily vendor deliveries.

DEMOLITION PLAN

DEMOLITION PLAN

BLDG. #	CURRENT USE	CONDITION	PROJECT	COMMENTS
408 409 410 316	GENERAL WAREHOUSE GENERAL WAREHOUSE GENERAL WAREHOUSE PW STORAGE	ADEQUATE ADEQUATE ADEQUATE	P-021	PROVIDE SITE FOR NEW WAREHOUSE.
18 GT-1	MAINT. STORAGE FILLING STATION	SUBSTANDARD SUBSTANDARD	P-080	PROJECT TO CONSOLIDATE FUNCTIONS INTO ONE FACILITY NEGATING NEED FOR CURRENT FACILITY.
PIER 1	FUELING PIER	SUBSTANDARD	P-084	PROVIDES SITE FOR NEW REPLACEMENT PIER.
QTRS L	BOQ	INADEQUATE	P-336	PROVIDES SITE FOR NEW BOQ.
135 137 138	PW ADMIN ADMINISTRATIVE ADMINISTRATIVE	INADEQUATE INADEQUATE INADEQUATE	MP-002	PROJECT TO CONSTRUCT ADMINISTRATIVE FACILITYN ON DEMO SITE.
308 400 405 406	PW STORAGE PW SHOPS PW STORAGE PW STORAGE	INADEQUATE INADEQUATE INADEQUATE INADEQUATE	P-160	PROJECT TO CONSOLIDATE PUBLIC WORKS FUNCTIONS INTO ONE FACILITY.
33	GENERAL WAREHOUSE	INADEQUATE	P-370	PROJECT TO CONSTRUCT NEW WAREHOUSE ON SITE.
120	INDOOR POOL	INADEQUATE	P-404	PROJECT TO REPLACE INADEQUATE POOL WITH NEW FACILITY.
16	NX & NSSF TRAINING	INADEQUATE	MP-003	PROVIDES SITE FOR NEW HEADQUARTERS.
96	REHAB CENTER	INADEQUATE	P-410	DEMOLITION PROVIDES SITE FOR CONSTRUCTION.



DEMOLITION PLAN