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San Francisco Bay Conservation & Development Commission

Staff Report on Houseboats and Liveaboards

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STAFF REPORT
ON
HOUSEBOATS AND LIVE-ABOARDS:
BAY PLAN AMENDMENT NO. 3-83

SAN FRANCISCO BAY CONSERVATION
AND DEVELOPMENT COMMISSION

JULY, 1983

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F O R E W O R D

This report, prepared by the staff of the San Francisco Bay Conservation and Development Commission, provides information on the history of waterborne living on San Francisco Bay, the role of the Commission in permitting houseboats and live-aboards, the predicted trends, and the place of houseboats in the Bay Area housing stock. Major impacts due to houseboats, including water pollution, sedimentation, dredging, fill, and conflicts with other uses, are discussed. The report also discusses the benefits of and the rules and restrictions affecting houseboats and live-aboards. The conclusion sets out the major findings of the study and proposes changes to the Bay Plan policies on houseboats and live-aboards. Information about the effect of adopting the proposed findings and policies necessary to comply with the Commission's regulations and to assure that this report can be used as the "functional equivalent" of an environmental impact report is also included.

CHAPTER I: INTRODUCTION

Waterborne residences have been used for centuries and are found all over the world. They include reed rafts on African lakes, junks in Hong Kong Harbor, ships anchored off Greek and Caribbean islands, and barges plying the rivers of England, Holland, and France.

Comprehensive accounts of the inception, growth, and migration of waterborne residences on the Bay are not readily available. However, it seems probable that houseboats and live-aboards could be found in small numbers beginning in the 1800's. By about 1880, a few recreational houseboats and live-aboards were reported in Belvedere and along Corte Madera Creek. Those on Corte Madera Creek were later pulled onshore, placed on pilings, and converted to homes.

After the turn of the century houseboats and live-aboards, primarily occupied by squatters, began to be reported elsewhere in the Bay. Newspaper accounts from 1910 through 1930 indicate that a number of houseboats and live-aboards were moored without permission along the Oakland-Alameda Estuary. Most of these have since been removed.

During World War II, the number of houseboats and live-aboards burgeoned, particularly on the San Francisco waterfront and along the southern shoreline of Richardson Bay, with the influx of shipbuilders. After the war, writers, painters, and craftspeople, attracted to Sausalito, moved to the houseboat community, building houseboats that looked more like sculptures than houses. By the 1960's houseboats had pretty much consolidated around Waldo Point in Marin County, although a few could be found scattered in other parts of the Bay. Live-aboards, on the other hand, continue to be scattered throughout the Bay's many recreational marinas.

While most form a mental image when the terms "live-aboard" and "houseboat" are heard, a myriad of structures and functions may be included. Generally live-aboards refer to any unmodified boat on which people live. They look like any other boat in the same class; they are self-propelled; they have sufficient room for living, often containing staterooms, a galley, and a head. Houseboats, generally larger than live-aboards, are not designed to move frequently. One type of houseboat is the abandoned or former barge, tugboat, ferry, or fishing boat used more or less "as is" for residential purposes but sometimes substantially modified, often by adding a houselike or trailerlike structure to a hull. The other, newer type of houseboat is a structure initially designed as a floating home. These houseboats are usually boxlike but also may vary in shape with turrets, towers, and angles. Except that houseboats float on the water, there is little to distinguish them from a house on land.

A third type of waterborne residence, distinguished from the other two only by location, is the so-called "anchor-out." These are houseboats or live-aboards that are not moored at a marina or along the shoreline but are instead anchored offshore and used residentially.

While houseboats, live-aboards, and anchor-outs are attractive to their owners, they are oftentimes troublesome to others, detrimental to the environment and may conflict with other public needs for recreation, navigation, wildlife, and open space. The conflict between public and private rights and desires has been particularly bitter and long-lasting in Richardson Bay.

CHAPTER II: TRENDS AND FORECASTS

Not only has the number of houseboats and live-aboards in the Bay increased steadily but the original, primarily recreational use has shifted to full-time residential. Duck hunters, fishermen, and summer vacationers rarely occupy today's houseboats and live-aboards. Recently, the numbers of artists, writers, and craftsmen who were prevalent during the 1950's and 1960's have also declined. Due to escalating houseboat costs and mooring fees more recent occupants are relatively affluent. The more fanciful houseboat design of the past is now being replaced by standardized, boxlike, and larger structures.

A. Numbers and Locations

Today there are an estimated 600 houseboats and 2,000 to 4,000 live-aboards in San Francisco Bay. Most of the houseboats are in Richardson Bay, which now contains approximately 425 houseboats and between 70 to 120 anchor-outs. Liveaboards are mostly scattered throughout the many recreational marinas in the Bay, including Sausalito, Berkeley, San Leandro, Oyster Point, Redwood City, and Martinez.

Because houseboats are distinctive and do not often move, accurate information is available on their locations and numbers from aerial photographs and field counts. Live-aboards are more elusive, blending easily among the 19,000 recreational boats in the many marinas around the Bay. The estimate of 2,000 to 4,000 live-aboards is derived from the Regional Water Quality Control Board's (RWQCB) estimate that 10 to 20 percent of all recreational berths are occupied by live-aboards1/.

Most houseboats are moored in special, houseboat marinas. Four are in Richardson Bay: Kappas Yacht Harbor with 117 berths; Waldo Point Harbor with 265 berths; Yellow Ferry Harbor with 22 berths; and Commodore Properties with 11 berths. In Alameda, the Barnhill Marina contains 30 berths for houseboats and in San Francisco, the Mission Creek Harbor contains 20 houseboat berths. Except for Commodore Properties, the houseboat marinas predate the Commission's creation in 1965, although the Commission has granted permits to expand and modernize them.

In addition to those moored in houseboat marinas, houseboats are moored elsewhere in the Bay. About 100 are moored near the Waldo Point Harbor. One recreational marina in Sausalito has 9 houseboats. About 12 are moored at the Napa Street Pier in Sausalito; a few are found at Red Rock Marina in Richmond; and 6 are moored at Point San Pablo Yacht Harbor in Richmond. Some houseboats are also used as yacht sales offices along the Oakland-Alameda Estuary. A few others are scattered elsewhere in the Bay.

Live-aboards are found at virtually all of the primarily recreational marinas in the Bay Area. Major marinas with known live-aboards are Berkeley (40 authorized berths for live-aboards), San Leandro (11 berths, none authorized), Martinez (12 berths, none authorized), and Oyster Point (35 to 38 berths, none authorized). There are also a number of live-aboards moored offshore in Richardson Bay, along Alviso Slough, and at the the Sausalito Yacht Harbor.

The 70 to 120 anchor-outs, mostly live-aboards but including some houseboats, are found in Richardson Bay in the vicinity of the Kappas, Yellow Ferry Harbor, and Waldo Point Marinas. As the number of boats constantly fluctuates, no firm number can be established. Occasionally anchor-outs will be spotted near the Berkeley Marina and elsewhere in the Bay. A comparison of 1973 and 1981 aerial photos shows an increase in the anchor-out fleet, perhaps a doubling, in that time. Traditionally, the number of anchor-outs increases with the warm weather of the late spring and summer. During the winter some occupants move their boats to warmer waters, moor them in a marina, or haul them onshore.

B. Commission Permits for Houseboats and Live-aboards

Of the 600 houseboats estimated to be in the Bay, the Commission has authorized berths for 424. The remainder either predate the creation of the Commission or are unauthorized. Five BCDC permits (Nos. 4-71, 5-71, 6-71, 14-73, and 26-76) authorized construction of houseboat facilities in Marin County. For the most part, houseboats to be moored at those facilities existed prior to BCDC jurisdiction.

The permits issued for houseboat marinas allowed existing houseboats to remain subject to conditions providing for significant public benefits. For example, most of the Richardson Bay houseboat marina sites had ragged, unsightly shorelines, and none provided public access. The permit conditions prevent further water pollution from houseboats, assure safety, improve shoreline appearance, and provide new public access. Very little fill was allowed, about one acre of fill for new houseboat docks and considerably less than an acre for creating an attractive shoreline, public access paths, and landscaping. In the permit for the Sausalito Yacht Harbor fill was allowed for parking for the recreational boaters, not houseboat or live-aboard parking.

Outside Richardson Bay, permits for houseboats and live-aboards were issued in San Francisco, Sonoma County, Alviso, and Berkeley. Permit No. 7-76 was issued to the Port of San Francisco for the clean-up of a marina containing houseboats located in Mission Creek. This permit opened 35,400 square feet (0.8 acre) of new Bay surface and provided for new public access on the shoreline. The construction of the public access, however, has been hampered by property arrangements between the Marina and the Port. One authorized houseboat is moored at Port Sonoma at the mouth of the Petaluma River in Sonoma County, and one has been authorized but not yet moored at the Alviso Marina.

Only one BCDC permit, issued in 1979, authorized live-aboards (No. 5-79). The City of Berkeley requested a permit to provide additional security at its recreational marina, which was suffering from vandalism to boats throughout the large, dispersed facility.

No permits for anchor-outs have ever been issued.

Figure 1 shows the location of the houseboat marinas and houseboats authorized by BCDC. A summary of all houseboat and live-aboard marina permit activity is in Figure 2.

C. Boat Design, Size, and Cost

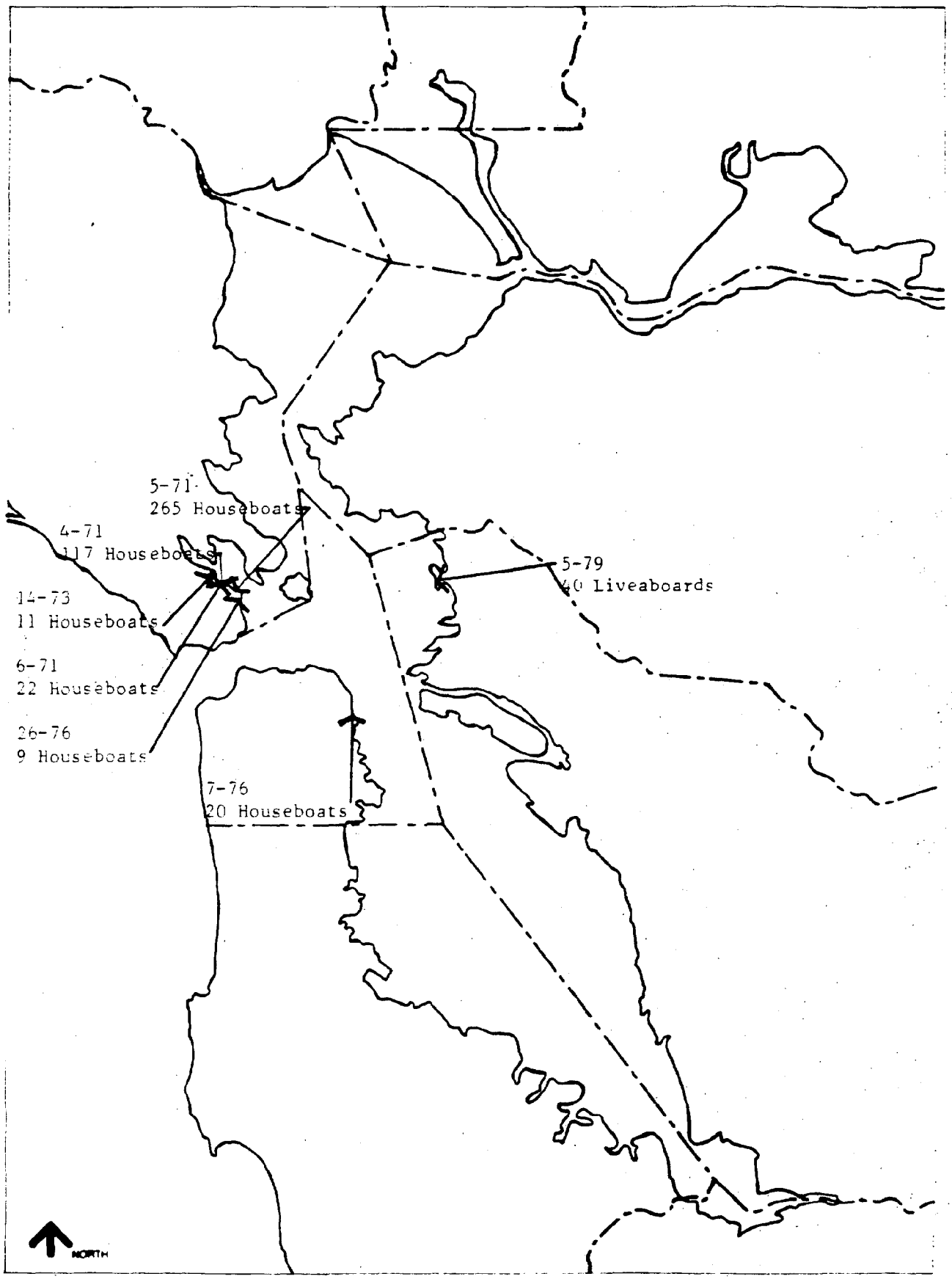
1. Design and Size

In the Bay live-aboards are generally sailboats, but there are also a few cabin cruisers and former fishing boats and tugboats. The most common size of sailboat used as a live-aboard is 27 to 36 feet in length. Recently, however, larger boats, 40 to 50 feet in length with about 250 to 300 square feet of living space, are being used as live-aboards. Larger live-aboards are commonly equipped with a living-dining area, two bedrooms (staterooms), kitchen (galley), bathroom (head), running water and electricity. Smaller live-aboards have less living space, often with a combined cooking, eating, living and sleeping area, and a bathroom. Live-aboards generally look like any other recreational boat.

Houseboats are generally larger than live-aboards, often two or more stories in height (16 to 20 feet above the water line) and with 500 to 3,000 square feet of living space. One of the most enduring features of houseboats has been the uniqueness of design. Early houseboats were often made from converted commercial vessels and barges with living units added on top. Others were almost sculptural units defying categorization. While many newer houseboats are blocky and bulky, sometimes described as floating trailers, many still have the individual decorative touches that distinguish them from conventional craft. This may not last, however. The recently adopted Marin County codes and standards for houseboats will undoubtedly result in less design diversity as new houseboats are built and older ones remodeled.

2. Costs

Houseboats usually float on a reinforced concrete hull costing about $15 per square foot or a wood and fiberglass hull costing about $11 per square foot. However, pontoons and styrofoam blocks may also be used for flotation, usually at less cost. Overall costs of a new houseboat on a concrete hull, including appliances, are about $80 per square foot. Existing houseboats currently for sale in Marin County range in price from $35,000 for a two-story, one bedroom unit to $199,000 for a two-story, two bedroom, two bath unit. Living space ranges from 500 square feet to 3,000 square feet for the larger, multi-storied houseboats.



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San Francisco Bay Conservation and Development Commission

BCDC AUTHORIZED HOUSEBOATS AND LIVEABORDS

FIGURE 1

FIGURE 2

INVENTORY OF BCDC HOUSEBOAT MARINA PERMITS

Permit Number	Applicant/ Marina Name	Location	Houseboat Berths	Total Berths	Total Public Access	Public Access on Fill	Amount of Fill and Use
4-71	George Kappas Kappas Yacht Harbor	Gates 6+6 1/2, Waldo Point Marin County	117	272	1.64 acre	1.64 acre	-0.3 acre - Docks/ marina facilities -1.64 acre - Minor fill for improving shoreline appearance
5-71	Lewis E. Cook, Jr. Arques Marina	Gates 4+4 1/2 Waldo Point Marin County	265	265	No figures	1.09 acre	-0.58 acre - Docks/marina facilities -1.09 acre - Minor fill for improving shoreline appearance
6-71	Miriam Tellis Yellow Ferry Harbor	Gate 5 Marin County	22	22	No figures	0.06 acre	0.06 acre - Minor fill for improving shoreline appearance
14-73	Commodore Properties	240 Redwood Highway, Marin County	11	11	No figures	0.15 acre	0.15 acre - Minor fill for improving shoreline appearance - Airport use (prevent flooding at heliport)
7-76	San Francisco Port Commission Mission Creek Harbor	Mission Creek, San Francisco	20	55	0.87 acre	None	Note: Increased Bay surface by 0.81 acres
26-76	Sausalito Yacht Harbor	Sausalito, Marin County	9	625	0.25 acre	0.04 acre	0.12 acre - Docks/marina facilities 0.04 acre - Public access

Live-aboards, with less living space than houseboats, are also expensive and comparable to the cost of a house. Although many older live-aboard boats are smaller, newer live-aboards are in the 40 to 50-foot range. These larger boats contain many conveniences and the facilities of a well-appointed small home. They can cost from $125,000 to $200,000. Used boats in this category may be purchased in the $85,000 to $90,000 range. The trend in boat sales in the past few years has been toward the larger, more expensive boat that is well equipped for both living and pleasure cruising.

In addition to paying for the boat itself, boat residents usually pay the cost of renting a berth. Houseboat owners pay monthly berthing fees of roughly $300, up from $150 in 1970. Liveaboards must pay the standard berth rental based on the size of the boat, plus an additional amount based on increased usage of the marina facilities. These fees can be up to $7.50 per foot per month, for a total cost of about $300 per month for a 40-foot boat.

Recently there have been proposals to sell berthing rights for recreational boats. Under these, the boat owner must buy a long-term lease, license, or other right to the area where the boat is berthed. In the future such rights may also be offered to occupants of houseboats and live-aboards. Although three such proposals, Portobello in Oakland, Emery Cove Marina in Emeryville, and Pier 39 in San Francisco have been locally approved, only Portobello has actually sold units, so the market has yet to be well defined. However, two of the marinas proposing such sales have estimated the prospective costs. Marina Bay in Richmond expects to sell berth rights for $550 per lineal foot to those who also purchase a condominium in their adjacent residential development, and $850 per lineal foot to other boaters. Pier 39 in San Francisco has advertised its berths for $570 to $1,700 per lineal foot. Berths 40 to 50 feet in length would thus cost between $32,000 and $50,000. Of course the effect of this financing arrangement is the creation of a property right which can subsequently be sold for whatever price the market will bear. The required large initial payment and the personal loan for financing the purchase may cause berth costs to increase beyond the financial capability of many Bay Area residents.

Probably due to these high costs and the lack of available choice berthing locations, very few houseboats are now being built. Those that are under construction are being built by individuals. Because individual construction more frequently leads to building code violations constituting safety and health hazards, local governments have recently attempted to assure that houseboats will meet standards. For example, Marin County now requires a permit before beginning construction of a houseboat. Only a few such permits have been issued because one must show proof of a legal berthing space before a permit can be issued. Small, non-code structures, however, can be put together rather quickly. This is one reason why unauthorized houseboats and live-aboards proliferate in popular areas like Richardson Bay.

D. Violations

1. Lack of BCDC Permits

The mooring of houseboats, the placement of docks, walkways and other marina structures used by houseboats or live-aboards, and changing the use of a recreational boat to a live-aboard are all activities requiring a BCDC permit. At the present time there are estimated to be over 150 unpermitted houseboats moored in the Bay. Many are moored in the Waldo Point area of Richardson Bay; several are anchor-outs offshore of that area; several are at or near the Napa Street Pier in Sausalito; a few are moored in Alviso Slough. Many houseboat violations are complicated by legal suits. Investigations are currently underway by local governments and the BCDC enforcement staff on most of the others.

Residential use on many of the estimated 2,000 to 4,000 live-aboards in the Bay predates the Commission's jurisdiction, so no BCDC permit is required for these vessels. A few others (40) are also moored at berths for live-aboards specifically authorized by BCDC. But a substantial number are moored at various, primarily private, recreational marinas. These live-aboards do not have but need a BCDC permit because the residential use started after the Commission obtained jurisdiction.

No survey has been done to determine the exact number of unauthorized live-aboards because of the difficulty of getting accurate information. Live-aboards are nearly indistinguishable from recreational craft at marinas. A slight increase in shoreline traffic and increased activity in the evening are usually the only signs that some sailors are living on their boats. It is also easy to convert a live-aboard to a residence or back again to a recreational use. A 1981 survey of the Sausalito waterfront estimated that there are 145 live-aboards, with 190 residents, among the 1,500 berths in the City.2/ No BCDC permits have been issued for live-aboards in Sausalito. To date, little enforcement action has been directed toward live-aboards.

The anchor-outs are located largely in Richardson Bay in Marin County. No BCDC permit has ever been issued for an anchor-out.

2. Trespass, Building Code, and Waste Discharge Violations

Houseboaters and their surrounding communities have been at odds for some time. Houseboaters have tended to moor wherever they like, build whatever they like without regard to codes or permit requirements, use waste systems that health and waste specialists find threatening to public health and polluting to the Bay, and, on occasion, refuse to pay rent to marina owners. Local communities periodically attempt to evict squatters, prevent waste discharges, and obtain compliance with building codes.

Examples of building code violations in Marin County include installing a new hull under an existing houseboat, adding on rooms, and remodeling interiors--all without permits. Many of these modifications do not meet building code standards. The Department of Public Works staff says that once a violation is detected, compliance is very high. However, detection is difficult and constant inspections are time-consuming and expensive to the taxpayer.

Many houseboats are not hooked up to sewers as the County requires and these boats likely violate health and water standards by discharging wastes into marina basins or, in the case of Richardson Bay, in that Bay. As of the end of April 1983, only 225 of the 400 authorized houseboats in Richardson Bay were hooked up to shoreline sewers. These boats are at marinas authorized about 12 years ago. The remainder are not connected to sewers and likely discharge directly into the Bay. One member of the Marin County Department of Public Works is assigned to inspect waterfront structures regularly and assist property owners in designing and installing appropriate waste systems. However, the process is a slow one, and there is continued resistance to the County's waste discharge requirements.

At the present time live-aboards are not required to be connected to sewers, but untreated wastes are, nevertheless, prohibited from being deposited in marina basins or anywhere in the Bay. Waste specialists believe, however, that discharges nevertheless regularly occur because water quality tests show continued pollution, especially in enclosed marina basins and areas with poor circulation.

Figure 3 charts the major instances of governmental efforts to enforce laws violated by occupants of houseboats and live-aboards, particularly ones moored at unauthorized locations.

E. Forecasts

1. Demand

In the past, demand for houseboats came mostly from people wishing to enjoy a different lifestyle at a low cost and not requiring large living spaces or yards. Recently the demand has expanded to include affluent people desiring to live in Marin County at the water's edge.

People select particular communities for a number of reasons but waterside location, nearness to San Francisco, and a Marin County address have, during the last few years, led to particularly strong demand there. Dramatic increases in Marin housing prices, particularly for homes near the water have occurred. Between 1978 and 1982, the average price of homes in Belvedere, which are located for the most part on or near the water, increased 131 percent (from $275,950 to $625,833). In Tiburon where most homes are not on but are near the water, the price increase was 53 percent (from $199,845 to $304,904). The Marin County average increase in price for a home was 68 percent (from $108,730 to $182,553).

FIGURE 3

CHRONOLOGY OF HOUSEBOAT ACTIVITIES

1921 The City of Alameda condemned 15 arks moored in the estuary and on San Leandro Bay.

1923 The federal government evicted several houseboats located on mudflats between Park Street and Fruitvale Avenue in Oakland.

1925 Fifty houseboat squatters were evicted by the federal government from property near High Street in Oakland.

1943 The Coast Guard evicted five families from houseboats at the foot of Kennedy Street in Oakland to allow the Oakland shipyards to expand.

1948 Marin County authorized the first of many studies of arks and houseboats in Richardson Bay.

1952 Sausalito passed an ordinance requiring houseboats to move off underwater streets held in trust by the City and to require houseboats to tie into municipal sewer systems within four months.

1956 San Francisco condemned six of 28 houseboats for dumping raw sewage into the Bay.

1960 The Corps of Engineers evicted 25 ark dwellers near the Fruitvale Avenue Bridge in Oakland after the City Council had declared them to be health, safety and fire hazards.

1960 San Francisco evicted residents of four houseboats on Judson Street in the Hunters Point area; one resident had lived there for 13 years.

Source: Archives of the San Francisco Chronicle.

While houseboat prices are high (ranging between $100,000 to $200,000) and for much of the rest of the Bay Area approach landside housing costs, they are cheap in comparison with the cost of a house on the shoreline or near the water in Marin County. The disparity between the cost of a home by the water and a houseboat is a major reason why people desire to move into a houseboat community. This disparity will also result in pressure to add new houseboats to existing marinas and build new houseboat marinas in Richardson Bay. It is likely, however, that greatest future demand will be from the relatively affluent, not from those with modest incomes seeking an alternative lifestyle.

2. Housing Supply

Houseboats and live-aboards do not constitute an appreciable amount of the Bay Area's housing stock, housing at most 6,000 to 11,000 people or about 0.1 to 0.2 percent of the region's 5 million population, nor are they ever likely to. The Bay Area Council estimated that the 1980 shortage of housing was 65,000 units and the 1990 shortage may be 350,000 units. Given these estimates it is apparent that boat dwellings would have to proliferate to unacceptable levels to be of any real significance in meeting the region's housing needs.

Moreover, use of the water for housing produces benefits that are private, while the waters of the Bay provide benefits for the public as a whole. For this reason housing should be accommodated on land rather than on the waters of the Bay.

CHAPTER III: IMPACTS AND BENEFITS

A. Environmental Impacts

1. Water Pollution

a. Discharges and Impacts

Water pollution is a major adverse impact associated with both houseboats and live-aboards. Most houseboats and live-aboards are moored in protected bays such as Richardson Bay or in marinas with enclosed basins. Both locations are protected from the tidal surge and strong currents that disperse pollutants and bring in cleaner water. As a result, pollutants build up, endanger health, and may damage wildlife.

Sewage and graywater discharges from houseboats and live-aboards, for example, have significant impacts on water quality and public health. Sewage consists of human body wastes. Graywater consists of galley, bath, and shower wastes. Both have similar impacts on water: introduction of coliform bacteria; toxic soap residues; biochemical oxygen demanding substances; suspended solids, oil and grease; and biostimulatory substances such as nitrogen and phosphorus.

Two standards are used to determine whether water is unacceptably polluted by coliform bacteria.3/ The water-contact recreation bacteriological standard4/ -- the less stringent standard -- is used to judge whether people can swim and use the water with little risk to their health. The shellfish harvesting bacteriological standard5/ -- the more stringent standard -- is used to judge whether people can eat shellfish with little risk to their health. Because shellfish tend to concentrate pollutants, water must be cleaner to meet the shellfish harvesting standard.

By either standard, Richardson Bay marinas and those located in the Oakland-Alameda Estuary are badly polluted. In 1981, the Regional Water Quality Control Board (RWQCB) found6/ that water-contact recreation bacteriological standards were exceeded at several locations in Richardson Bay including Waldo Point, Yellow Ferry, Kappas Small Boat Marina, and Napa Street Pier. Other Bay locations exceeding water contact standards include the Alviso Marina, Alviso Slough, and the Alameda Yacht Harbor. The RWQCB also found that the shellfish harvesting bacteriologial standards were exceeded at the following marinas: Waldo Point Harbor, Yellow Ferry, Marinship, Clipper Yacht Basins 2, 3, and 4, Kappas Small Boat Marina, Kappas East and West Piers, Commodore Marina, Barnhill Marina, Alameda Yacht Harbor, Port of Oakland-Central Marina, Embarcadero Cove Marina, and Oyster Point Marina.

Houseboats and live-aboards are also a source of oily wastes, bilge water, and biostimulatory substances all of which degrade water quality. While the resultant water pollution is not as significant as coliform bacteria originating from sewage, biostimulants are of concern in Richardson Bay where algal blooms may occur.

b. Water Pollution Prevention

Pollution due to discharges of untreated sewage and graywater from boats used as residences can be eliminated if they are connected to a shoreside sewer system. The RWQCB now requires all houseboats, to be so connected. Direct connections7/ to sewer systems have also been required in all the houseboat marina permits issued by the Commission. The RWQCB recommends liveaboards be connected to a shoreside system or contain holding tanks that can be emptied only by pumping out at an approved facility.

Direct connections for live-aboards are technically feasible. One such system, at the Peninsula Marina in Redwood City, relies on flexible hoses joining the boats to a plastic pipe on the dock which is, in turn, connected to a shoreside line. The operator of the marina describes the system as "inexpensive" and the total monthly berthing fees average $375 per month for a 50-foot boat.

Most live-aboards are also large enough to contain holding tanks. For these vessels through-hull discharge fittings can be sealed so that pump-out facilities are used to empty the tanks. There are a few live-aboards and houseboats that are so small that holding tanks are difficult to install. Also, there are a few boats that do not have toilets or galleys on board. For the occupants of these vessels convenient on-shore facilities must be provided or discharge into the Bay will be likely..

Pump-out facilities can be used by live-aboards. But Bay Area marina operators indicate that pump-out station use is fairly low. There are probably a variety of reasons: some pump-out facilities are inconvenient to find and use; some are misused and become inoperative; many boaters prefer to use onshore restrooms and showers when available; and some marinas charge high fees to use the stations. For example, there have been reports8/ that Sausalito Yacht Harbor charges $100 per use. While low pump-out station use may not mean that wastes are deposited in unauthorized locations, the discrepancy between pump-out station use and the number of boats with holding tanks suggests that pump-out stations are not the most secure way to prevent Bay water pollution.

BCDC experience with preventing water pollution from live-aboards is limited. Only one BCDC permit deals with the issue. The permit for the Berkeley Marina requires pump-out facilities, not sewer connections, for disposal of sewage and graywater from live-aboards. The BCDC permit requires that each live-aboard vessel with a toilet have a holding tank which will hold at least three days estimated volume of wastewater. Additionally all through-hull fittings for sewage and graywater discharge on the live-aboards must be sealed. The marina basin is regularly monitored and recent reports state that water quality standards have been met9/. But the

marina operator reports low pump-out station use. This anomaly can probably be explained because there are complete men's and women's restroom facilities and showers for each dock. Also some boaters prefer portable toilets which can be emptied at onshore facilities. The permit also contains revocation rights for live-aboard berthing, requirements to provide free pump-out services, and the ability to require shoreside sewer connections if water quality deteriorates. These strong sanctions help assure that wastes are not deposited in the Bay.

For both recreational boats and live-aboards with holding tanks that are not connected to a shoreside system, pump-out stations will continue to be needed. Despite the present low use, pump-out stations, if properly administered, can help to prevent discharges into the Bay. There are currently only 31 pumpout stations to serve approximately 3,000 to 4,000 boats with holding tanks in San Francisco Bay. Figure 4 describes pump-out facilities in San Francisco Bay Area. For the RWQCB to prohibit discharges it is necessary to show that there are sufficient pump-out stations to handle vessel wastes.10/

2. Sedimentation

a. Impacts

Houseboats, live-aboards, and associated marina structures often also adversely change localized sedimentation patterns and rates. Sedimentation is the settling out of small particles carried in water. It consists of eroded dirt with other elements and chemicals carried into the Bay in urban and watershed runoff. Large amounts of sediment enter the Bay system daily, and much is deposited on the bottom. Even after settling it is often resuspended by currents and wave action. Thus, sediment is naturally present in the Bay system.

Natural sedimentation patterns and rates may be changed by structures, such as docks and breakwaters, that alter water currents and velocities. Houseboats and live-aboards may also change the rate and location of sediment deposits by "stilling" the water. The effect increases the amount of sediment deposited at or near the location of the vessels and structures causing more material to be deposited than would occur naturally.

Excessive sediment harms fish by clogging sensory, feeding, and breathing organs; it traps small floating organisms; and it buries and chokes bottom-dwelling organisms. Impacts increase in localized areas when fill changes current patterns or velocity and when dredging reintroduces the material into the water. Richardson Bay is particularly plagued by shallow waters and limited water circulation.

b. Prevention and Reduction

Nothing can prevent general sedimentation, but localized impacts on sedimentation rates and patterns can be reduced through careful site selection; by thorough analysis of sedimentation patterns, water currents, winds, and other natural forces at selected sites; and by designing

TABLE 4

Pumpout Facilities in the San Francisco Bay Area

Marina	Hours of Operation	No. of Pumpout Stations	Estimated No. of Boats Served Per Week	Estimated Time to Pump out an Average Boat	Disposal of Waste from Pumpout Sta.	Fee	Depth at MLW (ft.)
Alameda Yacht Harbor	9am-5pm daily	1	unknown	15 min.	sewer	free	unknown
Alviso Marina	all hours	2	5	unknown	sewer	free	0
Ballena Bay Yacht Harbor	all hours	1	10 - 20	5 min.	sewer	free	unknown
City of Berkeley	all hours	3	unknown	unknown	sewer	free	9
Coyote Pt. Marina	8am-5pm daily	1	2	20 min.	sewer	free B $5 Pu	unknown
City of Emeryville	all hours	2	7	unknown	sewer	free	8
Gas House Cove	9am-6pm daily except Tuesday	1	3	5 min.	sewer	$2.50	12
Glen Cove	9am-5pm daily	1	unknown	2 min.	hauled by truck	$4.00	unknown
Marina Yacht Harbor	8am-5pm daily	3	unknown	5 min.	sewer	$2.50	10
Martinez Marina	all hours	1	5	15 min.	sewer	free	unknown
Oyster Pt. Marina	8am-5pm daily	1	unknown	unknown	sewer	free	6
Pelican Yacht Harbor	9am-5pm daily	1	0	unknown	sewer	undec.	10
Peninsula Marina	all hours	1	4	4 min.	sewer	75¢	7
Pier 39	all hours	1	1 - 2	15 min.	sewer	$3.50	35
Pittsburg Marina	7:30am-5:30pm summer, and 7:30am-4:30pm winter	1	10	10-15 min.	sewer	$2.00	6

Source: RWQCB, Vessel Waste Discharge Survey, 1981

TABLE 4 - continued

Pumpout Facilities in the San Francisco Bay Area

Marina	Hours of Operation	No. of Pumpout Stations	Estimated No. of Boats Served Per Week	Estimated Time to Pump out an Average Boat	Disposal of Waste from Pumpout Sta.	Fee	Depth at MLW (ft.)
Port of Oakland	all hours	1	unknown	15 min.	sewer	free	unknown
Port Sonoma	all hours	2	45	unknown	sewer	25¢ for 5 min.	10
Richmond Marina	all hours	1	15	unknown	sewer	25¢ for 1 min.	unknown
Richmond Yacht Club	all hours	1	1	1½ min.	sewer	no public use; 25¢ for B	7
San Leandro Marina	9am-5pm daily	2	unknown	15 min.	sewer	free	7
Sausalito Yacht Harbor	9am-5pm daily	2	0	1 hour	sewer	$100.00	6
Vallejo Municipal Marina	8:30am-4:30pm daily	1	2	4 min.	sewer	$1.50 B $2.50 Pu	5½

B = berth renter Pu = public

breakwaters, docks, and mooring locations to improve water circulation and minimize undesirable changes in sedimentation. Considerable experience and knowledge is needed to conduct such analysis and design. The Commission should therefore assure that knowledgeable professionals are involved in projects for new and remodelled marinas.

3. Dredging

a. Impacts

Sediment can, of course, be removed by dredging. But dredging destroys bottom life, reintroduces pollutants into the water column, and can be expensive. Dredging and the disposal of dredge spoils can also harm fish and wildlife. For example, pressure to find nearby and convenient locations for the disposal of spoil often jeopardizes diked baylands, marshes, and shallow waters that may be selected as "cost effective" dumps for dredged spoils. Polluted sediments that are dredged cause additional adverse impacts on aquatic wildlife by releasing the pollutants into the Bay waters.

Dredging to remove sediment in existing houseboat areas is complicated because it is difficult to move houseboats. They are ordinarily not self-powered and may be connected to dockside utilities and services. Moreover, since mobility is not of interest to houseboaters, they have little incentive to pay for dredging costs. As a result, in the last 18 years, only one houseboat marina, the Barnhill Marina in Alameda, has applied for dredging permits. Two minor permits were granted, one in 1971 and one in 1973, each to dredge only 500 cubic yards.

No permits have ever been granted for dredging houseboat marinas in Richardson Bay, though it is plagued by shallow waters and limited water circulation, suffers large amounts of sediment deposits annually, and the underlying muds are badly polluted. In 1971, when the early BCDC permits were issued for houseboat marinas, the Department of Fish and Game (DFG) requested that material under the existing houseboats not be dredged. The DFG stated that dredging would be harmful because: (1) the initial and maintenance dredging would reduce the benthic animal population; (2) the dredging would have direct detrimental effects on fish and wildlife; and (3) the sediments might be polluted by oxygen-demanding materials from inadequately treated sewage and might also contain other toxic materials including heavy metals and pesticides11/. Also in 1971, the RWQCB stated that there was no reason from a water quality standpoint to require dredging12/. Thus, the Commission allowed houseboats that existed at that time to rest on the Bay bottom for some periods of the tidal cycle to avoid the adverse impacts of dredging identified by the DFG and the RWQCB. Similarly, it will be difficult, if not impossible, to build new or expanded houseboat marinas in much of Richardson Bay unless some or all of the added houseboats sit on the mudflats during some tidal stages or dredging is allowed.

b. Reduction and Prevention of Impacts

Only by selecting sites with sufficiently deep water that are naturally scoured by currents and by designing new marina structures to reduce the amount of "stilling" of waters can dredging be minimized. But deep water sites that have strong currents are usually not desirable to houseboaters who prefer quiet sites where boats are protected from open waters and strong currents. Contents of muds below proposed sites should therefore be thoroughly tested, and sites with polluted muds avoided. In addition projects proposing new or expanded marina berths should clearly indicate the amount of dredging that will be needed to assure that boats float at all stages of the tide. The amount should be forecasted over the life of the marina project and the disposal site should be identified. Disposal of spoils at one of the Corps' authorized sites13/ has the least impact on the Bay but these sites may be some distance from the dredging location.

4. Fill

a. Amount and Impacts

While the amount of fill associated with houseboats and live-aboards has been small historically, the localized impacts of even small fills can be detrimental. Houseboats and live-aboards moored for an extended period are a form of "fill" under the BCDC law, as are marina docks, walkways, and breakwaters. Assuming that each houseboat is 15 feet by 45 feet, or 675 square feet, then about 6-1/2 acres of authorized houseboat "fill" now exists. This is a mere fraction of the estimated 45,000 acres of mudflats in San Francisco Bay. However, when that fill is located in a restricted area, especially one with sedimentation problems and limited tidal flushing, like Richardson Bay, the local impacts can be considerable.

The effect of the floating fill on mudflats is similar to that of solid fill in several respects. When houseboats or live-aboards are moored over the mudflats, the boats not only prevent shorebirds from feeding, they block light, interfering with photosynthesis of tiny algae. When the houseboats rest on the bottom during periods of low tide, they crush the microorganisms living in the mudflats. The result for the period the boat is on the bottom is little life, photosynthesis, or oxygen production. While the amount of oxygen produced by algae at any particular location is small, the cumulative impact of the loss or degradation of Bay mudflats is a major concern, particularly since so many mudflats have been lost in the past.

b. Reducing Fill Impacts

Shading impacts due to boats and docks can be reduced by proper design. In marina design one method to reduce shading is to minimize the area of boat hulls and walkways, and to increase spacing between boats so that substantial open water exists to allow light penetration to the Bay bottom. Obviously two-story or taller houseboats would require even greater spacing. But spacing is costly in materials and land. Another alternative

would be to orient houseboats and their docks favorably to the sun to allow maximum light penetration. This approach may conflict with maximizing views and providing the maximum protection in foul weather.

Dredging will also allow boats to float at all tidal stages and prevent the adverse impacts of boats resting on the bottom. However, determining the balance between the impacts of dredging and the impacts of shading and resting on the Bay bottom is difficult and must be evaluated on a case-by-case basis. For areas where houseboats and live-aboards do not now exist, siting requirements that assure they are not located in areas where they would cause significant sedimentation or in areas of shallow water would reduce future adverse impacts on fish and wildlife and oxygenation.

B. Social Impacts

The social impacts of houseboats and live-aboards include the use of water and shoreline areas needed now or in the future for recreation, wildlife habitat, and public access, and demands on services in excess of what housing on land requires.

1. Conflicts with Other Uses

Houseboats and live-aboards are a form of housing requiring fill in the Bay. Housing is not a necessary use of the Bay because there is sufficient upland to provide for present and predicted housing needs for the Bay Area.14/ Moreover, a water location is not required for housing to function. Uses that do need to be in or adjacent to the Bay include ports, water-related industry, water-related recreation, public access, bridges, airports, and wildlife refuges. Many of these latter uses have also required large amounts of fill in the past. Therefore sufficient shoreline and water areas should be reserved for present and future needs for these "water-oriented" uses before any area is allowed to be used for housing, a non-water-oriented use. Conflicts between housing and water-oriented uses are most acute in areas like Richardson Bay where accessibility and physical attractiveness make the area highly desirable for housing.

Houseboats and live-aboards can conflict with any water-oriented use but then conflict mostly with (1) public recreation, including boating and fishing, (2) fish and wildlife habitat, and (3) public access, including views and open space.

a. Recreation

As discussed in the "Staff Report on Recreational Boating Facilities,"15/ there is a continuing demand for recreational boat berths in the Bay. But suitable marina sites are limited because they must have sufficient onshore space for parking and access, a water basin with an orientation to currents and tides that provides protection during stormy

conditions, and be a reasonable distance from urban centers. Moreover, the Commission recently decided that large fills for recreational marinas were not in the public interest,16/ thereby further reducing the number of potential sites.

Houseboats and live-aboards compete with recreational vessels for nearshore water areas because they require marina facilities with similar site characteristics. To the extent they preempt areas otherwise suitable for recreational marinas, it will be more diffficult to meet the demand for recreational berths. Houseboats and live-aboard marinas also make less efficient use of scarce shoreline space because the parking requirements for such marinas are more extensive than for recreational marinas.

Fishing, another recreational use that takes place in the nearshore waters of the Bay, is generally done from the shore, piers, or small boats. It requires little equipment other than a rod, line, and bait and is an activity available to and popular with all Bay Area income and age groups, both for sport and for food. To the extent that houseboat marinas occupy desirable fishing sites, preclude access to good sites, or eliminate fishing habitat, recreational fishing will be reduced.

Marinas containing houseboats and live-aboards also commonly conflict with the human use of shellfish beds. Numerous Bay marinas are within one-half mile of shellfish beds17/. Waste discharges from houseboats and live-aboards contribute bacterial contaminants that make Bay shellfish unsafe to eat. Because of contaminants in shellfish, the Department of Health Services recommends against the recreational harvesting of shellfish in the Bay at this time; however, harvesting is not banned. Consequently, many people currently harvest shellfish despite the health risks. Shellfish may be safely available from the Bay again in the future, both for recreational and commercial harvesting, but only if the beds are protected from conflicting uses and pollution sources, including boats used as residences that release wastewater.

In addition to space for recreational marinas, nearshore areas are desirable for boating itself in canoes, kayaks, and dinghies. They are also desirable for wind surfing and swimming. These activities are often easiest and most fun in the shallow waters close to shore where waves are small and waters are sheltered from strong winds. Boating is also available and accessible to a broad range of age and income groups in the Bay Area. There are few shallow water areas convenient to urban centers where small boating can safely occur in the Bay. Richardson Bay is a particularly good location for this activity. To the extent houseboats and live-aboards preempt nearshore areas and "anchor-outs" occupy offshore areas in Richardson Bay, small boating opportunities are reduced. Also to the extent that bacterial contamination continues or increases, these activities are threatened because water areas that are badly polluted will not be safely available to swimmers, wind surfers, and other water sport enthusiasts.

b. Habitat

Houseboats, live-aboards, and anchor-outs also diminish the wildlife value of quiet bays and inlets. People and wildlife in close proximity are usually not compatible; the wildlife often leaves. Areas preferred by houseboaters and recreational marinas are often the same areas needed by wildlife, particularly as feeding grounds for birds and small fish.

Some shoreline areas also serve as haul-outs for the harbor seals, shy inhabitants of the Bay, now threatened as their habitat diminishes. The development of one of these open or wildlife areas even for a short time leads to permanent loss of habitat.

c. Public Access

(1) Housing Impacts on Public Access

Housing conflicts most sharply with public access because housing is the most private of the uses that occur adjacent to the Bay. It pits the homeowner's desire for control over his property against the public's constitutional right to reach and use the Bay. As a result, public access along the Bay shoreline is often adversely impacted by proximity to residential uses. Paths close to residences are not widely used because the dwellings intimidate the public who feel like intruders in a private community. The residents may also feel uncomfortable and may react strongly if strangers are too close to their homes. Tall, large structures near public access paths and areas can also block views and give an enclosed, restricted feeling to the user who then tends to avoid such areas. Houseboats moored near the shoreline can present both problems, particularly houseboats of occupants who have a strong community feeling and believe that the public are outsiders.

(2) Reducing Housing Impacts on Access

When housing conflicts with other recreational needs for the same area or with wildlife habitat, there is little that can be done to reduce the impacts; a choice must be made between the competing uses. Adverse impacts of houseboats on public access, however, can be reduced through proper design and siting. Sufficient setbacks between the structures and the public access areas can also be provided. In some land projects, design professionals recommend a setback equal to the height of the structure. Setbacks can also be used to provide usable public access next to residences. In some cases landscaping is also valuable to screen the residential uses while framing and emphasizing public areas and views. These design concepts should be reviewed and, where appropriate, incorporated into designs for new and remodelled marina projects.

No matter how well designed, however, houseboat marinas will in most cases also have adverse impacts on views. The most obvious impacts are on views of the Bay from the shoreline. Mooring layouts are often designed to maximize use of the site, with little regard for

preserving public views. Tall, bulky houseboats, moored close to the shoreline in separate marinas can result in a virtual wall along the shoreline precluding views of the open water.

Mooring arrangements can be planned to maximize view corridors through marinas. Design professionals can delineate view corridors and create elevation differences between public access areas and the berths. View corridors can be provided between docks set perpendicular to the shore and/or along the property lines. Houseboats clustered in "pods" will also allow views between the clusters. Public access paths provided at higher elevations than the water surface allow pedestrians to see over and around the large houseboat structures. For example, at the Berkeley Marina near the houseboat berths, the pedestrian path is approximately 8 to 10 feet above the water surface at the medium tide. In recognition of the adverse view impacts, Marin County limits the height of new houseboats to 16 feet, with variance provisions to 20 feet. Nevertheless, new houseboat marinas will intrude in the open vistas of the waters of the Bay.

2. Demands for Services

Houseboat and live-aboard communities make additional demands on urban services, particularly police and fire protection, and code compliance monitoring, over those made by land housing. For example, in Sausalito burglary and larceny rates are higher in the waterfront communities than elsewhere. While the Sausalito Police Department has attempted to organize boat owners into self-protecting units, it has had little cooperation. Additional police resources must be devoted to investigate waterfront theft reports and to patrol an area that is difficult to monitor.

Providing adequate fire protection for waterborne communities is also more difficult than for land homes. The docks restrict the size of equipment that can pass, and getting equipment to boats near the ends of docks takes considerable time and effort. Many of the boats are moored close together and not built with fire retardant materials. Neither Marin County nor the City of Sausalito has a fire boat and there are no funds to purchase one. Fortunately, to date the fire rate within waterborne communities has not exceeded that experienced on land but fire fighting professionals believe that the potential for large and devastating fires is significant.

In the past, houseboaters have not complied readily with building codes. For this reason Marin County has assigned one of its five building inspectors to the houseboat area. The County staff believes that this concentration of effort has increased the rate of compliance. However, it also means that those building on land in Marin County must share the other four building inspectors.

Like all communities, houseboaters pay taxes to support public services. In Marin County houseboats are taxed the same as houses: one percent of the fair market value of the houseboat. In addition owners of houseboat marinas are taxed on the fair market value of the underwater land rented for berthing.

C. Benefits

Houseboats and live-aboards provide two main benefits: housing and security. The housing benefit is primarily private, restricted to the houseboat or live-aboard occupant. Live-aboards also provide security for some recreational boaters because the presence of people in some recreational marinas appears to deter criminal acts.

1. Housing Benefits and Life Style

The benefits of houseboats and live-aboards are primarily private. They offer a private life style enjoyed by the people who choose to live on a houseboat or live-aboard. While this is not a public benefit, it is an aspect of houseboating that is particularly important to houseboat and live-aboard residents.

What attracts people to life on the water? For some it is the culmination of a lifelong dream. Some are only there for a short time, waiting for the time when they can satisfy other plans. Some like the cheaper housing. Some like the freedom -- no lawn to mow and the ability to sail at the drop of a tie line.

Perhaps the best way to form an understanding of the boat residents and values is through biographical sketches. Military service first brought Richard to California. A watersports enthusiast, he vowed to return to Sausalito to live on the water. He now owns a houseboat and also maintains a motorboat for waterskiing in the Delta. Bill, a sailor, has used his spare time for the last ten years to build a boat. For the past two years he has lived on the boat in the South Bay while completing the final touches. When done, he expects to sail to the South Seas. Sue commutes to work from a 37-foot-sloop moored in the Oakland Estuary. She bought the boat and then lost her land housing. After two years of boat living, she is still uncertain how long the boat will be her primary residence. Pauline and Toby needed a new place to live, saw an ad for a houseboat and bought a houseboat at Waldo Point Harbor. They now live in the tallest houseboat in the Bay Area--four stories--with 2,600 square feet of living space. It is moored at B dock where Pauline and Toby particularly enjoy the friendly and helpful neighbors. They consider the houseboat a great bargain; a house having similar views in Tiburon and Sausalito would cost twice the price. There is little maintenance on the boat as it is built on a concrete hull and moored at a recently constructed dock.

Others who live in houseboats and live-aboards on the Bay also stress the strength of community where they live. They share skills, information, and work. Families care for one another's children and boats. They pool money and labor to repair docks, houseboats, or build a community center. Whether the sense of community will continue in the more modern, expensive houseboat marinas is difficult to determine.

2. Improved Security at Recreational Marinas

Although operators and boat owners have claimed that houseboats and live-aboards deter crime in marinas by the presence of occupants who can report suspicious activities to the police, the first evidence supporting these claims has come from Berkeley.18/ The 40 live-aboards scattered through the Berkeley Marina are required by the City to keep an eye out for suspicious or illegal activities in the Marina basin. The City's April, 1982 report19/ on live-aboards showed a decrease in total incidences of criminal activity in the Marina by nearly 75 percent over three years; in 1979 there were 131, in 1980 there were 53, and 1981 there were 44. There was a remarkable reduction in ten categories particularly relevant to security and surveillance including grand theft, petty theft, vandalism, robbery, felony assault, auto theft, murder, burglary, trespassing, and suspicious fire. The number of these ten crimes decreased from 97 in 1979, to 37 in 1980, and to 26 in 1981. While there have been no other figures submitted to BCDC to support claims of increased security, these figures from Berkeley certainly support the contention that live-aboards in recreational marinas reduce crime. However, as mentioned earlier, reduction in crime has not accompanied the live-aboards moored in recreational marinas in Sausalito.

CHAPTER IV: LIMITS AND RULES

A. Public Trust

The major restraint on the approvability of houseboats and live-aboards is the public trust.20/ The trust is a property interest held by the government on behalf of all present and future generations. It applies primarily to unfilled tidelands and submerged lands whether they are held in public ownership or by private persons.

Trustees of the public trust in San Francisco Bay are BCDC; the State Lands Commission; the Department of Fish and Game21/; the State Water Resources Control Board, including the San Francisco Bay Regional Water Quality Control Board22/; and local governments holding legislative grants of tidelands.23/ For the Bay, those local governments are: the Cities of Alameda, Albany, Benicia, Berkeley, Emeryville, Martinez, Mill Valley, Oakland, Redwood City, Richmond, Sausalito, San Leandro, San Mateo, South San Francisco, and Vallejo; the City and County of San Francisco; Marin County; San Mateo County; Peralta Junior College District; and the California Maritime Academy.

All trustees have a constitutional duty to protect the public interest in tidelands and submerged lands, particularly for traditional public trust uses such as fishing, boating, commerce, wildlife, and open space.24/ Generally, private residential uses of trust lands, including the mooring of houseboats and live-aboards, are not permissible. This purely private use is unrelated to, not dependent upon, and does not further the public purposes for which tidelands are uniquely suited.25/ Moreover houseboats and live-aboards do little to stimulate or foster navigation, commerce, or fishing and, in many cases, actually diminish those activities.

Both private and public tidelands and submerged lands in the Bay are subject to the trust. But the trust affects private lands differently than public lands. On private lands, nontrust uses may occur if (a) the lands are not needed for trust purposes; and (b) the nontrust uses are limited so that the lands can be made available for trust purposes when that need does arise. On public lands, nontrust uses are usually not allowable. Only where the nontrust use is a very small part of a larger project otherwise consisting of trust uses, and where the nontrust use is "necessarily incidental" to a trust use, may it be allowed. "Necessarily incidental" means inextricably bound up with the accomplishment of a trust purpose.26/ Moreover, all uses on public lands subject to the trust must also serve a "statewide purpose."

This restriction means that the use must benefit all the people in the state. Most typical trust uses, such as ports, wildlife habitat, and open space, can easily be shown to benefit all of the people. But private uses, such as residential houseboats and live-aboards, usually only benefit the small number of people who live on the boats. The rest of the people in the state enjoy no benefits from that use of trust lands. Moreover, because the public owns these lands, the lands may not be devoted to private uses. Allowing such a private use would amount to a gift of public property in violation of the Gift Clause of the California Constitution.27/

The few live-aboards at the Berkeley Marina (located on granted lands subject to the trust) serve as an example. Here four percent of the berths were allowed to be occupied by live-aboards because the presence of a few residents at the primarily recreational marina, a trust use serving a statewide purpose, provide added security particularly during the week and at night when most of the recreational boaters are not present. Moreover, the area occupied by the live-aboards is a very small part of the Berkeley granted lands and all of the rest of the lands are devoted to recreational boating, open space, and habitat--trust purposes.

To aid trustee agencies when they evaluate projects on private lands subject to trust, particularly houseboat and live-aboard projects, the Attorney General recommended28/ evaluating the proposed project according to the following criteria:

> (1) whether the use will interfere with existing public trust uses, such as public access to the Bay, navigation, commerce, fishing, scenic view corridors, and wildlife habitat; (2) whether the lands are currently needed for trust uses; (3) whether the use will interfere with future public trust uses in the area; (4) whether the subject area is relatively small in relation to the lands available for trust needs in the vicinity; (5) the period of time for which the lands will be devoted to nontrust uses; and (6) whether, by their cost and permanence, the improvements associated with the houseboats are such as to render difficult or impossible future devotion of the lands to trust purposes, as a practical matter.

Criteria 5 and 6 require that nontrust uses, such as houseboats and live-aboards, be limited to a relatively short time period within which forecasts of future trust needs are accurate and reliable. Otherwise a trust need for a particular site temporarily devoted to a nontrust purpose cannot be

accommodated when the trust need arises. Some definite time period should be established so that developers, landowners, local governments, and trustee agencies will have a clear limitation.

In a dynamic society reliable forecasts of future needs are difficult to predict over long periods. Forecasts of future recreational needs, the activities for which trust lands are most likely to be needed, are particularly unreliable over long periods because public demand for recreational facilities changes rapidly. In areas like Richardson Bay where recreational boating has steadily increased and other water-oriented recreational activities, such as wind surfing, have become quite popular recently, it is even more difficult to forecast future trust needs far into the future. Because of these difficulties, the time period allowed for nontrust uses should be fairly short, perhaps in the range of 5 to 10 years. Forecasts of need for such periods are reasonably reliable.

A fairly short authorization period for houseboat and live-aboard use will also help assure that the associated docks, walkways, and similar marina structures are not too costly because the period to amortize their capital costs will usually be based on the allowable period of use. Of course any authorization for a residential use is difficult to terminate even though the period is clearly stated and relatively short. Once established, it is difficult for agencies to terminate any use but particularly in those cases where residents are detrimentally affected.

B. Regulatory Authority and Policies

In addition to the restrictions imposed on houseboats and live-aboards in the Bay by the public trust, existing land use regulations also greatly limit their approvability.

1. BCDC Rules and Policies for Houseboats and Live-aboards

a. Permits Needed

The Commission has sufficient legal authority to regulate houseboats and live-aboards. BCDC permits are required for mooring houseboats, a form of fill; for the placement of pile-supported or floating piers, walkways, pilings, breakwaters, and other structures to create a marina for either houseboats or live-aboards; for changing the use of a recreational boat to a live-aboard; and for any dredging and the disposal of dredged spoils.29/

b. Houseboats and Live-aboards are Generally Impermissible

In addition to the restrictions imposed by the public trust, the McAteer-Petris Act also severely limits the approvability of houseboats. Houseboats are not a "water-oriented" use for which fill is

allowable because they are a residential use that does not need to be over or in the water. Moreover, houseboats usually do not confer a public benefit that justifies the detriment to the Bay from the fill involved. Live-aboards are not considered fill if they are not moored for extended periods of time. But structures, such as marina docks and walkways, used to support live-aboards are fill to which the same restrictions apply that apply to houseboats. Since live-aboards as residential uses differ little, if at all, from houseboats, the Commission should treat the two types of residential vessels similarly when the vessels themselves require permits.

c. Exception to Unapprovability

There is one exception to the general prohibition of houseboats and live-aboards under the McAteer-Petris Act. Small numbers of houseboats and live-aboards and associated structures, e.g. docks, walkways, and breakwaters, may be allowed if they are part of a project that is to improve shoreline appearance or to provide new public access to the Bay.

To approve minor fill for the improvement of shoreline appearance, the Commission must be able to find that the fill is necessary because the present appearance of the Bay and shoreline in the area adversely affects enjoyment of the Bay and its shoreline within the site area itself or within adjacent areas of the Bay shoreline. Further, it must be either physically impossible or economically infeasible to improve the appearance without filling30/. To approve minor fill for public access, the Commission must be able to find that the fill is necessary because there is at present inadequate public access to the Bay shoreline in the area. Further, it must be either physically impossible or economically infeasible to improve the public access without filling31/. In both cases the amount of fill approved must be the minimum necessary to improve the shoreline appearance or provide the new access.

d. Current Bay Plan Policies for Houseboats

When minor fill for houseboats, live-aboards, and associated facilities is appropriate under BCDC's enabling legislation, the applicable houseboat policy in the Bay Plan now requires that houseboats: (a) not adversely affect the ecology of the Bay; (b) not cause a harmful amount of sedimentation; (c) be connected to a shoreline sewage treatment system or have onboard treatment facilities acceptable to public health and water quality control agencies; (d) require no fill except for a pedestrian walk on pilings; and (e) be acceptable to local governments having jurisdiction32/.

2. Local Rules and Policies for Houseboats and Live-aboards

a. Authority

Local governments have authority to regulate such matters as type and intensity of uses, parking requirements, open space needs, and height and size of structures. State law also reserves regulation of certain aspects of boats and boating to the local governments. For example, under the Health and Safety Code33/ and the Harbors and Navigation Code34/, local governments have the authority to control sanitation and pollution from vessels. Local governments may also set time of day restrictions and speed zones, and designate special-use areas, all to control the use of vessels.

Local governments may also establish harbor districts which may regulate and control the anchoring, mooring, towing, and docking of vessels and enact other ordinances to protect persons and property within the waters subject to the harbor district. San Mateo County has established the San Mateo County Harbor District with jurisdiction over Oyster Point Harbor. While harbor district requirements must be consistent with federal and state laws and constitutional provisions protecting the free and open navigation of waters, the districts can establish rules that control harbor operations, define channels, and regulate uses35/.

b. Local Plans and Zoning

Generally local governments have severely limited approvals of new houseboat marinas and the expansion of existing marinas to accommodate houseboats. To date anchor-outs have not been effectively controlled. While Marin County has adopted an ordinance for anchor-outs, the County has not yet put the ordinance into effect36/. Live-aboards are not generally addressed in local plans or codes, but several local governments have in their general plans and zoning ordinances provisions for locating houseboats or live-aboards within new marinas. Issues raised by houseboats have been addressed mostly by the cities in Marin County. Strong city controls may have indirectly contributed to the proliferation of unauthorized houseboats and live-aboards in Marin County.

Other cities, such as Oakland and Berkeley, have also exercised various controls over marinas, including the mooring of by houseboats and live-aboards. Richmond and Vallejo support houseboat and live-aboard use within their jurisdictions. Elsewhere there are few local land use controls probably because of the lack of any perceived problem. A more specific description of the local policies follows.

The City of Alameda has one houseboat marina that existed before BCDC. However, the City Planning Department states that new houseboat marinas would not be consistent with the City's General Plan, largely because of the noise levels from the Oakland Airport. The levels are so high they preclude residential facilities along much of the City's shoreline. The City's code does not address live-aboards.

The City of Richmond's plan allows houseboats or live-aboards in "coastline commercial zones." These zones are located at Point San Pablo Yacht Harbor, Red Rock Marina, and the south shoreline of the Richmond Inner Harbor. All houseboats would require a conditional use permit from the City Planning Commission.

The Port of Oakland leases the land for about 95 percent of the marinas in the City of Oakland. None of the Port's leases allows live-aboards. If a lease that allowed live-aboards were to be approved, the Port would enforce the City's health code requiring sewers for residential dwellings.

The City of Berkeley, with both houseboats and live-aboards in the City Marina, has incorporated rules and regulations over these vessels into the City code. The controls set out the specific requirements for sewage and graywater disposal for both the houseboats and live-aboards, as well as most other aspects of residential use of vessels.

In Marin County, the cities have taken the lead in regulating houseboats, live-aboards, and anchor-outs. Efforts to control and regulate the location, number, and construction of houseboats and live-aboards began in 1963 and continue to the present. Difficulties in enforcing City and County ordinances have prevented full application, but the City of Sausalito and the County are proceeding with enforcement of many elements of their codes, particularly regarding sewage connections for houseboats. The Richardson Bay Special Area Plan, currently being prepared by local governments and BCDC, will attempt to resolve enforcement issues.

Marin County has not authorized any houseboat marinas since 1970. However, the County is now considering authorizing a houseboat community at Waldo Point where houseboats and live-aboards are now moored without authorization. Other than this action, the County has not expressed any interest or need to authorize construction of additional houseboat marinas. The most important County requirement for new marina construction is for each houseboat to be connected to an on-land sewage system. The Public Works Department is inspecting houseboat marinas regularly to bring all units into compliance.

The most recent County activity was passage of an ordinance prohibiting anchor-outs in Richardson Bay without a County permit. The new ordinance, passed in August 1982, has not yet gone into effect. The County must first develop standards for reviewing applications for the County permits. The critical issues include disposal of sewage and graywater, and the enforcement of the ordinance.

In Sausalito, new marinas are currently limited to a small zone in one area of the shoreline. However, the City may study (1) new houseboat marinas north of Mono Street; and (2) converting ten percent of

berths in all existing marinas to houseboat berths. Although there are now no City funds for the study, the Art Zone hopes to fund one in the near future. Live-aboards are not allowed under the City's existing codes.

Sausalito recently passed an ordinance prohibiting mooring any boat in waters owned by the City for more than 48 hours without written consent of the City. Violation can result in a fine of up to $100. To date, this ordinance has not been enforced.

Mill Valley addresses houseboats and anchor-outs in its municipal code. The code prohibits the construction of houseboats or mooring of boats in the water areas in the city limits of Mill Valley for more than 24 hours without written permission of the City Council. To date, this law has not been enforced.

The City of Tiburon allows temporary mooring of houseboats and yachts for up to ten days. There are no provisions for large houseboat marinas since the maximum number of docks allowed at one site is six. The ordinance does not preclude small, six houseboat marinas.

The City of Belvedere has set out mandatory requirements for any houseboats located in the City. These include: each houseboat must be moored to a slip, wharf, or pier having right of access to a public road; the owner must own two off-street parking places near the slip; each houseboat must be connected to the city sewage system; and the location of houseboats is limited by the zoning ordinance of the City.

C. State Lands Commission

1. Holds Ungranted Bay Lands

The State Lands Commission (Lands Commission) holds all state retained tide and submerged lands and may lease and license uses on those lands. Any authorized uses and work must be consistent with the McAteer-Petris Act and the Bay Plan.37/ The Lands Commission may fix and collect reasonable charges or rentals for the use of such lands. Knowing and willful filling, dredging, or reclamation of state-owned lands underlying any navigable waters, or erecting, maintaining, removing, or altering any structure on such land without written authorization from the Lands Commission is a violation which the Lands Commission may correct.

2. Reviews Local Management of Granted Lands

The Lands Commission is also charged pursuant to various laws with reviewing local governmental management of granted tide and submerged lands.38/ Such lands must be used for public purposes and substantial improvements as described in the grant language must take place. The Lands Commission can make findings that substantial improvements have not taken place which can effect a transfer of the lands back to the state.

In reviewing leases for marinas on granted lands that propose to include live-aboards, the Lands Commission applies the following criteria39/:

a. The leased area must be a relatively small portion of the total water area in the harbor, bay, or marina that is otherwise available for public trust purposes.

b. The lease may not constitute an interference with or inconvenience to commerce, navigation, fisheries, or related public trust purposes such as recreation.

c. The term of the lease must be no longer than that period of time during which the leased area will not be needed for trust purposes, and the lease would be terminable under provisions which are reasonably exercisable by the Lands Commission to the local grantee.

d. The location of the leased area must be compatible with existing and contemplated harbor facilities.

e. Any improvements to be erected in the leased area must not be so permanent or expensive as to create irreversible changes in the area, and could be easily removed.

f. No significant detrimental environmental impact would result.

3. Co-Trustee of Public Trust for the Bay

The Lands Commission also acts as a co-trustee of the public trust lands in the Bay. While both BCDC and the Lands Commission have the power to limit public and private uses of trust lands, only the Lands Commission has the power to exercise the public trust affirmatively for the implementation of public projects on trust lands. Recently, for example, the Lands Commission declared that Albany Bay (claimed to be privately owned) was needed for trust purposes for wildlife habitat, public recreation, and open space.40/

D. State Water Resources Control Board and Regional Water Quality Control Board

1. Regulates Waste Discharges

As pointed out earlier, the most significant and long-standing impact associated with existing houseboats and live-aboards is the discharge of pollutants, primarily sewage and graywater, into the Bay. While many boat owners believe that only a small degradation results from small boat

discharges in comparison to discharges from outfall pipes, large vessels, naval vessels, and other sources of sewage and pollution, impacts can nonetheless be significant in enclosed basins, shallow bays and inlets with poor circulation such as Richardson Bay. It is estimated that approximately 365 million gallons of untreated wastewater enter the San Francisco Bay yearly, most of which comes primarily from wet weather overflows, but approximately four percent (14.6 million gallons) comes from houseboats and live-aboards41/. While the volume appears small in comparison with the overflows, it is the second largest single source of water pollution in the Bay, it occurs year-around, including the summer when dilution is poor, and it usually occurs in enclosed basins and bays that receive poor flushing action.

The State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB) generally have authority to control discharges into San Francisco Bay. In San Francisco Bay, the Legislature has prohibited discharges in all marina basins 42/ and the RWQCB has prohibited municipal waste discharges in Richardson Bay43/. Although the discharge of untreated sewage from any source, including anchor-outs, is prohibited in marina basins and Richardson Bay, there is limited funding and staff for enforcement. The SWRCB and RWQCB do not have authority to regulate directly liquid galley, shower, or bath waste (graywater). These wastes can only be controlled by cities and counties.

Discharges are controlled through requirements set by RWQCB under Section 402 of the Clean Water Act, a federal law, and under state law, the Porter-Cologne Act. NPDES permits (called "waste discharge requirements" in California) are required for solid waste; sewage; munitions; chemical waste; biological materials; radioactive materials; heat; and industrial, municipal, and agricultural waste discharged into navigable waters, and into "waters of the United States" within the states' jurisdiction. The RWQCB issues permits, or waste discharge requirements, using effluent limits and water quality plans established pursuant to the Clean Water Act and the Porter-Cologne Act.

Permits issued by RWQCB cannot require specific water quality control measures be implemented by the discharger, only that the discharged effluent meet certain water quality standards. Due to this limitation local governments and BCDC might be better able to control waste discharges and to require mitigation for unavoidable impacts than the Board. For instance, the Board has no authority to control how marina basins are designed and therefore cannot assure that breakwaters will allow adequate water circulation. BCDC can address these issues when applications are submitted. Similarly the Board cannot require specific types of facilities on houseboats and live-aboards for the collection and transportation of sewage and graywater. Local governments have authority to adopt ordinances to require graywater collection and specific sewage facilities.

In cases where discharges are particularly harmful, federal law also allows water quality agencies of the states such as the RWQCB to prohibit the discharge of both treated and untreated sewage. To do this, however, the Secretary for Transportation must first be able to determine that "adequate facilities for the safe and sanitary removal and treatment of sewage from all vessels are reasonably available for such water to which prohibition would apply."44/ After a positive determination, a regulation completely prohibiting discharge of treated and untreated sewage could be added to Department regulations. The prohibition does not apply to graywater.

2. Discharges from Houseboats

In 1970 when houseboat discharges were found to be a detriment to the health, safety, and welfare of the people of the state, the RWQCB was charged with insuring proper regulation of discharges from houseboats.45/ In its 1981 report of Survey of Vessel Waste Discharges, the RWQCB still found several areas of the Bay with high levels of pollution caused by houseboat and live-aboard discharge wastes. These areas include Marin County (Waldo Point, Yellow Ferry, and Kappas Small Boat Marina), Sausalito (Napa Street Pier), San Jose (Alviso Marina and Slough), and Redwood City (Redwood Creek).

Due to these findings, the RWQCB staff has great concerns regarding houseboat and live-aboard sewage and graywater discharges into the Bay. The RWQCB staff believes approximately 70 percent of total waste from noncommercial vessels in the region comes from unsewered live-aboards and houseboats. Because of the problems associated with the use of pump-out facilities, RWQCB staff believes the RWQCB should seek the connection of houseboats to shoreline sewer facilities with almost no exceptions. The RWQCB staff believes provisions of sewer service to houseboats and live-aboards is both technically and economically feasible, especially given that most marinas are already providing water and electrical service to berths. To date, the Regional Board has not established a policy based on these RWQCB staff concerns.

The RWQCB can indirectly control graywater and other discharges by requiring local governments to adopt ordinances when graywater discharges are harmful to water quality. Each regional board must investigate its region to determine areas where houseboat discharges are inadequately regulated by local ordinance. In problem areas, the RWQCB notifies affected cities and counties and recommends provisions to control houseboat discharges. The local governments have 120 days to adopt an ordinance for control of discharges of waste. If no ordinance is adopted or if the adopted ordinance is insufficient, the RWQCB may adopt regulations to be enforced by the local government. To date the RWQCB has not notifed any local governments in the Bay Area that ordinances are required.

3. Pump-out Facilities

Under the Harbors and Navigation Code46/, the SWRCB can require any private or public marina to provide convenient and accessible sewage retention device pump-out capability. Each RWQCB is to determine need for pump-out facilities in its region based on the number of vessels with sewage retention devices requiring pump-out facilites and the location of marinas in the area.

Guidelines47/ for selection of pump-out sites state that public marinas should be considered first. If there are no public marinas in the area, the RWQCB considers the following factors regarding private marinas: (1) availability of private marinas with pump-out facilities not available to the general public; (2) priority to marinas with fuel docks; (3) the number of vessels with sewage retention devices berthed at each marina in the area; (4) the depth of water required for the vessels that will be using the pump-out facilities; and (5) the expense of installing a pump-out facility and access to a means of disposing of or treating the sewage.

In the San Francisco Bay Area, the Regional Board has not had to use these guidelines to require installation of pump-out facilities as part of new or expanded marina projects.

E. Federal Agencies

1. United States Army Corps of Engineers

a. Section 10 Permits for Houseboats

The Corps regulates activities in waterways under two laws48/ and implementing regulations but only the Rivers and Harbors Act applies to structures in or on waterways within the Corps' jurisdiction. Section 10 of the Rivers and Harbors Act prohibits construction of certain structures in or affecting navigable waters of the United States unless a Corps permit is obtained. The regulation definining structure49/ includes any "... permanently moored floating vessel...other permanent or semi-permanent obstacle or obstruction...." The courts have interpreted this to mean that a houseboat only becomes a structure requiring a Section 10 permit if it is permanently moored50/.

By internal memo51/, the San Francisco Corps office has set up criteria to determine when a vessel is permanently moored and thus needs a Corps permit. The criteria include: (1) the length of time the vessel has been moored and how long it will likely be moored in the future; (2) how the vessel is attached to the mooring, e.g. typical, easily detachable chains and anchors or larger and more solidly connected chains, etc; (3) the types of electrical, water, or sewage hook-ups -- temporary or heavy duty of permanent or semi-permanent nature; (4) whether the vessel is grounded in mud

or sand; (5) whether the use of the vessel is for functions normally characteristic of structures built on shore, such as full-time residence; and (6) whether the vessel lacks self-propulsion, evidence of an intent to leave it in place. Typical houseboats in the Bay would generally be considered structures, but live-aboards, including anchor-outs, would not.

To date the Corps has permitted some houseboat marinas but has issued no permits for houseboats in the Bay, and it appears that a substantial number are permanently moored without a Corps permit. Of these some were moored prior to December 18, 1968, and to not require Corps permits because a nationwide permit authorized moorings up to that date. Few enforcement actions have been brought probably because of the cost of such actions and administrative difficulties. However, abatement procedures and fines are available to the Corps for violations.

In deciding whether to issue a permit, the Corps determines whether the project is in the public interest. For large or controversial projects, the Corps holds a public hearing and solicits comments from state and local agencies with jurisdiction and other agencies with expertise, as well as from the public. Under the Corps' general policy an approved project should: (1) provide public benefits that outweigh forseeable detriments; (2) not unnecessarily alter or destroy wetlands; (3) conserve wildlife; (4) be consistent with water quality standards; (5) protect historic, scenic, and recreational values; (6) not interfere with adjacent properties or water resource projects; (7) comply with approved coastal zone management programs such as the Commission's law and policies; and (8) be consistent with other state and local plans and policies.52/

b. Section 404 Permits for Disposal of Dredged Materials

The Corps also administers a permit program pursuant to the Clean Water Act53/ which requires permits for the deposition of dredged material. A "Section 404" permit is required for spoils disposal.

c. Removal of Navigation Hazards

Generally the Corps enforces the federal law that prohibits obstructions in navigable channels.54/ Before this authority may be exercised, the channel must be officially established by Congress.55/ Thereafter, vessels, including live-aboards and houseboats, that are placed in such channels may be removed if, in fact, they prevent or obstruct the passage of other vessels. This presents a factual determination that can be resolved only on a case-by-case basis. If a vessel is an obstruction to navigation, the owner is responsibile for removing the vessel. Failing such removal, the United States may do so.

In Richardson Bay, the only congressionally established channel extends from Raccoon Straits up Richardson Bay to the Corps' Bay model just north of the Sausalito city limits. The channel is 300 feet wide and marked by buoys.56/ As Richardson Bay is quite shallow and much frequented by commercial and recreational craft, keeping the marked channel free of moored vessels is probably necessary to assure safe navigation for all mariners. Most anchor-outs now in Richardson Bay are not in the congressionally authorized channel; they are located north of it. If navigational needs were established, the channel could be extended northerly but this would require congressional action57/ and also involves budgeting federal funds for channel maintenance and marking.

2. United States Coast Guard

a. Establishing Anchorages

The Coast Guard establishes anchorages58/ where boats may be safely moored. The purpose of the anchorage is to protect navigation, however, so it, for the most part, cannot be used to preclude houseboats or live-aboards except in those locations where harm to navigation can be shown. The Coast Guard will, however, annotate the anchorage regulations to indicate any local restrictions on mooring that may apply. Except for fairways used by all vessels in the Bay, boats may moor within general and special anchorages without limitation on specific location or length of stay. General anchorages cover most of the Bay, including the South Bay, East Bay, Honker Bay, and Grizzly Bay. Richardson Bay is designated a special anchorage particularly suitable for mooring vessels because it is well removed from fairways and is located where general navigation will not endanger or be endangered by vessels. Houseboats and live-aboards may moor anywhere in a general or special anchorage.

The Coast Guard may also include notes about local or state rules affecting mooring of vessels. For Richardson Bay, the Coast Guard has placed a note about the City of Sausalito's mooring ordinance which forbids mooring at Dunphy Park without written consent from the City58. But the note is only informative; the City is responsible for enforcement.

b. Certification of Boat Toilets

The Coast Guard is also responsible for certifying acceptable marine sanitation devices (MSDs) and for assuring that vessels with heads (toilets) have approved devices59. The regulations do not apply to graywater, bilge water or other wastes, only sewage. In the Bay most live-aboards have heads60. The Coast Guard approves three types of MSDs:

> Type I MSDs macerate and disinfect the sewage with either chlorine or formaldehyde. The cycle usually lasts two to three minutes. Some systems treat and discharge each flush individually, while others treat a batch of flushes before discharging.

Type II devices are biological-chemical systems; bacteria aerobically digest the sewage and then the sewage passes over chlorine tablets to disinfect it.

Type II MSDs transport the sewage to a holding tank where it is held until it can be pumped out. Usually some sort of biocide-deodorant is added to the holding tank to reduce gas and odor production.

The typical cost for purchase and installation of either Type I or II devices is between $1,000 and $1,200. Annual operating costs average about $40, mostly for the chemical disinfectant. Costs for purchase and installation of a Type II system are $250 to $400. Operating costs are between $10 and $50 a year for pump-out fees and odor controlling chemicals.

Federal law specifically prohibits any state or local government from adopting or enforcing their own laws regarding the design, manufacture, or installation of MSDs. While the state and local governments may not provide for different types of MSDs, they can prohibit discharges that harm the Bay.

To assure compliance, the Coast Guard can board and inspect boats and fine owners if boats do not comply. Unfortunately, the Coast Guard budget has been diminished greatly in the last few years and the Coast Guard has been unable to conduct inspections except as part of other boarding operations. No fines have ever been issued for violations of waste discharge requirements. Although violators are liable for a civil penalty of up to $5,000 for each sale of an unapproved MSDs or for removing or rendering inoperative an MSD, no cases have been brought and no fines levied. Fines of up to $2,000 per violation can be levied for operating a boat not properly equipped. It is unlikely that an inspection program will be funded; installation of MSDs is left to the goodwill and judgment of individual boat owners.

CHAPTER V: CONCLUSIONS AND PROPOSED FINDINGS AND POLICIES

A. Conclusions

Except under very limited circumstances, vessels used for residential purposes are not permittable in San Francisco Bay; they are generally not consistent with public trust needs for the Bay nor are they a water-oriented use for which fill may be allowed pursuant to the BCDC law. However, a few additional houseboats and live-aboards may be allowed if they are part of a project involving a small amount of fill for improving shoreline appearance or for providing public access; if the residential use is short-term; and if they are located on private tidelands and submerged lands or, if on public lands, are part of a larger trust project to which they are incidental.

Houseboat and live-aboards and marinas associated with them have substantial adverse impacts on the Bay. One of the greatest impacts is the release of sewage and graywater into the Bay. This impact can be avoided through assuring that all vessels used residentially are continuously connected to a shoreline sewer system when the vessel is moored at a marina. The responsible use of a holding tank and pump-out facility can also prevent water pollution; however, holding tanks are a less secure method than direct connections to sewer lines because the occupant may empty the tank into the Bay rather than use an approved pump-out facility. Other adverse impacts associated with houseboat and live-aboard marina construction and maintenance are undesirable changes in sedimentation locations and rates, adverse impacts on fish and wildlife and water quality due to dredging, and fill. Many of these impacts can be reduced by avoiding unsuitable sites, thorough analysis of all relevant physical conditions, and well engineered designs for new marina structures. Impacts on public access, including views, are often detrimental but design professionals can develop plans that alleviate adverse impacts and at some locations shoreline appearance can be improved and new or better public access added. The most serious conflict posed by houseboats and live-aboards is the use of tidelands and submerged lands that are needed for other trust purposes. Little can be done to reduce this impact.

Local government and state agencies have sufficient authority to assure that houseboats and live-aboards are located in suitable areas, do not significantly impact the Bay, meet current waste disposal requirements, and meet safety and health standards. But enforcement is difficult, costly and time-consuming.

The Commission has primary responsibility to assure that houseboats and live-aboards and associated marina facilities meet the requirements of the BCDC law and the public trust. Existing BCDC permit authority and enforcement responsibility is sufficient to assure that unauthorized vessels and structures meet state standards. The Commission can also support the Regional Water Quality Control Board waste discharge requirements and water quality objectives for the Bay through permit conditions recommended by the Board that assure that waste is not deposited in the Bay.

Local governments, particularly Sausalito and Marin County which have jurisdiction over the area where most housebosts and many live-aboards are located, also have sufficient authority to assure that houseboats and live-aboards are not moored inconsistently with the public trust and that those few that are permissible meet health and safety standards. To assure that restrictions on residential uses in the Bay imposed by the trust, the BCDC law, and the requirements of the RWQCB are widely known, local governments should enact and enforce specific houseboat and live-aboard ordinances. Such ordinances should establish standards for appropriate mooring locations, collection of sewage and graywater, parking, and similar matters. The ordinances should also assure that anchor-outs, which cannot be feasibly connected to sewer systems and which often occupy areas most needed for public trust purposes, will be relocated to existing marinas or otherwise removed from offshore locations.

B. Tentative Findings

1. Houseboats and live-aboards, including anchor-outs, are vessels used by people for typical residential purposes, such as cooking, sleeping, and washing. They include vessels used infrequently for residential purposes.

2. Houseboats and live-aboards have been part of the Bay environment since the 1880's. Only a few Bay Area residents occupy houseboats and live-aboards; the vessels constitute and extremely small part of the Bay Area housing stock. While modern houseboats and live-aboards that meet current safety codes are fairly expensive to build and moor, there will likely be a continuing demand particularly as housing costs on land rise.

3. Houseboats and live-aboards adversely impact the Bay, particularly when pollutants are discharged, sedimentation patterns and rates are altered in a manner that harms fish and wildife or water quality, dredging is frequent or involves polluted muds, or fill is added. Houseboat marinas also compete for sites needed for future recreational boat berths, other recreational activities, open space, and wildlife habitat.

4. Houseboats and live-aboards have conflited with local, state, and federal laws due to unauthorized mooring and violations of health, water quality, and safety standards. Tall, bulky houseboats may also adversely impact public access, particularly views of the Bay. Impacts can be reduced by careful siting, design, and reconstruction of marinas and by requiring connection to utilities at existing marinas.

5. The public trust places severe legal restrictions on residential use of tidelands and submerged lands subject to the trust. Residential use of privately owned tidelands and submerged lands subject to the trust can only take place if the residential use is not inconsistent with other trust needs, such as wildlife habitat or recreation, and if the area can readily be made available for recognized trust purposes should the need arise in the future. Additional restrictions apply to state-owned lands or lands granted to local governments by the state. In those situations, the residential use must also be consistent with any restrictions in the state grant and be in furtherance of a statewide public purpose.

6. Although responsibility for the regulation of houseboats and live-aboards is vested in different governmental agencies, thereby making coordination difficult, sufficient regulatory authority exists to control adequately houseboats and live-aboards moored at marinas. There is greater uncertainty concerning the degree of control federal, state and local agencies can exercise over anchor-outs. The most difficult aspect of all houseboat and live-aboard regulation, however, is the time consuming and expensive nature of enforcement.

C. Proposed Policy

Vessels used for residential purposes, such as houseboats and live-aboards, should not be permitted, except that a limited number of additional houseboats or live-aboards may be moored and minor additions of berths at existing houseboat or recreational boat marinas may be permitted only if the project:

1. Would be on privately-held lands not currently needed for trust purposes, such as for boating, fishing, recreational marinas, wildlife habitat, and open space, or would be a small part of a large project on public lands, predominately devoted to trust purposes to which the vessels would be incidental, and both the vessels and the larger project would serve a statewide purpose;

2. Would not have a significant adverse affect on the Bay, such as by interfering with valuable fish and wildlife habitat, causing a harmful amount of, or change in, the rate or pattern of sedimentation, or degrading water quality;

3. Would meet all waste discharge requirements established by the Regional Water Quality Control Board and provide recommended sanitation and wastewater facilities;

4. Would require no fill except for the vessels, a pedestrian dock on pilings, shoreline improvement or public access, and such fill would meet the requirements for minor fill for improving shoreline appearance or for providing new public access;

5. Would be sited to float at all stages of the tide, to allow light penetration to the Bay bottom, to enhance views from the shoreline, and to provide substantial area and improvements for public access to the Bay and shoreline;

6. Would comply with local plans, zoning, and a specific ordinance that establishes enforceable standards for suitable mooring locations, graywater collection, necessary utilities, building standards, periodic monitoring and inspection, and termination of the residential use when the lands are needed for trust purposes; and

7. Would be limited in cost and duration so that the tidelands and submerged lands used would be released for water-oriented uses and trust needs at such time as the Commission determined and, in no case, would the initial or any subsequent period of authorization exceed five years.

D. Impact of the Proposed Policy

This section discusses matters required by Commission Regulations (Section 10811) to ensure that the Bay Plan amendment process is the "functional equivalent" of an environmental impact report. The Commission Regulations require that the Executive Director's report to the Commission review and discuss: (1) the effects of the proposed change; (2) the consistency of the change with the McAteer-Petris Act; (3) the environmental impacts of the change; (4) alternatives to the proposed change; and (5) the benefits and mitigation for which the change provides.

1. Effects of the Proposed Change to the Bay Plan

The major effect of the Bay Plan change would be to reduce the potential for fill in the Bay for residential purposes--houseboats and live-aboards--by limiting the locations and conditions whereupon such vessels could be moored. While some small numbers of additional vessels could be allowed, they could not interfere with other public trust uses including boating, fishing, recreational marinas, wildlife habitat, open space, etc. Environmental impacts associated with these uses, including water pollution, increased sedimentation, and shading, would be minimized by limiting the mooring of vessels for residences and by requiring stringent regulations at the local government level.

The proposed change could have important short-term and long-term effects on the small number of Bay Area residents who currently live on boats. The short-term impacts might include increased enforcement of existing local codes, competition for authorized berths for vessels used as residences, increased number of boats anchored-out in the Bay, minor increased competition for land based housing, higher costs for mooring spaces, and lessening the value of boats that do not have an authorized mooring location. Long-term

impacts may include enhanced water quality in areas of the Bay currently identified as polluted, decreased competition between recreational and residential vessels for berthing, and decreased impacts of shading. The limited duration authorization (e.g. five year permits) would, in the long-term, discourage construction of marinas for residential uses unless they could also serve recreational boating. However, construction of sewage and graywater facilities for houseboats would tend to encourage long-term continuation of the houseboat and live-aboard use.

2. Consistency of the Proposed Change with the McAteer-Petris Act

The proposed change must be consistent with the McAteer-Petris Act which allows fill for nonwater-oriented uses such as houseboats and live-aboards only if the fill is minor and the project is for improving shoreline appearance or adding new public access to the Bay. Fill for water-oriented uses, such as recreational boating, may be allowed and a few houseboats or live-aboards needed for security could be approved as a small part of a recreational marina. In addition, any fill for residential uses would be on privately-owned lands not currently needed for trust purposes or on publicly-owned lands which are predominantly used for trust purposes; would have no upland alternative, would be the minimum necessary; would minimize impacts on volume, surface area or circulation of water, water quality, fertility of marshes, or fish or wildlife resources; would protect public health, safety, and welfare; and, where feasible, establish a permanent shoreline.

3. Environmental Impacts

a. Summary of Possible Adverse Environmental Impacts

The proposed change to the Bay Plan, limiting and restricting houseboats and live-aboards, although intended to decrease water pollution and avoid other environmental effects, could, nevertheless, result in some adverse environmental impacts. Possible adverse impacts would include those associated with any marina-type projects: placement of floating, pile-supported, and solid fill in the Bay; dredging; reduction of water quality and water circulation; conflicts with other shoreline uses; and possible impacts on existing housing.

Placement of all types of fill can have serious adverse impacts on the Bay system including habitat destruction, water pollution, and air pollution. Fill for docks, and the resulting boating activity, can adversely affect sensitive wildlife, such as the harbor seal. Floating and pile-supported fill may cause enough shading to affect water temperatures and may also increase localized sedimentation. The proposed changes would minimize the amount of fill allowable for facilities.

Dredging, part of every marina project, would occur because the policies encourage marina development and maintenance. At the time of dredging, short-term adverse effects may include release of pollutants, creation of localized turbidity, and destruction of bottom habitat. The revised policies would lessen these impacts by discouraging construction at sites with high sedimentation rates and by encouraging marinas to locate at sites requiring maintenance dredging only at long-term intervals.

Water quality at marinas can be reduced through placement of fill, interruption of natural water movement, and increased surface runoff entering the Bay. Pollutants, including gas, oil, heavy metals, sewage, and greywater, can enter the Bay as a result of facility operation or accidents.

Some slight impact on the Bay Area housing market may result as boat dwellers become land dwellers. Competition for vacant units may increase, thus contributing to a possible increase in price. The affected group, however, is very small and would not significantly affect the existing situation of competition for housing, particularly rental units.

b. Alternatives to the Proposed Change

There are several alternatives to the proposed houseboat and live-aboard policy changes: (1) continue existing policy (see page 29 of this report); (2) indicate by site where future houseboats and live-aboards may be moored; (3) limit the size and shape of vessels used for residential purposes; (4) allow more than five year periods of authorization; or (5) prohibit future houseboats and live-aboards and phase out existing ones over time.

Continuation of the existing policy could result in requests for significant future fill in the form of marina facilities and permanently moored vessels. Large scale use of the Bay for residential purposes is inconsistent with public trust needs for the Bay, such as for recreational boating, open space, wildlife habitat and water-oriented recreation. Additional adverse environmental impacts would also result (shading, resting on the bottom, dredging etc). Existing policy would also lead to conflicts between the various agencies that administer the trust. Lastly the existing policy does not clearly reflect the limitation of fill in the McAteer-Petris Act to water-oriented uses. Thus, existing policy is to some extent misleading to applicants and the public.

Adding map notes indicating where and how many houseboats and live-aboards may be moored would require a analysis of all possible Bay sites. Site identification did not prove helpful in indicating where recreational marina facilities were actually built. The analysis also requires large resources that may not be warranted. Developers usually prefer criteria for work and uses rather than a restricted listing of suitable sites. Listings often cause land price increases unrelated to actual market conditions.

Size and height standards for houseboats and live-aboards could be adopted to limit adverse impacts on public access and views. However, the Commission has been reluctant to adopt fixed standards because local government often has standards or preferences and broader authority. The Design Review Board has advised the Commission that it is difficult, if not impossible, to adopt guidelines that will assure sound design. The shoreline around the Bay varies widely and there are a large number of possible designs. The Board has felt that designers should be given freedom to address particular sites and projects and that design excellence can be better achieved through design review.

Rather than the proposed five year limit for new houseboat and live-aboard moorings, a longer term could be allowed. However, whatever term is selected must assure that the area can be released within a reasonable time when public trust needs for the area are identified. The five-year period will reduce substantially the interest of marina developers unless the marina can be designed to be easily converted to recreational boat berths. Developers would likely prefer periods of 20 or more years but such a long term may not be consistent with the public trust.

Prohibition of houseboats and live-aboards--fill for residential purposes—is consistent with both the McAteer-Petris Act and the public trust but may not be reasonable under the existing conditions. Some recreational marinas that may need the security that can result from live-aboards or houseboats moored among recreational boats would not be able to use live-aboards and houseboats. In some areas of the shoreline, the only likely way to improve shoreline appearance and provide new or better public access may be to allow houseboats and live-aboards as an enticement. Elimination of existing houseboats and live-aboards would dislocate existing residents and place minor additional burdens on land housing; however, removal of existing houseboats and live-aboards would also increase recreational boating opportunities and make tidelands available for other trust purposes..

c. Public Benefits and Mitigation

Under the provisions of the proposed change, the public would benefit from increased protection of public trust uses and enhanced water quality. More attractive public access, improvement of shoreline appearance, and better quality recreational marinas would also likely result. Offsetting mitigation may be required for any fill although BCDC generally does not require mitigation for floating fill such as piers, docks, gangways, etc.

NOTES

1/ California Regional Water Quality Control Board, San Francisco Bay Region, Vessel Waste Discharge Survey, 1981.

2/ Art Zone, Residential Survey of the Sausalito Waterfront, 1981.

3/ California Regional Water Quality Control Board, San Francisco Bay Region. Vessel Waste Discharge Survey, 1981, p. 31.

4/ California Regional Water Quality Control Board, San Francisco Bay Region, Vessel Waste Discharge Survey, 1981, p. 31.

5/ California Regional Water Quality Control Board, San Francisco Bay Region, Vessel Waste Discharge Survey, 1981, p. 31.

6/ California Regional Water Quality Control Board, San Francisco Bay Region, Vessel Waste Discharge Survey, 1981, pp 3-4.

7/ BCDC Permit Nos. 4-71, 5-71, 6-71, 14-73, 7-76, and 26-76.

8/ California Regional Water Quality Control Board, San Francisco Bay Region, Vessel Waste Discharge Survey, 1981, Appendix A.

9/ City of Berkeley, Status Report on Live-aboards, April, 1982.

10/ Harbors and Navigation Code, Section 775, et seq.

11/ Department of Fish and Game, Letter to BCDC dated July 14, 1983.

12/ Regional Water Quality Control Board, Letter to BCDC dated July 14, 1983.

13/ Final Composite Environmental Statement: Maintenance Dredging, 1975, Table I-2, Plate I-2.

14/ San Francisco Bay Conservation and Development Commission, Waterfront Housing, 1967, p. 8.

15/ San Francisco Bay Conservation and Development Commission, Staff Report on Recreational Boating Facilities, 1982, p. 3.

16/ San Francisco Bay Conservation and Development Commission, Staff Report on Recreational Boating Facilities, 1982, p. A-2.

17/ California Regional Water Quality Control Board, San Francisco Bay Region, Vessel Waste Discharge Survey, 1981, p. 4.

18/ City of Berkeley, Status Report on Live-aboards, April, 1982.

19/ City of Berkeley, Status Report on Live-aboards, April, 1982.

20/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 56.

21/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 2-3.

22/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 3.

23/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 22.

24/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 13-14

25/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 7.

26/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 61-62.

27/ California Constitution, Article XVI, Section 6.

28/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 59.

29/ Government Code, Section 66632.

30/ California Administrative Code, Ch. 14, Section 10443.

31/ California Administrative Code, Ch. 14, Section 10444.

32/ San Francisco Bay Plan, page 31.

33/ Health and Safety Code, Section 4432.

34/ Harbors and Navigation Code, Section 660.

35/ Harbors and Navigation Code, Section 7152.

36/ Marin County Code, Chapter 11.22.

37/ Letter from George Deukmejian, N. Gregory Taylor, Dennis Egan, and Kathleen Mikkelsen to Michael B. Wilmar, dated April 28, 1982, p 3.

38/ Public Resources Code, Section 6374.

39/ William F. Northrop, State Lands Commission, Letter to Senator Dennis E. Carpenter, dated January 10, 1983.

40/ State Lands Commission, Meeting of October 28, 1982.

41/ Staff, Regional Water Quality Control Board.

42/ Health and Safety Code, Section 4431.

43/ Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Abstract, 1974, page 55.

44/ 33 USC, Section 1322.

45/ Water Code, Section 13900, et seq.

46/ Harbors and Navigation Code, Section 2831.

47/ California Administrative Code, Title 23, Section 2834.1

48/ 33 USC, Section 403 (referred to also as Section 10 of the Rivers and Harbors Appropriation Act of 1899).

49 33 CFR, Section 322m 2(b).

50/ U. S. v Boyden, Docket No. 81-4553 U. S. Court of Appeals, Ninth Circuit, Decided January 10, 1983.

51/ Procedure Memo No. 12, April 14, 1977.

52/ 33 CFR, Section 320.4.

53/ 33 USC, Section 1344.

54/ 33 USC, Section 409.

55/ 33 CFR, Section 209.190.

56/ CN 7-80.

57/ 33 CFR, Section 209.190.

58/ 33 USC, Section 471.

59/ 33 CFR, Section 110.126(a).

60/ 33 USC, Section 1322.

61/ California Regional Water Quality Control Board, San Francisco Bay Basin, Vessel Waste Discharge Survey, 1981, p. 20.

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