Action Plan III: Marinas and Boating

Water Quality Protection Program for Monterey Bay National Marine Sanctuary

Origin and Purpose

This document presents the third of a series of action plans for the Water Quality Protection Program (WQPP) for Monterey Bay National Marine Sanctuary. The WQPP addresses a key provision of the Memorandum of Agreement (MOA) signed by eight federal, state, and local agencies—that they work together to develop a water quality protection plan for the Sanctuary. The MOA was adopted in 1992 when Congress and the President established the Monterey Bay National Marine Sanctuary. It was created in recognition of the need for an ecosystem-based watershed management program to ensure protection of the Sanctuary's unique resources.

Signatories to the Agreement are: the National Oceanic and Atmospheric Administration; the U.S. Environmental Protection Agency, Region IX; the California Environmental Protection Agency; the California State Water Resources Control Board; the San Francisco Regional Water Quality Control Board; the Central Coast Regional Water Quality Control Board; the California Coastal Commission; and the Association of Monterey Bay Area Governments.

About This Document

This document outlines a set of strategies proposed to address potential water quality problems resulting from activities occuring in and around marinas and boating. References to institutions and their roles in implementing this plan are proposals put forth by the multi-agency planning team. Ultimate authority to proceed and implement any of these proposed strategies remains with the institutions themselves.

For More Information

For more information on the Water Quality Protection Program please contact:

Director, Water Quality Protection Program
Monterey Bay National Marine Sanctuary
299 Foam Street, Suite D
Monterey, CA 93940
Tele: (408) 647-4247
Fax: (408) 647-4250

Contents

Water Quality Protection Program Committee

Federal

U.S. Department of Commerce, National Oceanic and Atmospheric Administration
U.S. Environmental Protection Agency
U.S. Department of Agriculture, Forest Service
U.S. Department of Agriculture, Natural Resources Conservation Service
U.S. Department of Transportation, Coast Guard
U.S. Department of Defense, Army Corps of Engineers

State of California

California Coastal Commission
California Environmental Protection Agency
Department of Fish and Game
State Water Resources Control Board
San Francisco Regional Water Quality Control Board
Central Coast Regional Water Quality Control Board
California Resources Agency
Elkhorn Slough National Estuarine Research Reserve
University of California Sea Grant Extension Program

Local Agencies

Association of Monterey Bay Area Governments
Monterey County Agricultural Commissioner
Monterey County Department of Parks and Recreation
Monterey County Planning and Building Inspection
San Mateo County Planning
Santa Cruz County Planning
Santa Cruz County Environmental Health Services
Santa Cruz Port District
San Luis Obispo County and Council of Governments

Other Organizations

Center for Marine Conservation
Elkhorn Slough Foundation
Monterey County Hospitality Association
Monterey Fishermen's Marketing Association

Marinas and Boating Strategies Additional Participants

The following agencies, organizations, and businesses participated with WQPP committee members in a series of workshops to develop the Marinas and Boating strategies.

C-Care
City of Monterey - Monterey Harbor
Down Under Dive Service
Elkhorn Yacht Club
Fluid Systems
Gravelle's Boatyard
Harbor Marine, Santa Cruz
Monterey Bay Boatworks
Monterey County Environmental Health
Moss Landing Commercial Fisherman's Association
Moss Landing Community Organization
Moss Landing Harbor District
San Mateo County Environmental Health
San Mateo County Harbor District, Pillar Point
Santa Cruz Port District
Save Our Shores

Executive Summary

Program Overview

The Water Quality Protection Program (WQPP) for the Monterey Bay National Marine Sanctuary is an interagency effort to enhance and protect the Sanctuary's physical, chemical and biological resources. The program implements a key provision of the June 1992 Memorandum of Agreement (MOA) signed by eight federal, state and local agencies as part of Sanctuary designation — that they work together with the local community to develop a plan to protect the Sanctuary's unique resources.

An ecosystem-based, watershed management program is being developed to address a number of issues that relate to Sanctuary water quality. These include urban runoff, marina and boating activities, agricultural activities, point sources, and surface water management. The program is bringing together resource managers, scientists, business persons and public groups to develop consensus on water quality problems and realistic solutions.

This document represents Action Plan III, and includes detailed recommendations for addressing water quality issues associated with marinas and boating. Action Plan I identifies priority strategies to address water quality problems associated with urban runoff. Action Plan II identifies strategies for regional monitoring, data access, and interagency coordination. Other issues will be undertaken in subsequent action plans.

Problems Addressed in This Action Plan

Contaminants associated with marinas and boating activities include toxic metals, petroleum hydrocarbons, bacteria, nutrients and marine debris. Important goals for reducing pollutant loadings from these sources include: 1) reducing and preventing habitat and resource degradation within harbors, sloughs and estuary waters; 2) reducing costs associated with disposal of contaminated materials dredged from harbor bottoms; and 3) ensuring protection of recreational opportunities and human health.

Process for Developing Strategies

This document describes seven priority strategies for addressing water quality problems associated with marinas and boating activities in the region. These strategies were developed by an interagency Project Development Team for the WQPP with assistance from a wide array of participants (Appendix A and B). The WQPP also worked closely with the AMBAG Harbors Best Management Practices Project for Monterey and Moss Landing Harbors. The major steps used in this process are described below.

Develop Background Information

Various efforts to characterize water quality conditions in the region have been conducted during the process of plan development. Regional water quality problems were initially identified and prioritized at a 1994 WQPP Workshop, attended by approximately 120 of the region's water quality experts (NOAA, 1994). Participants included representatives of federal, state and local government agencies, businesses, nonprofit groups, and the scientific community. A second water quality conditions report (NOAA, 1995) was produced later in the process to compare results from the 1994 WQPP workshop with State water quality data.

WQPP staff and committee members also surveyed government agencies with various existing water quality programs, to provide background information that would allow the plan to utilize and coordinate with existing efforts. Currently there are approximately 30 federal, state and local government programs that address activities related to marinas and boating. Information was gathered on the scope and relative success of the programs, the types of pollutants and problems addressed, and agency or program needs.

Gather Recommendations

Participants at the 1994 workshop also identified approximately 90 preliminary strategies to address water quality problems. This information was one source of ideas for developing marinas and boating strategies, in addition to strategies for the other four WQPP issue areas. Ideas for marinas and boating strategies were also derived from meetings of the Technical Advisory Committee of the AMBAG Harbor Best Management Practices Project, and from the Marinas and Recreational Boating Technical Advisory Committee Report prepared for the State Water Resources Control Board and the California Coastal Commission. Recommendations from these sources were then synthesized and compiled into a 56-page workshop report entitled Marinas and Boating- Water Quality Issues and Potential Strategies.

The report, which identified 13 strategies, was distributed at the regional Marinas and Boating Workshop held in November 1995.

Prioritize Recommendations

Thirty-five representatives from local, state and federal agencies, harbor districts, marine businesses, fishermen's groups, and the public attended the one-day workshop. The following three general criteria were used to evaluate the 13 proposed strategies: 1) socioeconomic impacts, 2) institutional feasibility, and 3) environmental benefits.

Workshop participants broke into three groups, which examined the proposed strategies according to their potential effects on the above subject areas. The socioeconomics group examined such factors as potential costs to businesses and the degree of public acceptance associated with each strategy. The institutional feasibility group examined the degree of difficulty that an agency or organization would have in implementing a strategy. The environmental benefits group looked at potential benefits to water quality, habitats and living resources. From this structured process, the group recommended seven priority strategies to refine for implementation.

Revise/Add Detail to Recommendations

Following the workshop, a series of "write-up sessions" were held for each strategy to provide details on required steps to implementation. Participants included experts and stakeholders in the subject areas covered by the proposed strategies. The sessions, held through the winter and spring of 1995/96, also identified which institutions or agencies would assume the lead in implementing the strategies, and which agencies would provide primary support. Workshop participants also estimated costs associated with implementation, including staff requirements, capital expenditures and operations and maintenance; and reviewed potential funding sources available to support implementation.

Recommended Marinas and Boating Strategies

The following seven strategies emerged from this rigorous review of proposed actions:

Public Education and Outreach will initiate a regional education and outreach program, communicating to boaters the environmental and economic impacts of pollution, and simple techniques for pollution prevention. The program will identify target audiences within the boating community and formulate the best tools/techniques for reaching them. Education materials will be developed to enhance a greater understanding of and support for the pollution-control strategies proposed for implementation.

Technical Training will provide annual training presentations to harbor district personnel and associated groups on new technologies, products and procedures that can be used to reduce water pollution problems within harbors and marinas. This strategy will produce training materials, recruit instructors, and identify funding sources to carry out technical training. Incentives for participating in this program will include certificates and media recognition of harbor districts that allow employees to participate.

Bilge Water Disposal and Waste Oil Recovery will facilitate the collection of contaminated bilge water through the construction and operation of new bilge water pumpout and waste handling facilities. This strategy will assist harbor districts in identifying funding sources, appropriate technology and equipment including absorbent bilge pads, appropriate sites to locate pumpout equipment, and programs to publicize the location and use of bilge pumpout facilities.

Hazardous and Toxics Materials Management will provide periodic, hazardous waste collection within the harbor districts. This strategy will facilitate the proper disposal/removal of paints, used oil, waste fuel, and solvents away from receiving waters. The strategy will assist harbor districts in acquiring funds for periodic pickup of materials and assist in siting and publicizing the pickup events.

Topside and Haulout Vessel Maintenance will identify and promote regional guidelines and practices that reduce contaminants from hull washing wastewater and first-flush runoff from boatyards and parking lots. This strategy will investigate and promote better containment and filtering of paint residue and sand blasting material; and identify ways in which harbors can better control and filter runoff from parking, staging and waste collection areas.

Underwater Hull Maintenance will promote the application of less toxic paints and more efficient

underwater cleaning practices that result in reduced discharges to harbor waters. This strategy will coordinate and promote demonstration events for "marine-friendly" products, and initiate a hull cleaning training and certification program.

Harbor Pollution Reduction Progress Review will develop simple procedures that harbormasters may use to assess the status or effectiveness of pollution-control efforts. This strategy would provide a tracking system to the harbors that records such information as use and condition of harbor waste facilities, incidence of small spills, and the number of reported illicit discharges. An annual review of this information would provide harbormasters with an indication of the acceptance/success of resource protection programs. To promote participation, a "Clean Harbor" award program would be initiated that recognizes harbors for their efforts to reduce pollution.

Projected Costs and Timetables

An approximate schedule and estimated implementation costs are included in the Overview of Actions section. In addition, projected costs associated with implementing the strategies and potential funding sources are provided in more detail in individual strategy discussions.

Implementation of the education strategy and the bilge waste disposal strategy has already begun. Implementation of most of the other strategies will begin in 1996 or 1997.

The costs information estimated for marinas and boating strategies indicates that the majority of expenditures would be for labor and services as opposed to capital expenditures. Estimated total costs for implementing the marinas and boating strategies of the WQPP range from approximately $400,000 to $560,000 over the next three years. These estimates provide an order of magnitude assessment of costs, and will likely be modified as the strategies undergo further review during implementation.

Introduction

This action plan describes strategies to reduce water pollution from certain activities associated with marinas and boating in the Sanctuary region. The plan represents the efforts of the WQPP's Project Development Team and many other participants in the boating community. Implementation of these strategies will require funding and staff support. The costs associated with implementing each strategy, potential funding sources and lead agencies are identified in each of the sections within this document.

The Sanctuary

The Monterey Bay National Marine Sanctuary (MBNMS) was designated by Congress in September 1992. It encompasses approximately 4,000 square nautical miles of coastal and ocean waters along the central California coast, extending from southern Marin County south to Cambria in San Luis Obispo County. The goals of the Sanctuary are: (1) enhance the existing regulatory resource protection regime; (2) establish a coordinated research program to expand knowledge of the Sanctuary environment and resources, and thus provide the basis for sound management; (3) initiate a broad-based education and interpretive program to improve public understanding of the Sanctuary's importance as the habitat for a unique community of marine organisms; and (4) provide a comprehensive management framework to protect this habitat (NOAA 1992). Development of the WQPP is an integral part of the management framework.

The Memorandum of Agreement

As part of the Management Plan for the Sanctuary, a Memorandum of Agreement (MOA) to develop an ecosystem-based Water Quality Protection Program (WQPP) for the Sanctuary was signed by eight key water quality agencies. These signatories are: the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management (NOAA/OCRM); the U.S. Environmental Protection Agency, Region IX (USEPA); the California Environmental Protection Agency (Cal EPA); the State Water Resources Control Board (SWRCB); the San Francisco Regional Water Quality Control Board (SFRWQCB); the Central Coast Regional Water Quality Control Board (CCRWQCB); the California Coastal Commission (CCC); and the Association of Monterey Bay Area Governments (AMBAG). Many additional federal, state, and local agencies, and public and private groups are working with the signatory agencies as formal members of the WQPP planning team (See Appendix A).

The purpose of the WQPP is to recommend and seek implementation of priority strategies and programs that address point and nonpoint sources of pollution. The program goal is to protect and enhance the chemical, physical, and biological integrity of the Sanctuary. Implementation of the program will be the responsibility of federal, state and local agencies working with businesses, landowners, environmental groups, and the public. To avoid duplication and overregulation, the MOA mandates that the water quality management process take into consideration the following permits, plans, research and monitoring efforts already in place in the region:

- Research and monitoring associated with the development of the WQPP;

Water Quality Protection Program Goals & Objectives

- Ensure protection for all Sanctuary resources
- Enhance and protect the Sanctuary's chemical, physical, and biological integrity
- Identify and address specific threats to Sanctuary resources
- Develop consensus among agencies, business, landowners, and the public on practical solutions to problems
- Integrate mandates and expertise of existing coastal and ocean resources management
- Develop priority strategies and implementation schedules for control of point and nonpoint sources
- Assign responsibilities for carrying out strategies
- Identify costs and sources of funding
- Pool financial and staff resources to carry out strategies
- Establish a comprehensive water quality monitoring program
- Encourage public participation, education, and community stewardship of the Sanctuary and its watersheds
- Promote cooperative use of technology and information transfer

- National Pollutant Discharge Elimination System (NPDES) permits, issued under Section 402 of the Clean Water Act (CWA);
- Waste Discharge Requirements (WDR) issued under Section 13263 of the California Water Code;
- California Ocean Plan, Basin Plans prepared by the RWQCBs, and CWA section 208 Plans; and
- Nonpoint Source (NPS) Pollution Planning and Control Measures including Management Plans prepared under CWA Sections 205(j), 319 and 208 and under Section 6217(g) of the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990.

An Integrated Management Approach

The WQPP has been designed to take advantage of existing environmental management programs and resources within the Sanctuary region by looking for potential areas of cooperation and integration. This same approach has been successful in other parts of the country where agency staff and budgets are limiting factors. The WQPP is a consensus-building program that brings together all the stakeholders early in the process. Local, state, and federal government agencies, businesses, nonprofit organizations and members of the public all are helping shape water quality protection strategies (Appendices A and B). Signatories to the MOA and agencies and organizations that helped bring about the Sanctuary designation have committed the active participation of their staff in developing the WQPP.

It is likely that many of the problem pollutants and activities that have the potential to degrade Sanctuary resources can be addressed by management programs already established in the region. The key to making progress on protecting Sanctuary water quality is to recognize which programs are most suitable for addressing these problems, and, if necessary, identify how these programs can be enhanced to ensure appropriate water quality conditions. This is the first priority of integrated management in the region. The second is to establish activities to correct water quality problems not adequately addressed by existing management. The third component is to monitor water quality conditions over time and institute a process of continuous management to ensure that management activities generate meaningful results.

Figure 1 documents the WQPP's broad geographic range, including 11 watershed areas and three ocean segments. This area encompasses parts of eight counties, twenty incorporated municipalities, two California Regional Water Quality Control Boards, numerous special districts, and the overlapping jurisdictions of at least ten state and federal regulatory agencies. Land use in the region is characterized by large agricultural areas, grazing land, urban and suburban development. This mix of background conditions and agency responsibilities mandates an approach that cuts across jurisdictional and political boundaries and focuses on ecosystems and watersheds.

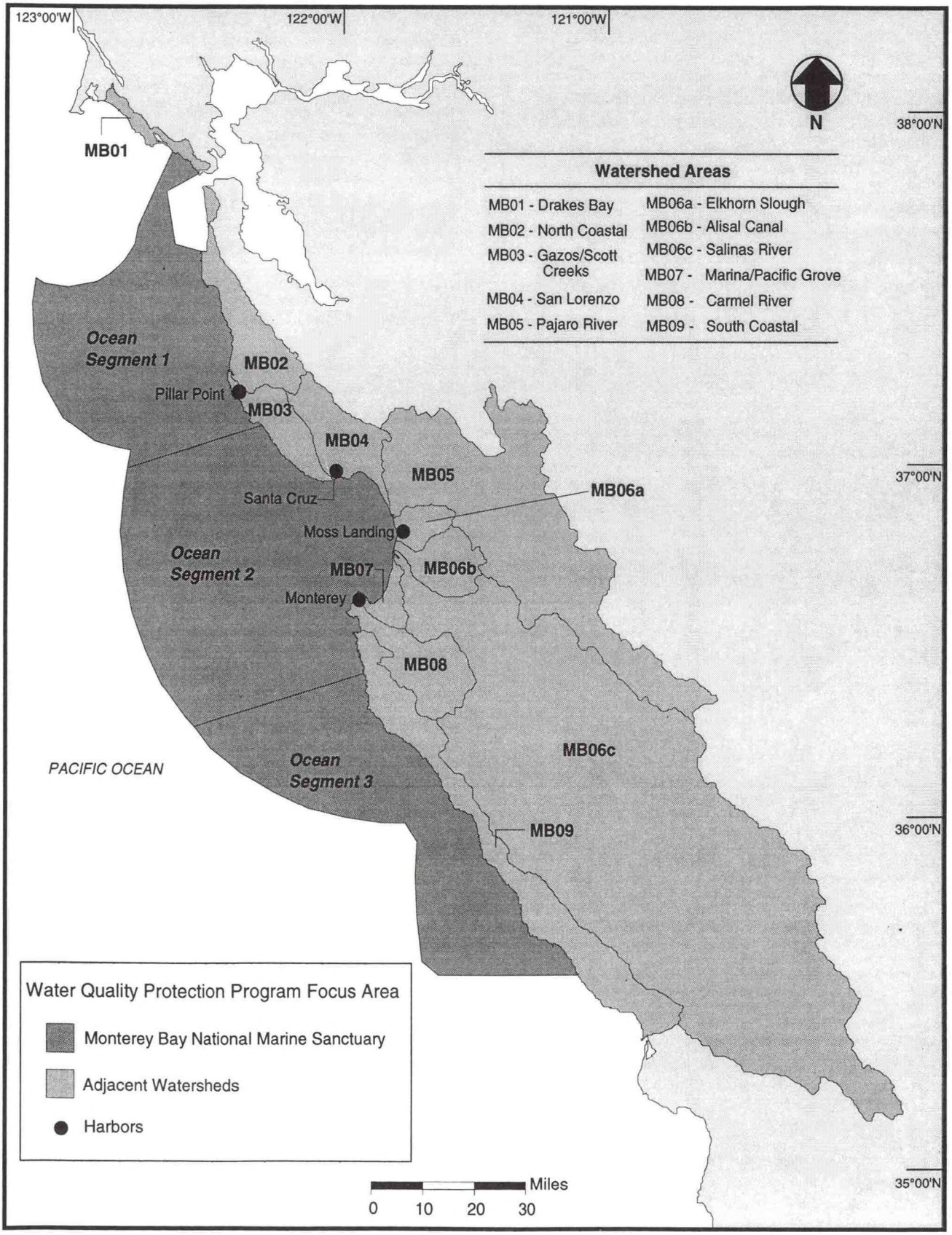
Identification of the requirements to implement water quality protection programs, including costs, financing mechanisms, and institutional responsibilities, is a major concern and is the focus of this action plan. The WQPP will rely heavily on education as an important means to reduce pollutant inputs to the Sanctuary. Voluntary participation will be the preferred method of achieving program goals, especially for the many sources of pollution (primarily nonpoint sources) that will prove difficult or impossible to regulate.

Marinas and Boating Issues

The WQPP is a comprehensive process for identifying water quality problems, developing management strategies, and carrying out action plans to protect and enhance Sanctuary water quality. Activities to be addressed include urban runoff, agricultural runoff, marina and boating activities, wetlands/riparian degradation and point sources. It is a large undertaking to develop detailed plans for each of these activities over such a large geographic area. The planning team agreed that the task should be broken into a more manageable series of issue areas, which could be developed in sequence.

Urban runoff was chosen by the planning team as the first issue area to be addressed; regional monitoring and data sharing was the second issue area. The third issue area, the subject of this document, is Marinas and Boating. The four primary harbors addressed by this document are shown in Figure 1.

Figure 1. *General Spatial Framework of the Water Quality Protection Program Showing the Four Primary Harbors.*



Goals for Addressing Marinas and Boating Activities

Contaminants associated with marinas and boating activities that can affect Sanctuary resources include: toxic metals, petroleum hydrocarbons, pathogens, bacteria and nutrients, and marine debris (trash or waste products thrown overboard). Important goals for addressing marinas and boating activities include:

- Reducing pollutant loadings from metals and hydrocarbons, to reduce habitat and resource degradation within the harbors, sloughs, and Sanctuary waters.
- Reducing pollutant loadings from metals and other contaminants to reduce disposal costs of dredged materials.
- Reducing sewage discharges to ensure protection of recreational opportunities, human health, and Sanctuary resources.

Related Planning Efforts

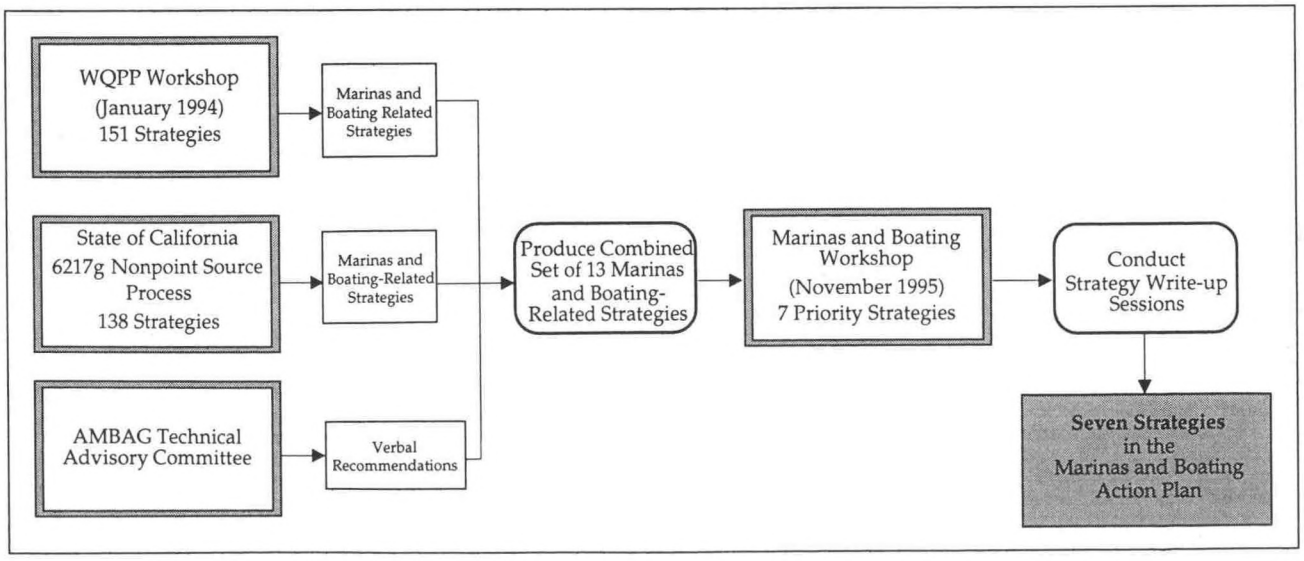
Figure 2 shows the sources of the current marinas and boating strategies. Initial recommendations for addressing activities associated with marinas and boating were generated at a 1994 WQPP workshop, which was attended by approximately 120 persons, representing local, state and federal agencies, and public and private groups in the Sanctuary region. In addition to evaluating strategies from this workshop, the WQPP also considered recommendations developed by two other recent planning efforts. During 1994, the SWRCB and the CCC convened a Technical Advisory Committee (TAC) to address marinas and boating issues. This TAC, consisting of harbor managers, boaters, and water quality experts from throughout the state, developed recommendations for the state's Nonpoint Source Management Program to address the goals of the CZARA Section 6217. The TAC report served as an important source of ideas for possible implementation in the region.

Verbal recommendations also were obtained from the Technical Advisory Committee of the AMBAG Harbor Best Management Practices project. This local TAC was composed of representatives from the region's cities and counties, harbor districts, fishermen's associations, environmental groups, and businesses.

Strategy Development

Thirteen initial recommendations compiled from the above sources were evaluated at a workshop held in November 1995, co-sponsored by the WQPP and AMBAG. Participants included representatives from local, state and federal government agencies, harbor districts, marine businesses, and public groups (Appendix B). Evaluation criteria included an analysis of environmental benefits, social and economic impacts, and institutional responsibilities.

Figure 2. *Sources of Water Quality Strategies.*



From the 13 recommendations, seven strategies were identified by participants as priorities for implementation. Details needed to carry out these priority strategies were then added by members of the WQPP Project Development Team and AMBAG, working with a variety of local experts on each strategy topic (Appendix B). This process, outlined in Figure 2, led to the detailed strategy descriptions presented in this action plan.

The strategies in this document identify costs, time schedules, institutional responsibilities, and the steps necessary for implementation. It should be noted, however, that these strategies may be modified as each undergoes further review in the WQPP workshop/public review process and as implementation begins. As noted in the Interagency Coordination Strategy (G.3) in WQPP Action Plan II, a continuous management process or coordinating council will be formed to oversee implementation of WQPP strategies, and recommend refinements where necessary.

Water Quality Issues

Water quality in the harbors adjacent to the Monterey Bay National Marine Sanctuary is affected by many sources. Runoff from upland agricultural areas contributes nutrients, pesticides, pathogens and sediments. Urban runoff contributes oil, sewage, and toxic pollutants. Historic pollution in both harbor sediments and upland areas continues to leach into harbor waters. Pollution generated directly through harbor and boating activities further affects water quality. In many cases the lack of waste disposal facilities for harbor users results in the improper or illegal disposal of pollutants in Sanctuary waters. Although pollution from harbor and boating activities is generally small relative to upland sources of contamination, it can have significant cumulative impacts in local areas.

All of the harbors have diverse user groups that include: commercial fishermen, other commercial vessel operations, recreational power boaters, and sail boaters. Each of these groups has different priorities and waste disposal needs. In spite of differences in vessel use, a large percentage of boater-generated impacts on water quality fall into four categories: toxic metals primarily from anti-fouling paints, hydrocarbons from motor operation and maintenance procedures, solid waste and marine debris from overboard disposal, and bacteria and nutrients from boat sewage.

Toxics

Toxic contaminants bind to particles and settle out in sediments. High concentrations of toxic contaminants in sediments have been associated with adverse biological effects on fish. These effects include fin erosion, liver tumors, and reproductive failures (PSWQA, 1990). Testing stations in Marina Del Rey, California were sufficiently contaminated with heavy metals to affect fish and/or invertebrates, especially at the larval or juvenile stage (U.S. EPA, 1990). State Mussel Watch Program data has indicated elevated levels of pollutants such as tributyltin, copper, and zinc at Santa Cruz, Moss Landing and Monterey harbors (SWRCB, 1995).

Tributyltins

Tributyltins (TBT) have been used since the 1960s in anti-fouling bottom paints (Nelson, 1994). Testing has indicated that some harbor sediments contain high levels of TBT. In 1994 tests conducted by the California Department of Fish and Game (CDFG) adjacent to the hull washing area at Gravelle's Boatyard in Moss Landing found TBT concentrations in samples of 900 parts per billion (ppb) (pers. comm. Johnston, 1994). Acute toxic effects of TBT on aquatic organisms, such as clam larvae, have been documented at levels as low as 6 parts per trillion (ppt) (U.S. EPA, 1994).

The use of TBT paints was limited by the U.S. EPA in 1989. The response of paint manufacturers was to develop new formulations of copper paints and to promote finishes which leach fewer heavy metals into harbor waters. Copper anti-fouling paints, however, are perceived to be less effective than TBT paints by many boat owners. In Southern California harbors this perception has led to a black market for TBT paints from Mexico (pers. comm. Johnson, 1995). In harbors that border the Sanctuary, the limited availability of TBT paints has facilitated a change to copper anti-fouling paints. Aluminum boats, vessels over 82 feet in length, and aluminum outdrives may continue to be painted with TBT paints by licensed applicators. Interviews with boatyard operators and paint suppliers indicate that the use of TBT is no longer common practice in local boatyards (pers. comm. Garrett, 1995; pers. comm. Boyd, 1995; pers. comm. Gravelle, 1995).

Copper Bottom Paints

Unlike TBT which has a half-life of 3.5 to 15 days in seawater, copper degrades slowly (Milliken and Lee, 1990). Most boat owners are currently using vinyl or epoxy paints with 60 to 80 percent copper. In order to remain effective, the outermost layer of the paint must be stripped away periodically to expose a fresh copper antifouling surface. Most of the copper in these paints leaches into harbor waters. As TBT paints are replaced, primarily with copper compounds, the amount of copper leaching from boat hulls will increase. The containment of wastewater from boat hull washing operations will reduce the total amount of toxic metals in the marine environment.

Boatyard Hull Washing

Typically, high concentrations of lead, copper, and zinc are found adjacent to boatyards where boats are hauled out and cleaned with high pressure wash to remove marine growth (METRO, 1992). In the past this operation was conducted directly over the water or the wash water was discharged into harbor waters. Sanding and sandblasting in preparation for painting also generate potentially toxic paint residues. In response to the CDFG's enforcement of Fish and Game Code section 5650(f), which prohibits

the discharge into State waters of any substance or material deleterious to fish, plant life, or bird life, all the boatyards in harbors adjacent to the Sanctuary are installing, or have installed, equipment to contain waste water from hull wash areas. Boatyards have also taken steps to reduce the contamination of stormwater runoff through better yard maintenance and dust containment technology. Non-boatyard sanding and painting has been curtailed, due to the imposition of Waste Discharge Requirements (WDRs)/NPDES permits by Regional Water Quality Control Boards, and the enforcement of CDFG code section 5650(f). The impact of recent reductions of hull cleaning wastewater discharges and the reduction of TBT use is not yet known. Recent monitoring indicates elevated levels of TBT, copper and other heavy metals associated with boat maintenance, in harbor sediments (SWRCB, 1995).

Underwater Hull Cleaning
Marine growth must be periodically cleaned from boat hulls to avoid buildup. Hull cleaning, while the boat is in the water, involves the use of stiff synthetic brushes, or in some cases scrapers. In the process of removing marine growth and exposing the active antifouling layer, some of the bottom paint is also removed. Heavy buildup increases the need for harder scraping which creates more particulate discharge. This method of hull cleaning is commonly done by a small number of divers, who offer this service in addition to other underwater maintenance activities.

The most commonly used bottom paints continuously leach metals such as copper and TBT to impede fouling growth. As a result, hull bottom paints are a constant source of toxic concentrations of metals in the water column and in harbor sediments. Organic and inorganic particulates released in the cleaning process settle out on the harbor bottom and leach toxic metals into the water. Marine organisms living and feeding in the sediments accumulate toxics and reintroduce pollutants into the food chain.

Dredging and dredged material disposal may increase the biological availability of TBT and other antifouling agents deposited in the harbor sediments. The cost of upland disposal of contaminated dredged material is more expensive than disposal of clean material, which can be used for beach replenishment. Increased disposal costs will result in costlier harbor maintenance and higher berthing fees.

Other Sources of Toxic Chemicals
Other sources of toxic chemicals from boating, which potentially degrade water quality, include: petroleum hydrocarbons; cleaners; toilet chemicals; and solvents. Petroleum hydrocarbons and sewage will be addressed in subsequent sections. Direct contamination of harbor areas from paints, solvents or other organic chemicals is primarily a problem of waste disposal. A wide range of toxic chemicals and hazardous solid wastes, including batteries, antifreeze, unused paints, contaminated solvents, zinc anodes, and flares, can be disposed of through household hazardous wastes programs, boatyards, or marine suppliers. These disposal options are often inconvenient to boaters, resulting in improper storage or disposal. Unlike a household waste generator, the boater may not have a safe area to store waste on the boat or dock area prior to disposal. As a result there is an increased chance of leakage or illegal dumping directly into the harbor or nearby coastal waters.

The development of toxic material collection facilities at harbors can be logistically difficult due to regulatory requirements and economic considerations. Contaminated or commingled wastes can incur considerably higher disposal costs. Handling large volumes of wastes may require more administrative work due to the federal Resource Conservation and Recovery Act (RCRA) permitting requirements of the U.S. EPA. These uncertainties cause harbor districts to be reluctant to assume the responsibility and liability for collected wastes.

Petroleum Hydrocarbons

Petroleum hydrocarbons enter harbor and Sanctuary waters through multiple pathways. While large spills are uncommon, the cumulative effect of small leaks and spills are enough to deposit significant levels of hydrocarbons in sediments and cause visible sheens or floating oil on the surface of harbor waters. Toxic effects have been demonstrated from sustained low concentrations of petroleum, including reductions in zooplankton and severe, long-lasting effects on benthic organisms (Milliken and Lee, 1990). Urban runoff and offshore vessel discharges contribute to the total amount of hydrocarbons in harbor and nearshore waters. The major sources of vessel-related hydrocarbon pollution include: spills during fueling, discharges of contaminated bilge water, vessel flooding, parking lot or work area runoff, and the improper disposal of waste oil and fuel.

Fuel Spills
Spills incidental to fueling operations are the result of bad habits and poorly designed or improperly used equipment. The filling and venting characteristics of

a vessel and the high or variable flow rate of fuel dock pumps can result in fuel spills.

Fuel tank vents on some vessels are located level with or lower than the top of the fuel tank fill hose. This means that when the fuel tank is topped off, fuel may be forced out through the vent. Due to the large volumes of fuel which larger vessels require, fuel dock pumps can be set to run at high volumes. The venting characteristics of many vessels allow the tank to fill completely before the back pressure will trigger the automatic shutoff nozzle. If the flow is not shut down before the tank is topped off, the back pressure in the system will force some amount of fuel out of the fill or vent. Thermal expansion or the physical rocking of the boat can also force a small amount of fuel out of the vent after a tank is topped off.

Bilge Water

Bilge water can be contaminated by oil or fuel spilled during maintenance operations or from small leaks from hoses, seals, and gaskets. Spills may travel away from the source making them difficult to track or clean up. The disposal of water containing oil and fuel can be difficult and expensive. For safety reasons and to maximize fuel economy, boaters do not want to have fuel or water in their bilge. Many boaters illegally pump oily wastes overboard or inadvertently allow automatic bilge pumps to discharge contaminated bilge water. The discharge of oil wastes is regulated by international, federal, and state laws with fines of up to $20,000. Enforcement of the law by the U.S. Coast Guard is difficult due to limited staffing and resources. Small discharges are difficult to detect and trace to a specific source. The cumulative effects of small discharges may comprise a significant source of hydrocarbon pollution.

Currently bilge water disposal is treated inconsistently in different areas. In most harbors the boater is required to collect the waste water and transport it to an off-site disposal facility. If a private waste hauler is used, the cost may be several dollars a gallon. The high cost of disposal is a considerable disincentive for proper disposal of contaminated bilge waste. Collection of bilge water may also be difficult to implement due to the potential of multiple contaminants in the waste stream. None of the harbors adjacent to the Sanctuary have facilities to pump contaminated bilge water out of boats or to treat contaminated bilge water. To reduce bilge water disposal costs, on-site treatment equipment can be installed. Oil and water separation is a relatively simple process. If bilge water is contaminated with other toxic components such as antifreeze, degreasers or emulsifiers, the level of treatment for the waste stream is more complicated and more expensive.

Oil Spills

Sunken or flooded vessels leak oil and fuel and result in relatively large quantities of hydrocarbons contaminating the harbors or coastal waters. Some of these incidents are emergency events which cannot be predicted or controlled. Poorly maintained or infrequently attended vessels might avoid flooding and the release of oil and fuel through better maintenance. Small quantities of discharged oil dissipate before they can be collected. The presence of only one responder in the Monterery Bay area (at Moss Landing), the recent decision of PG&E to no longer maintain response equipment that was relied upon by the local community, and the limited availability of clean-up equipment and personnel all highlight the importance of preventive measures.

Stormwater Runoff

Parking lot runoff is normally considered to be an urban nonpoint source pollution problem. However, harbor parking and work areas warrant additional consideration because they often drain directly into the harbor. Improper disposal of oil and hazardous materials or maintenance work done in the parking lots increases the level of pollutants in harbor parking area runoff. Waste oil collection facilities and solid waste dumpsters located in parking areas also increase the likelihood of materials being spilled in parking areas.

Solid Waste And Marine Debris

The improper disposal of non-hazardous solid waste creates hazards for boaters and can threaten marine mammals, birds, and fishes. While all the harbors adjacent to the Sanctuary have recycling programs, some types of waste are difficult or inconvenient for boaters to dispose of properly. Federal MARPOL regulations require that harbors and marinas provide waste disposal facilities (O'Hara, Iudicello, and Biece, 1988). The interpretation of these requirements has led to aggressive waste collections efforts by some harbor districts (McMahon, 1995). At other harbors solid waste containers and recycling are centralized and can be inconvenient to boaters.

Marine Debris

Wind-blown wastes originating from harbor area businesses and floating debris from distant sources are significant components of the total volume of marine debris. The disposal of large objects including wood, fiberglass, fishing nets and lines, can be

difficult at some harbors. Boater education programs have increased boater awareness of debris hazards to wildlife. Despite these efforts, mortalities continue from entanglement in fishing lines, nets, and ingestion of plastic wastes — debris associated with boaters. Debris in the water also has a negative effect on water contact sports and tourism in general. Structural damage to boats and mechanical failures related to floating plastic and solid objects remind boaters of the necessity of reducing marine debris.

Bacteria And Nutrients

Upland sources, including illegal sewage discharges into storm sewers, livestock operations, and fertilizers, contribute to bacterial and nutrient levels in harbor waters. Natural sources such as birds and marine mammals further affect water quality. When the loading of organic matter increases, the biological oxygen demand increases, and there is a consequent reduction in the dissolved oxygen available for respiration by aquatic organisms (U.S. EPA, 1985). The discharge of sewage from boats is also a potential source of pathogens, posing human health or environmental health threats either through direct contact or through the ingestion of contaminated fish and shellfish.

Sewage Discharges

Some boaters contribute to bacteria levels in harbors and near-shore waters through the illegal discharge of sewage. Although the volume of wastewater discharged from recreational boats is small, the organics in this wastewater are concentrated, and therefore the BOD is much higher than that of raw municipal sewage (Milliken and Lee, 1990). While federal law (33 USC 1322) prohibits the discharge of sewage within three miles of the coast, many boaters do not perceive their discharges as pollution. The cumulative effect of many, isolated small discharges, however, can pose a significant pollution problem. The habits of boaters to discharge sewage within the three-mile limit is reinforced by the lack of convenient pumpout facilities in many areas. Problems with poorly located, broken or malfunctioning pumpout equipment was a common complaint of surveyed boaters (AMBAG, 1995).

Each harbor has a limited number of live-aboards, some of whom contribute to sewage discharges in the harbor. Harbor codes require that berthed vessels be operable, but some vessels are rarely moved. For these vessels, moving to a pumpout station is difficult. Commercial fishing vessels may have live-aboard crews during fishing season. Some recreational boaters spend weekend nights on their boats. Restrooms are available for slip holders, but in some cases they are inconvenient to use.

Public Education

Boater education programs rarely provide information on tested and workable alternatives to familiar habits. Marine business operators are often frustrated and confused by contradictory or inconsistent regulation by multiple government agencies. Many harbor users are not aware of what activities are illegal or who to contact for information.

Education materials are often general in scope and are not necessarily relevant to local conditions. Maps of pumpout and disposal facilities, and local contact numbers are often unavailable in a simple, usable format.

Testing conducted for specific projects such as dredging, marina expansion, or mariculture provide a patchwork picture of harbor water quality. User groups are sometimes not convinced that their individual activities degrade the environment. The cumulative impacts of many small pollutant sources, and the connection between near-shore water quality and healthy fisheries is not always well understood. Boaters do not always make the connection between the use of toxic bottom paints or discharge habits, and economic impacts such as increased costs of marina dredging, reduction of bait fish supplies, and effects on fish nursery areas such as wetlands and estuaries.

Conclusion

Harbors are considered by some to be sacrifice zones in which discharges should be permitted. Boater and harbor-generated pollution can, in many cases, be reduced through education and training programs, and the application of new technologies. Harbor districts and regulatory agencies also need to increase efforts to monitor changes in water quality. Increased enforcement of existing laws may also be necessary for cases where voluntary compliance is not effective. Ultimately clean harbors and healthy fisheries will depend on changes in boater habits and the use of less polluting products and materials. It will also depend on reduction of the upland sources of contamination being addressed in other WQPP plans.

An Overview of the Actions

This section of the document summarizes the proposed actions. It provides information on how the actions overlap in time, the anticipated costs and benefits of the strategies, and the institutions with roles in implementation.

The Seven Strategies

The seven strategies proposed to address activities associated with marinas and boating cover a wide spectrum of approaches. Strategy implementation will strengthen educational efforts, promote maintenance practices that prevent contaminants from reaching harbor waters, and assist harbormasters in expanding services to the boating community, including pollution-reduction facilities and programs. The strategies also propose a range of training programs for harbor staff and private vendors, including best management practices for underwater hull maintenance and paint removal. Descriptions of related existing marinas and boating programs can be found in Appendix C.

A Proposed Schedule

The schedule proposed for implementing the seven strategies is shown in Table 1. Initial implementation has already begun for the Education, Technical Training and the Bilge Waste strategies.

Factors that will affect the implementation of these strategies include the availability of grant funds and the timing of grant funding cycles. As other water quality issues are addressed by the Program and as the Water Quality Council assumes oversight of the WQPP, the schedule for Marinas and Boating strategies may have to be adjusted to reflect a broader set of priorities.

How Much Will It Cost?

It has been difficult to get precise estimates for many of the actions proposed in this plan. Uncertainty about the scale and scope of some of the actions and the natural tendency for the level of implementation to rise and fall as institutional priorities change makes predicting precise costs particularly difficult.

Seven Strategies in this Action Plan

M.1 Public Education/Outreach

M.2 Technical Training

M.3 Bilge Waste Disposal and Waste Oil Recovery

M.4 Hazardous and Toxics Materials Management

M.5 Topside and Haul-out Vessel Maintenance

M.6 Underwater Hull Maintenance

M.7 Harbor Pollution Reduction Progress Review

For any given strategy, the estimated costs can be divided into two general groups: those that are one-time expenses (e.g. purchase of equipment and obtaining service contracts) and those that are ongoing and recurring (e.g. education activities, assessing and evaluating new problems, evaluating program effectiveness).

The figures in Table 2 assume that much of the support for implementation can come from in-kind services from participating agencies. In those cases the cost estimates represent the portion of a person's salary and benefits that would be necessary to carry out the function. In other cases, services and equipment will have to be purchased. Changing economic conditions will affect costs. To address such uncertainties, ranges are used for selected actions.

Cost estimates are not intended to replace detailed, multi-year budgeting proposals for potential funding sources. Instead, these estimates have been formulated to obtain a rough idea of the commitment that might be required to fully implement a strategy.

Potential Benefits

Strategies designed to reduce the potential environmental impacts from marinas and boating related activities will benefit the Sanctuary with cleaner water and fewer resource degradation problems. More importantly, these strategies have the potential to prevent problems from multiplying and irreparably damaging resources. Benefits which can be realized from this resource preservation include: enchanced recreational use of Sanctuary waters such as fishing, swimming, and surfing; reduced human health concerns during contact with water and consumption of seafood; fishery preservation and expansion of mariculture opportunities; reduction of

Table 1. *Schedule of Activities.*

Strategy	Person Months	1996 Quarter 1	1996 Quarter 2	1996 Quarter 3	1996 Quarter 4	1997 Quarter 1	1997 Quarter 2	1997 Quarter 3	1997 Quarter 4	1998 Quarter 1	1998 Quarter 2	1998 Quarter 3	1998 Quarter 4	1999 Quarter 1	1999 Quarter 2	1999 Quarter 3	1999 Quarter 4
M.1 Public Education/Outreach																	
1 Review existing materials, define target audiences/topics	1			■	■												
2 Bilge wastes and waste oil education	2			■	■	■	■										
3 Sewage discharge education	1			■	■	■	■										
4 Product information and toxics disposal education	1					■	■	■	■	■							
5 Marine debris education	1									■	■	■					
6 Vessel fueling education	2						■	■	■								
7 Underwater hull cleaning education	1							■	■	■							
8 Education on existing laws	1				■	■	■										
9 Develop an ongoing distribution program	0.2*				■	■	■	■	■	■	■	■	■	■	■	■	■
10 Encourage community use and stewardship of harbors	0.2*									■	■	■	■	■	■	■	■
M.2 Technical Training																	
1 Identify subject areas	1			■	■												
2 Compile training materials	2			■	■	■											
3 Identify instructors, trainers, funding	1				■	■											
4 Solicit participation and develop incentives	1				■	■											
5 Conduct regional and on-site workshops	0.1*					■	■	■	■	■	■	■	■	■	■	■	■
6 Evaluate workshops and modify as needed	0.05*								■				■				■
M.3 Bilge Waste Disposal & Waste Oil Recovery																	
1 Initiate education program (see above)																	
2 Identify funding sources	1	■	■	■													
3 Provide absorbent pads	1					■	■	■									
4 Identify necessary permits and MOA's for pumpouts	1	■	■						■	■							
5 Identify technology	0.5	■					■	■									
6 Identify appropriate sites	0.5	■					■	■									
7 Construct pumpouts	1.5			■	■			■	■	■	■						
8 Publicize location of facilities/increase enforcement	0.1*.			■	■	■	■	■	■	■	■	■	■	■	■	■	■
M.4 Hazardous & Toxic Materials Management																	
1 Plan development of a periodic waste collection program	1			■	■	■											
2 Obtain funding	2			■	■	■	■										
3 Develop sites and permits	1						■	■	■								
4 Establish procedures for handling of materials at harbors	2						■	■	■								
5 Implement periodic pickup services program	0.1*									■		■		■		■	
6 Implement education program	0.1*								■	■	■	■	■	■	■	■	■
M.5 Topside & Haul-Out Vessel Maintenance																	
1 Ensure compliance with existing state regulations	1					■	■										
2 Assess/promote new stripping and refinishing techniques	2								■	■	■	■					
3 Improve containment and filtering of paint/dust	1								■	■							
4 Review policies regarding work in slips and parking lots	1								■	■	■						
5 Improve control and filtering of runoff	10											■	■				■
M.6 Underwater Hull Maintenance																	
1 Promote safe marine products	1					■	■	■									
2 Promote results of demonstration events	1								■	■	■	■					
3 Improve bottom paint preparation	1								■	■	■						
4 Initiate a hull cleaning training and certification program	2								■	■	■	■				■	
M.7 Harbor Progress Review																	
1 Develop report format and checklist	1			■	■												
2 Develop tracking system	2			■	■	■											
3 Annual review and recommendations	0.1								■				■				■
4 Develop a Sanctuary "Clean Harbor" recognition program	0.1								■	■				■			

* = Full-time equivalents (for ongoing staff needs)
Person months refers to estimated amount of staff time required to implement activity.

long-term dredging costs for harbors resulting in lower slip fees; lower vessel maintenance costs due to longer lasting paints and less frequent haul-outs; a reduction in debris-related vessel damage; and a reduction in the need for potentially expensive and restrictive enforcement action and clean-up efforts.

While the most visible benefits are expected in sectors of the economy where clean water is critical (recreation, tourism, and commercial fishing), protection of the marine and aquatic resources in the Sanctuary is fundamental to the entire region's economy and quality of life.

Table 2. *Strategy Implementation Cost Estimates in $1,000.*

	Calendar Year						
	1996		1997		1998		Ongoing
Strategy	Capital	Labor & Service	Capital	Labor & Service	Capital	Labor & Service	Cost/yr
M.1 Education/Outreach		15-20		30-45	5	40-45	30-35
M.2 Technical Training		12-15		20-35		12-15	12-15
M.3 Bilge Waste Disposal and Waste Oil Recovery	5-10	10-15	30	25-35	30	10-14	5-9
M.4 Hazardous and Toxics Materials Management		5-9		35-50		13-23	13-23
M.5 Topside and Haulout Vessel Maintenance		5		40-49		38-45	6-8
M.6 Underwater Hull Maintenance		5-9		12-19		5	5
M.7 Harbor Progress Review		5		10-20		15	15
Total	5-10	57-78	30	172-253	35	133-162	86-110

Which Institutions Are Involved?

The success of this action plan will depend upon the level of commitment of the agencies and organizations that have agreed to carry out the strategies. The lead institutions shown for each strategy (Table 3) were selected for one or more of the following reasons:

- the agency/organization was the source of a new idea that has been developed into a strategy;
- the agency has the greatest degree of responsibility in the issue area; or
- the agency already has similar programs within which proposed strategies can be incorporated.

Primary support by an institution could require as much or more effort as the lead institution for a given strategy. These are usually the groups that have the most direct knowledge of how the strategy needs to work on the ground. As with the schedule and cost information, these roles are subject to change as priorities are reestablished over the course of Program implementation.

Table 3. *Strategy Implementation Roles.*

Strategy	Federal			State								Regional			Local								Orgs.		
	Monterey Bay NMS	EPA	U.S. Coast Guard	CA Coastal Commission	RWQCB #2	RWQCB #3	DTSC	IWMB	DBW	CDFG	Univ. of California Sea Grant	WQPP	AMBAG	Waste Management Districts	Monterey. Co. Envir. Health	Santa Cruz Co. Envir. Health	San Mateo Co. Envir. Health	Moss Landing Harbor Dist.	Monterey Harbor	Santa Cruz Port District	Pillar Point Harbor	Ctr. for Marine Conservation	Save Our Shores	Other Groups.
M.1 Public Education/Outreach																								
1 Review Existing Programs and Materials	●		○	○							○		●		○	○	○	○	○	○	○		○	
2 Bilge Waste/Waste Oil Education	●		○					○		○								●	●	●	●		○	
3 Sewage Discharge Education	●		●						○						○	○	○	●	●	●	●			
4 Product Info/Toxics Disposal Education	○						○	○						○	●	●	●	○	○	○	○		○	
5 Marine Debris Education	○		○	●																		○	○	
6 Vessel Fueling Education	●		○							○								●	●	●	●			
7 Underwater Hull Cleaning	○																	○	○	○	○		●	○
8 Education on Existing Laws			●	○	○	○				○			○		○	○	○	●	●	●	●			
9 Develop On-Going Distribution Program	●		○	○				○	○		○	○	○					●	●	●	●		○	○
10 Encourage Community Use and Stewardship of Harbors				●														●	●	●	●			○
M.2 Technical Training																								
1 Identify Subject Areas	○			○							○		○					○	●	○	○			
2 Compile Training Materials	●			○							○								●					
3 Identify Instructor and Funding	●			○				○					○					●	●	●	●			
4 Solicit Participation and Develop Incentives	○			○	○	○					○		○					●	●	●	●		○	○
5 Conduct Workshops	○				○	○					○	○						●	●	●	●			○
6 Evaluate Workshops and Modify as Needed	○										○							●	●	●	●			
M.3 Bilge Waste Disposal & Waste Oil Recovery																								
1 Initiate Education Program-See Education Strat.																								
2 Identify Funding Sources	●							○					●		○	○	○	○	○	○	○			
3 Provide Absorbent Pads	○	○	○							○					●	●	●	●	●	●	●		○	
4 Identify Permits & MOAs															●	●	●	○	○	○	○			
5 Identify Technology																		●	●	●	●			○
6 Identify Appropriate Sites																		●	●	●	●			○
7 Construct Pumpouts																		●	●	●	●			○
8 Publicize Location/Enhance Enforcement	●		●										○					●	●	●	●			
M.4 Hazardous & Toxics Materials Management																								
1 Plan Periodic Waste Collection Program	○	○				○	○							○	●	●	●	●	●	●	●			
2 Obtain Funding	○							○				○	○		●	●	●	●	●	●	●			
3 Develop Sites														○	●	●	●	●	●	●	●			
4 Establish Procedures for Handling Materials		○					○							●	●	●	●	○	○	○	○			
5 Implement Periodic Pickup Service Prg.														○	●	●	●	●	●	●	●			
6 Implement Education Program	●												○	○				●	●	●	●			
M.5 Topside & Haulout Vessel Maintenance																								
1 Ensure Compliance with Existing State Regulations					●	●				●								○	○	○	○			○
2 Assess & Promote New Stripping/Refinishing Techs.													○					●	●	●	●			●
3 Improve Containment & Filtering of Paint Spray																		●	●	●	●			●
4 Review Policies Regarding Work in Slips & Parking Lots																		●	●	●	●			
5 Improve Control & Filtering of Runoff					○	○												●	●	●	●			
M.6 Underwater Hull Maintenance																								
1 Promote Safe Marine Products											○							●	●	●	●		○	●
2 Coordinate & Promote Demonstration Events											○							●	●	●	●			●
3 Improve Bottom Paint Preparation																		●	●	●	●			●
4 Initiate Hull Cleaning Training & Certification Program	○			○	○	○					●							○	○	○	○			●
M.7 Harbor Progress Review																								
1 Develop Report Format & Checklist	●				○	○					○		○					○	○	○	○			
2 Develop Tracking System	●				○	○					○		○					●	●	●	●			
3 Annual Review and Recommendations					○	○					○							●	●	●	●			
4 Develop a "Clean Harbor" Award Program	○			○	○	○					○	○	●		○	○	○					●	●	●

● - Lead Institution for Implementation, ○ - Primary Support for Implementation

Strategy Descriptions

This section describes the strategies proposed to address potential water quality problems associated with Marinas and Boating activities. Each strategy is presented in a simple "What, Why, How, When, Where, and Who" format. That is, there is a general description of the scope of the strategy; a description of the problem and why the strategy is necessary; and detailed steps for implementation. In addition each strategy section contains information on the geographic scope, the lead and supporting agencies, estimated costs, and potential financing. Notes on early implementation are included.

Strategy M.1
Public Education and Outreach

Summary of Strategy M.1

Activities:

- Review existing materials, define audience/topics
- Bilge wastes and waste oil education
- Product information/toxics disposal education
- Marine debris education
- Vessel fueling education
- Sewage discharge education
- Underwater hull cleaning education
- Education on existing laws
- Develop an ongoing distribution program
- Encourage community use/stewardship of harbor

Participating Institutions:

- MBNMS*
- Harbormasters*
- Co. Environmental Health*
- AMBAG*
- CCC*
- SOS*
- U.S. Coast Guard*
- RWQCBs
- Diver Groups
- DBW
- CMC
- CDFG
- Waste Mgt. Districts
- IWMB
- Boater Groups
- Private Industry
- Sea Grant
- WQPP
- DTSC

Schedule: See Table 1

Approximate Cost:

$90,000 to $120,000 over three years
$30,000 to $35,000 for an annual on-going program

* = Proposed strategy implementation lead(s).

WHAT

Expand and build upon existing efforts conducted by individual harbors to develop a coordinated regional education and outreach program. Communicate to boaters the environmental, recreational and economic impacts of pollution. Provide harbor users with readily accessible materials describing locations and procedures for the disposal of hazardous and toxic materials. Promote the use of environmentally-safe pollution reduction technologies and products through local demonstration projects and outreach programs.

WHY

While boaters are conscientious about water quality in general, they are often unaware of the economic and environmental impacts of polluting activities. Discharges and leaching of pollutants into nearshore waters can have negative impacts on fisheries, wildlife and human health. If sediments are contaminated the costs of harbor maintenance and dredging will increase.

Both commercial and recreational boaters are interested in new products and technologies which offer cost-effective, less polluting, alternatives to commonly used paints and chemicals. In many instances, the use of new products, equipment, and techniques, is slowed due to a lack of information about product availability and local demonstrations of new technologies. Boaters also do not always know the locations of pollution control facilities such as pumpout stations and hazardous waste disposal facilities.

HOW

Step 1: Review Existing Materials, Define Target Audiences and Topics

a) Collect and review existing state-wide marina and boating water quality materials identified/collated by the California Clean Boating Network, Sea Grant, Marin County, etc. *(Note: already initiated)*

b) Identify specific target audiences within the boating community, such as resident versus transient boaters, different language groups, etc. Identify the best tools or techniques to reach each target audience. For example, difficult-to-reach day-use boaters might be targeted by developing short water quality messages to be incorporated as "fillers" into NOAA's weather radio, or by use of portable signs near the launch ramps.

c) Prioritize topics and specific tools to be included in the education program.

d) Draw upon or modify existing materials to develop Sanctuary-wide educational materials, and materials for specific harbors as necessary, covering issues below.

Step 2: Bilge Wastes and Waste Oil Education

a) Inform the public of the location of bilge and crankcase oil pumpouts. Encourage boater guides to list pumpout locations on their maps and harbor descriptions. *(Note: boater card already initiated)*

b) Develop and post simple instructions at pumpouts, post notices on harbor gates. Include pumpout information with billing statements. Include information on existing laws and fines for discharging used oil or oily bilge water.

c) Create user guides for bilge pumpouts or disposal facilities where bilge and oil pumpouts are not available. Communicate the importance of minimizing the contamination of bilge water and discourage the use of emulsifiers. List disposal options for contaminated fuel.

Step 3: Sewage Discharge Education

a) Communicate information on the impacts of sewage-related pathogens on shellfish, recreational activities and human health. Identify critical habitat for baitfish and commercial species which may be impacted by discharges.

b) Develop local maps to show locations of sewage pumpouts *(Note: already initiated)*. Coordinate with publishers of boating guides to include the exact locations of pumpouts on their maps. Provide information on how to access pumpouts. Note: 25% of boaters surveyed by AMBAG indicated that they did not know about the existence, or location of, sewage pumpouts. An additional 32% indicated that the pumpouts were inconvenient to use.

Step 4: Product Information and Toxics Disposal Education

a) Collect and disseminate product testing data for alternative boat cleaning and maintenance materials. Many toxic programs have listings of less-toxic alternative products for boat maintenance.

b) Provide information about the fire and health hazards associated with storing hazardous materials in dock boxes or mixing chemical wastes.

c) Provide information on disposal options for materials not currently collected at the harbor. Install adequate signs at recycling locations, solid waste receptacles and waste oil tanks to direct the user to disposal sites for other materials. Provide information on the cost and convenience of disposal when boaters purchase materials from distributors and retailers.

Step 5: Marine Debris Education

a) Communicate to boaters and harbor businesses the impacts of debris on birds and marine mammals. List ways to prevent marine debris. Increase signs at waste containers to indicate proper disposal of recyclable material.

b) Quantify the damage to boats caused by debris. Record and roughly quantify types and sources of materials collected during clean-up days and harbor dredging. Develop an educational display on items that have been found on the bottom. Build upon debris collection campaigns and outreach efforts of the California Coastal Commission.

c) Ensure that all boaters are aware of MARPOL and the U.S. Coast Guard regulations regarding the disposal of debris at sea (and penalties of up to $25,000 per violation). Develop a sticker campaign to inform boaters of Sanctuary disposal regulations which may be more stringent than MARPOL.

Step 6: Vessel Fueling Education

a) Promote standardized fueling and emergency spill response procedures, including development of durable signs for the fueling docks. Include

information on overfilling and spill-prevention procedures, and existing penalties for spills and failure to report a spill. Focus additional attention on prevention of spills and leakage when nozzles and cans are passed across the water to the boats. Focus initial efforts at harbors such as Santa Cruz and Moss Landing where individual boaters conduct the fueling rather than fuel dock operators.

b) In association with signs, include a simple station on the fuel dock with a tray and grate to contain spills and drips from small fuel cans, and provide pads to absorb small spills elsewhere. Communicate appropriate disposal options for absorbent materials such as pads, rags, and bilge pillows *(also see M.3 Bilge Waste Disposal and M.4 Hazardous and Toxic Material Management strategies).*

Step 7: Underwater Hull Cleaning Education

a) Communicate the potential environmental and economic benefits of alternative paints and proper maintenance procedures *(also see M.6 Underwater Hull Maintenance and M.5 Topside/Haulout Vessel Maintenance Strategies).*

b) Distribute product information on less toxic paint and cleaning materials plus handling procedures to boat slip renters.

Step 8: Education on Existing Laws

Compile and disseminate a list of laws and regulations pertaining to disposal. Many boaters are unclear about what is legal or illegal to do. A list of laws could be used as an educational tool to increase voluntary compliance.

Step 9: Develop an Ongoing Distribution Program

a) Develop an ongoing collaborative program to distribute materials, organize educational outreach events and demonstration programs. Wherever possible, incorporate materials into existing outreach and education programs (e.g. U.S. Coast Guard Boating Safety programs) and existing enforcement actions. Use harbor employees as ambassadors for the education program.

b) Identify and recruit individuals who are well-known and respected within the boating community to conduct group and one-on-one outreach activities, and distribute materials. Encourage and develop ability of liveaboards and other boaters to help educate and assist fellow boaters regarding discharge procedures and cleanup protocols.

c) Incorporate materials, displays and programs into existing events such as Salmon Derbies, Fisherman's Association meetings, Elkhorn Yacht Club Nautical Flea Market, Moss Landing Annual Flea Market, Santa Cruz Harbor events, Sanctuary Birthday Celebrations, Coastal Awareness Day, etc.

Step 10: Encourage Community Use and Stewardship of Harbors

Increase sense of community stewardship of harbors and develop a water quality ethic through increased use of harbors as a community and recreational focal point. Establish walking/biking trails, place memorial benches to harbor users, sponsor public events to increase visibility of harbors to the public, increase park-like atmosphere through landscaping, etc.

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 4. *Institutional Responsibilities and Staffing Requirements for Strategy M.1, Public Education and Outreach.*

Primary Activity	Lead	Primary Support	Person Months
1 Review Materials/Target Audiences	MBNMS, AMBAG	Co. Environ. Health, Harbormasters, SOS, Sea Grant, CCC, USCG	1
2 Bilge Waste/Waste Oil Education	Harbormasters, MBNMS	CDFG, SOS, USCG, IWMB	2
3 Sewage Discharge Education	Harbormasters, USCG, MBNMS	Co. Environ. Health, DBW	1
4 Product Information & Toxics Disposal Education	Co. Environ. Health	Harbormasters, Waste Mgt. Districts, MBNMS, DTSC, IWMB, SOS	1
5 Marine Debris Education	CCC	SOS, MBNMS, USCG, CMC	1
6 Vessel Fueling Education	Harbormasters, MBNMS	CDFG, USCG	2
7 Underwater Hull Cleaning Education	SOS	Harbormasters, MBNMS, Diver Groups	1
8 Education on Existing Laws	USCG, Harbormasters	CCC, RWQCBs, CDFG, AMBAG, Co. Environ. Health	1
9 Develop Ongoing Distribution Program	Harbormasters, MBNMS	USCG, Sea Grant, CCC, Boater Groups, Private Industry, IWMB, WQPP, SOS, DBW, AMBAG	0.2*
10 Encourage Community Use and Stewardship of Harbors	Harbormasters, CCC	Boater Groups	0.2*

* = Full Time Equivalents per year (for on-going staff needs)

FUNDING

Table 5. *Costs for Completing Activities and Funding Sources for Strategy M.1, Public Education and Outreach.*

	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
Primary Activity	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Review Materials/Target Audiences	–	<5	–	–	–	–	–	In-kind Services	In-kind Services	MBNMS, AMBAG, IWMB, USCG
2 Bilge Wastes/Waste Oil Education	–	5-10	–	–	–	–	–	In-kind Services	In-kind Services & Grants	IWMB, DTSC
3 Sewage Discharge Education	–	–	–	<5	–	–	–	In-kind Services	In-kind Services & Grants	DBW
4 Product Information & Toxics Disposal Education	–	<5	–	–	–	–	–	–	In-kind Services &Grants	IWMB, DTSC
5 Marine Debris Education	–	–	–	5-10	–	–	–	–	In-kind Services &Grants	IWMB
6 Vessel Fueling Education	–	–	–	5-10	–	–	–	–	In-kind Services &Grants	–
7 Underwater Hull Cleaning Education	–	–	–	<5	–	–	–	–	In-kind Services	–
8 Education on Existing Laws	–	–	–	<5	–	–	–	–	In-kind Services	–
9 Develop Ongoing Distribution Program	–	–	–	5-10	–	5-10	5-10	–	In-kind Services& Grants	–
10 Encourage Community Use and Stewardship of Harbors	–	–	–	–	5	35	25	–	In-kind Services, Grants	Harbor Districts, Boaters

Strategy M.2
Technical Training

WHAT

Develop and implement a regional technical training program for harbor, marina and boatyard employees within the Sanctuary region. The program will include training modules and presentations regarding new technologies, products, procedures and policies that can be used to maintain and enhance water quality within harbors and marinas. The training program will also include instruction on identifying, responding to, and tracing the sources of various types of spills in the harbors.

WHY

Staff of harbors and marine businesses currently do not have consistent access to updated technical information regarding products, facilities, and procedures available to prevent water pollution. Information on current federal, state and local regulations pertaining to harbors and marinas also may not be widely available or applied. Background information on the environmental, regulatory, and economic basis for pollution prevention programs is also not readily available to harbor staff, who often must translate and/or justify resource protection regulations and procedures to boaters, fishermen and the public.

HOW

Develop and implement regional "train the trainer" workshops and materials for harbor personnel working at the Sanctuary's harbors. Trainers will use the information to conduct ongoing training at each harbor for harbor, marina, boatyard and fuel dock personnel, tailoring to the specific issues at each site as needed.

Step 1: Identify Subject Areas

Identify and prepare a detailed outline of the subject areas to be presented in the technical training workshops. *(Note: already initiated).* These subject areas will include:

Summary of Strategy M.2

Activities:

- Identify Subject areas
- Compile training materials
- Identify instructors, trainers and funding
- Solicit participation and develop incentives
- Conduct regional and on-site workshops
- Evaluate workshops and modify as needed

Participating Institutions:

- Harbor Masters*
- MBNMS*
- AMBAG
- CCC Clean Boating Network
- WQPP
- IWMB
- Sea Grant
- RWQCBs
- SOS
- Surfrider
- Marine Assoc.

Schedule: See Table 1

Approximate Cost:

$44,000 to $65,000 over three years
$12,000 to $15,000 for an annual ongoing program

a) Why water quality is of concern to boaters, fishermen and the public. How to provide answers to common questions from the public concerning operations and impacts for each harbor, marina, or boatyard.

b) Current regulations and standards, what they mean in user-friendly terms, and what they require from staff and boaters.

c) How to recognize activities and practices of boaters and boat service operations that create or discharge pollution, and how to communicate effectively with commercial and recreational boaters regarding pollution control techniques.

d) Fueling procedures, small spill prevention and response, sinking vessel response.

e) Boat maintenance and cleaning procedures, runoff control, proper disposal of hazardous and toxic materials, options for types of less toxic maintenance products.

f) Requirements and monitoring of vessel service companies working in harbors and marinas.

Step 2: Compile Training Materials

Concurrently with Step 1, identify, obtain and review existing materials available for training, including those provided by the California Clean Boating Network, Sea Grant Program, U.S. Coast Guard, U.S. Environmental Protection Agency, Northern California Marine Association, local Health Departments, and the San Francisco Bay Planning Coalition. Identify the best materials, and modify them as necessary to address regional conditions. Support materials will include written information such as brochures and fact sheets, in addition to slide presentations and instructional videos available from industry groups, government and non-government organizations. Package materials into three or four modular units which trainers can use to present a series of approximately two hour water quality training sessions throughout the year. Modules will be designed to supplement rather than duplicate existing training programs (e.g. HAZMAT training). *(Note: already initiated).*

Step 3: Identify Instructors, Trainers and Funding

Identify and recruit a facilitator/instructor to conduct the regional "train-the-trainer" workshop, introduce the training modules and their use. Identify two participants from each harbor who are best suited to attend the workshop and will become the trainers for their site. Investigate the potential for specialization of trainers on particular modules, combined with exchange of expertise among harbors for conducting the on-site workshops. Recruit co-sponsors and funding sources for the regional workshop, so the workshop may be offered free of charge.

Step 4: Solicit Participation and Develop Incentives

Solicit the support of the harbor districts, city councils, marina operators, and trade groups to allow time for potential trainers to attend the regional workshop and for employees to attend the workshops at each harbor. Develop recognition and incentives for employee participation in the program. For example, each participating employer or harbor district could receive a certificate or plaque from the Sanctuary, recognizing the district's or businesses' commitment to the Sanctuary and protection of water quality. Public recognition for participation should be generated through media articles on the training, what it means for boaters, and announcements of the awards.

Step 5: Conduct Regional and On-Site Workshops

Schedule and carry out the regional workshop, and follow through with scheduling and notifications of the series of training sessions at each harbor. To support this step, prepare a mailing list and mail training announcements to harbors, marinas, boatworks, and marine businesses in the Sanctuary. For harbors which have ongoing staff training workshops on a variety of issues, the water quality training modules should be incorporated into their existing series with invitations extended to private operations in the harbor area.

Step 6: Evaluate Workshops and Modify as Needed

Prepare and distribute a workshop evaluation form to gauge the success and needs of the technical training program. Evaluate the effectiveness of the training program on an annual basis and make modifications as needed to workshops offered in subsequent years. Update with new techniques, technologies, laws, etc. Provide a mechanism for communication and coordination among participating trainers to maintain consistency throughout the region.

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 6. *Institutional Responsibilities and Staffing Requirements for Strategy M.2, Technical Training.*

Primary Activity	Lead	Primary Support	Person Months
1 Identify Subject Areas	Monterey Harbor	Other Harbormasters, AMBAG, CCC Clean Boating Network, SeaGrant, MBNMS	1
2 Compile Training Materials	MBNMS, Monterey Harbor	CCC Clean Boating Network, SeaGrant	2
3 Identify Instructors, Trainers and Funding	Harbormasters, MBNMS	AMBAG, IWMB, CCC Clean Boating Network	1
4 Solicit Participation & Develop Incentives	Harbormasters	AMBAG, Sea Grant, SOS, RWQCBs, CCC, Surfrider, MBNMS	1
5 Conduct Regional & On-Site Workshops	Harbormasters	Sea Grant, MBNMS, WQPP, Marine Assoc., RWQCBs	0.1*
6 Evaluate Workshops & Modify As Needed	Harbormasters	MBNMS, Sea Grant	0.05*

* = Full-time equivalents per year (for ongoing staff needs)

FUNDING

Table 7. *Costs for Completing Activities and Funding Sources for Strategy M.2, Technical Training.*

	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
Primary Activity	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Identify Subject Areas	–	<5	–	–	–	–	–	In-kind Services	In-kind Services &Grants	–
2 Compile Training Materials	–	15	–	–	–	–	–	In-kind Services	In-kind Services &Grants	–
3 Identify Instructors, Training and Funding	–	–	–	5-10	–	–	–	–	In-kind Services &Grants	–
4 Solicit Participation & Develop Incentives	–	–	–	<5	–	–	–	–	In-kind Services &Grants	–
5 Conduct Regional & On-Site Workshops	–	–	–	10-20	–	10	10	–	In-kind Services, Grants, Marina Business	–
6 Evaluate Workshops & Modify As Needed	–	–	–	–	–	<5	<5	–	In-kind Services &Grants	–

Strategy M.3
Bilge Waste Disposal and Waste Oil Recovery

WHAT

Facilitate the collection of contaminated bilge water through the construction and operation of new bilge water pumpout and waste handling facilities. These handling facilities would probably include large holding tanks and oil/water separators. Where feasible, mobile pumpouts mounted to a boat or barge should be developed to maximize boater convenience. A mobile pumpout could be used in situations where a vessel is disabled and cannot move, or simply to provide the convenience of having the pumpout come to your boat instead of the other way around.

Marinas that have not already done so should install crankcase oil pumpouts to reduce oil spilled in the bilge during oil changes and incidental spills of waste oil during disposal. These pumpouts should include mechanized systems that pump oil directly from the boat motor into holding tanks. The oil is stored and taken to a waste oil recycler.

Encourage the use of bilge and waste oil pumpouts by siting them in accessible and convenient locations. Use of facilities should also be encouraged by a regional education effort to raise awareness of the issue and publicize pumpout locations (See M.1 Public Education/Outreach Strategy), and by increased enforcement of existing laws for those few boaters who do not respond to the voluntary approach. In addition to pumpouts, absorbent oil pads and a pad cleaning/disposal system should be provided for boaters use at each harbor.

Summary of Strategy M.3

Activities:

- Initiate public education program
- Provide absorbant pads
- Identify permits and MOAs
- Identify funding sources
- Identify technology
- Identify appropriate sites
- Construct pumpouts
- Publicize location/increase enforcement

Participating Institutions:

- Co. Environmental Health*
- Harbor Masters*
- MBNMS*
- U.S. Coast Guard*
- AMBAG*
- Fuel Dock Operators
- IWMB
- Private Industry
- EPA
- SOS
- CDFG

Schedule: See Table 1

Approximate Cost:

$110,000 to $134,000 over three years
$5,000 to $9,000 for an annual ongoing program

WHY

The water that sometimes collects in the bilge (the inside of a boat hull) can become contaminated with oil, fuel, engine coolant, or bilge cleaners, creating a toxic mixture which should not be pumped overboard. However, it is difficult to properly dispose of contaminated bilge water due to the large volumes of water involved and the problem of separating the sea water from the toxic contaminants. Due to a lack of bilge water pumpout facilities in most Sanctuary harbors, current disposal options are limited to either transporting the bilge waste water to toxic disposal sites, mixing it with waste oil (which can render the oil non-recyclable), or simply pumping the contaminated bilge water overboard. Use of oil absorbent pads or bilge "pillows" is also an option, although these are only partially effective at soaking up oil on bilge water and can create disposal problems themselves. Also, automatic bilge pumps sometimes discharge oily bilge water from unmanned vessels. The improper disposal of oily bilge wastes is cited by harbormasters and boaters as the main source of oil in the harbors.

Another related problem is that of used crankcase oil getting into harbor and Sanctuary waters. Waste oil handling and storage systems provide multiple pathways for waste oil to enter the water. Oil spilled during oil changes, abandoned oil containers, and oil-soaked containers and rags may result in oil leaking into harbor waters. Waste oil holding tanks may leak, or spills may occur during the transfer of oil from vessels to the disposal area. Even small amounts of oil in an enclosed waterway or estuary can be harmful to fish and wildlife, especially to

sensitive estuarine fish nursery areas (e.g., Elkhorn Slough) which are of particular concern to the fishing community.

HOW

Step 1: Initiate Education Program

Initiate education program to raise boaters awareness of the issue and promote safe disposal *(See M.1 Public Education/Outreach strategy)*. As a first step, post the location of the nearest bilge and waste oil pumpouts.

Step 2: Identify Funding Sources

Seek methods of funding which will allow pumpout services to be provided at low or no cost to the boater at the time of use. This might include: Clean Vessel Act grants, the State waste oil grant program, Boating and Waterways loans, donations from private oil suppliers, or increases in slip fees. Costs should be kept low to encourage use. Also, identify funds to support an oil pad distribution program for boaters. *(Note: funding search/grant submissions already initiated).*

Step 3: Provide Absorbent Pads

Provide a dispenser near the dump stations with oil absorbent pads for boaters to remove small spills and small amounts of oil from bilge water (provide at low or no cost). Develop an effective means of properly disposing of spent pads as hazardous waste.

Step 4: Identify Necessary Permits and MOA's for Pumpouts

Investigate ways to facilitate pumpout installation and to expedite the permitting process. Consult with the various agencies that regulate different aspects of bilge water and waste oil collection and storage to determine permit requirements for pumpout facilities. Outline requirements for various harbors, and work with agencies to improve their abilities to permit such facilities. Agencies to be consulted may include: the air pollution control district(s), wastewater discharge permitting agencies (e.g. Regional Water Quality Control Board, sewer agencies), fire districts, Department of Fish & Game's (CDFG) Office of Oil Spill Prevention and Response (OSPR), California Coastal Commission, and others. Private consultants and manufacturers of water treatment equipment may also be able to assist in facilitating the permitting process.

Pursue formal agreements between harbor districts and fuel dock owners/operators, the State Lands Commission, etc. For state tidelands, waste oil collection may be a condition of a harbor district lease of tidelands, for instance. Investigate feasibility of using an attendant to avoid contamination and safety problems at bilge waste collection facilities. Investigate means to resolve potential liability for spills that may occur due to pumpout usage, as an incentive for the participation of fuel dock operators.

Step 5: Identify Technology

Identify technology and equipment options through consultations with engineering contractors and equipment manufacturers: Several manufacturers produce self-contained water treatment units. The most basic working systems consist of a series of sumps for oil separation with wastewater discharging to the sanitary sewer (e.g. Spud Point Marina in Bodega Bay). After separation, the oil collected from the bilge water would be taken to a hazardous waste facility, and the cleaned-up water could potentially be discharged into the sanitary sewer system. Develop regional guidelines for the type of equipment needed.

Step 6: Identify Appropriate Sites

Investigate locations for maximum convenience and accessibility to boaters. In some harbors, citing the pumpouts for bilge water, sewage, and possibly crankcase oil, near marina fueling stations would provide the convenience of a one-stop *"pump out, fuel up"* facility. Investigate the mobile pumpout concept as an alternative to fixed pumpout location, and as an effective sinking vessel response. A general policy of no repeat visits by mobile pumpouts may be necessary in some harbors to discourage continued immobility of vessels.

Step 7: Construct Pumpouts

Construct pumpouts and waste treatment facilities. Upgrade spill containment (e.g., berms) and monitor waste oil storage facilities to reduce the chance of oil leaks. Develop security for the facility and signs to discourage dumping of other contaminants which would prevent recycling of the oil. *(Note: installation of bilgewater pumpout for Breakwater Cove in Monterey already initiated).*

Step 8: Publicize Location of Facilities and Increase Enforcement

Notify boaters of location of new facilities, explain procedures and encourage their use. Explain existing system of fines for oil discharges. *(See M.1 Public Education/Outreach strategy).* Increase enforcement of existing laws and ticketing of illegal dischargers by U.S. Coast Guard, U.S. Coast Guard Auxiliary, and/or harbor districts for those few boaters who may not respond to a voluntary approach. U.S. Coast Guard now has ability to ticket generators of small spills (Title 100), rather than going through a lengthy oil spill litigation.

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 8. *Institutional Responsibilities and Staffing Requirements for Strategy M.3, Bilge Waste Disposal/Oil Recovery.*

Primary Activity	Lead	Primary Support	Person Months
1 Initiate Public Education Program	See Strategy M.1 Public Education and Outreach		
2 Identify Funding Sources	MBNMS, AMBAG	Harbormasters, Co. Environ. Health, IWMB	1
3 Provide Absorbent Pads	Co. Environ. Health, Harbormasters	MBNMS, EPA, USCG, CDFG, SOS	1
4 Identify Permits & MOAs	Co. Environ. Health	Harbormasters	1
5 Identify Technology	Harbormasters	Private Industry, Fuel Dock Operators	0.5
6 Identify Appropriate Sites	Harbormasters	Fuel Dock Operators	0.5
7 Construct Pumpouts	Harbormasters	Private Industry	1.5
8 Publicize Location/Increase Enforcement	MBNMS, Harbormasters, USCG	AMBAG	0.1*

* = Full-time equivalents per year (for ongoing staff needs)

FUNDING

Table 9. *Costs for Completing Activities and Funding Sources for Strategy M.3, Bilge Waste/Oil Recovery.*

Primary Activity	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Initiate Public Education Prg.	–	–	–	–	–	–	–	In-kind Services	In-kind Services, Grants	IWMB, MBNMS, Counties
2 Provide Absorbent Pads	5-10	<5	–	<5	–	<5	<5	–	Grants	IWMB
3 Pursue Permits & MOAs for Pumpouts	–	<5	–	–	–	–	–	–	In-kind Services	Counties, Harbormasters
4 Identify Funding Sources	–	<5	–	–	–	–	–	–	In-kind Services	MBNMS, AMBAG
5 Identify Technology	–	–	–	<5	–	–	–	–	In-kind Services	Private Industry, Harbormasters
6 Identify Sites	–	–	–	<5	–	–	–	–	In-kind Services	Harbormasters
7 Construct Pumpouts	–	–	30	10	30	10	–	–	Grants	IWMB, Block Grants
8 Publicize Location/Increase Enforcement	–	–	–	5-10	–	<5	<5	–	In-kind Services, Grants	IWMB, Block Grants, MBNMS, USCG

Strategy M.4
Hazardous and Toxic Materials Management

WHAT

Initiate a program to provide periodic collection events at harbor districts in the Sanctuary. Resolve potential regulatory and liability issues that currently impede harbor districts taking a more active role in hazardous materials management. Work with regional and county waste management agencies to incorporate harbor waste collection initiatives into existing programs.

Develop convenient disposal options for boaters that allow for the drop-off and collection of hazardous materials in harbors. Establish procedures for the collection of batteries, paints, solvents, antifreeze and waste oil/fuels at periodic collection events. If necessary, assist harbors in securing grant funds for periodic collection events. Prepare a public information program, including signs, to ensure that boaters are aware of the programs.

Summary of Strategy M.4

Activities:

- Plan periodic waste collection and pickup events
- Obtain funding
- Develop sites
- Establish procedures handling materials
- Implement periodic collection and pickup events
- Implement education program

Participating Institutions:

- Co. Environmental Health*
- Harbor Masters*
- MBNMS*
- Waste Mgt. Districts*
- DTSC
- AMBAG
- WQPP
- IWMB
- EPA
- RWQCB 3

Schedule: See Table 1

Approximate Cost:

$58,000 to $83,000 over three years
$13,000 to $23,000 for an annual on-going program

WHY

Hazardous and toxic materials generated by boaters include batteries, paints, solvents, antifreeze, detergents, waste oil and contaminated fuels. All of these materials are potentially toxic to aquatic organisms. Most harbors currently do not have the legal authority or infrastructure to temporarily store or transport these types of wastes, leaving boaters with few convenient options for their disposal. These materials are often stored in dock boxes or in boats, where leakage and flooding during washdowns may result in releases to harbor waters. Harbor managers report instances where fuel and hazardous materials are abandoned on docks or in parking areas.

In addition to problems associated with wastes in small containers, leaking or flooded vessel fuel tanks can create problems with disposal of contaminated gasoline and diesel fuel. A boater with a large amount of contaminated fuel may not be able to dispose of it through a bilge pumpout system. Currently, boaters either filter the fuel on site through a water-separating fuel filter, or haul it to a disposal site. When asked in a boater survey what types of materials are most difficult to dispose of, 20% of the respondents cited waste fuel.

Hazardous and toxic material disposal is further complicated by the fact that there are regulatory and economic disincentives for harbor districts or marina operators to collect these types of wastes. Harbor districts are discouraged from handling toxic wastes due to the liability associated with storing and transporting these materials. Because harbors generally do not handle these materials, it is often left up to the individual boaters. This often leads to improper storage and disposal due to lack of convenient disposal options.

A waste generated by an individual boater can be disposed of without permit or fee; it is considered a household hazardous waste. If the same waste is collected by the harbor district and co-mingled with the wastes of other boaters, it may have to be contained in a permitted waste collection area. The harbor would accept the responsibility of the generator and the costs of transportation and disposal. If large volumes of hazardous wastes are collected, the harbor district may no longer qualify as a Small Quantity Generator, requiring higher insurance fees, additional administrative costs, and

greater liabilities. These regulatory and economic issues must be resolved to implement an effective waste management strategy.

HOW

Step 1 : Plan Development of a Temporary Waste Collection Program

In coordination with the harbor districts, county waste districts/landfill operators and environmental health departments, outline a periodic waste collection and pickup program to transfer wastes collected at the harbors to appropriate county waste sites. This would include identification of appropriate pickup sites within the harbors, and the timing and number of pickup events that would take place. Plan the program with the landfill/solid wastes officials in Monterey, Santa Cruz, and San Mateo counties. It may be possible to incorporate the harbor pickup service into existing waste programs, such as the Batteries, Oil, and Paint (BOP) program currently underway in the region.

Step 2: Obtain Funding

If necessary, secure funds and contract pick-up services with certified haulers. Grants that are potentially available include those through the California Integrated Waste Management Board and the State Water Resources Control Board. Investigate the possibility of using HAZMAT-trained volunteers to assist professionals at the periodic pickup stations in the harbor districts.

Step 3: Develop Sites

In collaboration with regional waste districts, local fire protection districts, environmental health departments and other government agencies, assist harbor districts in the siting of periodic waste collection/ transfer sites. In addition to accessibility and convenience to boaters, factors would include spill containment (e.g. non-leaching berms and impervious bottoms), fire protection, and security — fenced and locked facilities. Investigate the possibility of obtaining categorical exemptions for harbors for periodic collection and transport of small quantities of hazardous materials. *(Concurrent with Step 2)*

Step 4: Establish Procedures for Handling of Materials at the Collection Facilities within the Harbors

With assistance and direction from county waste management officials, establish handling procedures for hazardous materials which can be handled at the pickup sites, and recommended disposal procedures for any materials which cannot be accommodated.

Step 5: Implement Pickup Services Program

Set dates for pickup events within the harbors, contract with a certified waste hauler if necessary, and implement the facilities (pickup) program. Step 5 would be initiated simultaneously with the Step 6 Education Program.

Step 6: Implement Education Program

Implement boater education programs to promote the periodic, collection programs. This would include flyers to the boating community, signage and information on the proper handling and disposal of hazardous materials and toxins, including gasoline and oil products (*link with M.1 Public Education/ Outreach strategy*).

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 10. *Institutional Responsibilities and Staffing Requirements for Strategy M.4, Hazardous & Toxic Materials Mgt.*

Primary Activity	Lead	Primary Support	Person Months
1 Plan Periodic Waste Collection Pickup Program	Harbormasters, Co. Environ. Health	Waste Mgt. Districts, EPA, DTSC, RWQCB 3, MBNMS	1
2 Obtain Funding	Harbormasters, Co. Environ. Health	AMBAG, WQPP, MBNMS, IWMB	2
3 Develop Sites	Harbormasters, Co. Environ. Health	Waste Mgt. Districts	1
4 Establish Procedures for Handling Materials	Waste Mgt. Districts, Co. Environ. Health	Harbor Districts, EPA, DTSC	2
5 Implement Periodic Collection Pickup Program	Harbormasters, Co. Environ. Health	Waste Mgt. Districts	0.1*
6 Implement Education Program	MBNMS, Harbormasters	AMBAG, Waste Mgt. Districts	0.1*

* = Full-time equivalents per year (for ongoing staff needs)

FUNDING

Table 11. *Costs for Completing Activities and Funding Sources for Strategy M.4, Hazardous and Toxic Materials Mgt.*

Primary Activity	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Plan Periodic Waste Collection Pickup Program	–	<5	–	–	–	–	–	–	In-kind Services	–
2 Obtain Funding	–	<5	–	–	–	–	–	–	Grants	IWMB, DTSC
3 Develop Sites	–	–	–	15	–	–	–	–	In-kind Services, Grants	IWMB, DTSC
4 Establish Procedures for Pickup & Transport	–	–	–	<5	–	–	–	–	In-kind Services, Grants	IWMB, DTSC
5 Implement Haz. Materials Pickup Program	–	–	–	10-20	–	10-20	10-20	–	In-kind Services, Grants	IWMB, DTSC
6 Implement Education Prg.	–	–	–	5-10	–	3	3	–	In-kind Services, Grants	IWMB, MBNMS

Strategy M.5
Topside and Haul-Out Vessel Maintenance

WHAT

Identify and promote regional guidelines on practices that reduce contaminants from hull washwater and first flush runoff from boatyards and parking lots. Promote continued and expanded use of dust and drip containment methods (e.g., tarps and screens), and paint stripping technologies and products that result in reduced emissions. Review the effectiveness of policies and pollution controls addressing maintenance work at boat slips, parking lots and unregulated work areas. Promote boat maintenance methods that generate less pollution through education efforts and/or "Clean Worker Contract" programs.

Evaluate priority areas and identify feasible solutions for each harbor to improve control and filtering of runoff from parking lots, unregulated work areas and waste collection areas. Assist harbors in securing funding to implement runoff BMPs.

WHY

Above-water cleaning, repairing and refinishing of boats generates potentially toxic residues, dust particles, and spilled liquids which may contaminate harbor waters and sediments. This type of maintenance work may be done on the water at the slip ("topside" work), in boatyards, or in unregulated work areas (parking lots). The containment of dust, spills, and runoff is practiced to varying degrees at different harbors.

Marina parking lots are often the sites of boat maintenance activities and waste storage areas. Parking lot runoff may contain oil leaked from vehicles or other residues from illegal parking lot work or spills. Unregulated work or storage areas can be contaminated with fuel, oil or solvents. Detergents used to wash down trailered boats may accumulate during dry seasons and compound first flush impacts of seasonal storms. The problem is increased by improper disposal of contaminated fuel, antifreeze and other toxic materials.

Summary of Strategy M.5

Activities:

- Promote new stripping/refinishing technologies
- Improve containment & filtering of paint
- Ensure compliance with existing regulations
- Improve control and filtering of runoff
- Review policies re: work in slips/parking lots

Participating Institutions:

- RWQCBs 2 & 3*
- Harbor Masters*
- Boatyards*
- Manufacturers
- CDFG*
- AMBAG
- Retailers

Schedule: See Table 1

Approximate Cost:

$83,000 to $99,000 over three years
$6,000 to $8,000 for an annual on-going program

HOW

Initiate Education and Training Programs (See strategies M.1 Public Education and Outreach, and M.2 Technical Training)

Step 1: Ensure Compliance with Existing State Regulations

In coordination with harbormasters, boatyards and the Regional Boards, work to ensure that harbor/boatyard facilities are in compliance with Waste Discharge Requirements, NPDES permits and California Department of Fish and Game Code Section 5650. Requirements for the containment of hull wash water and storm water runoff have resulted in different approaches at each harbor. There seems to be some confusion about what is currently required of boatyard operators.

Step 2: Assess and Promote New Stripping and Refinishing Technologies

Identify equipment and maintenance techniques for stripping and refinishing operations that reduce emissions and discharges. Build upon and promoting existing boatyard BMPs already in use. Examples

include: heat scrapers for small work, alternatives to varnish for ultra-violet protection, tools for collecting sand during in-slip-work, equipment to collect waste material stripped from hulls, and wet sand blasting for boatyards which have hull washwater treatment facilities. Develop demonstration projects to promote the use of such products and techniques in appropriate areas. Tailor presentations to the specific conditions in each harbor (e.g., the percentage of boaters who do their own work versus use contractors). Invite manufacturer's representatives to provide product demonstrations, where possible incorporating them into existing meetings of the boating community. *(link with M.2 Technical Training and M.1 Public Education/Outreach strategies).*

Step 3: Improve Containment and Filtering of Paint/ Dust

Investigate and promote better containment and filtering of paint spray and sanding/blasting dust, which can generate both volatile and particulate emissions. Continue and build upon existing screening and containment measures used at boatyards, and best management practices used during small scale work at boat slips or on land (e.g., use of a hand vacuum during sanding). Spray paint only in constrained areas such as a paint booth, or where there is no danger of wind drift. Contain sanding and blasting dust in appropriate enclosed places (e.g., boatyards), and ensure that wet-removal is not used in areas without hull-wash treatment facilties. Use tarps or dropcloths for smaller jobs, and investigate feasibility of using floating drop cloths for in-slip work. *(link with M.2 Technical Training and M.1 Public Education/Outreach strategies)*

Step 4: Review Policies Regarding Work in Slips and Parking Lots

Review existing regulations regarding maintenance work done at boat slips and in parking lots. Assess specific conditions of each harbor, marina, or boatyard:

a) Work with the boating community in each harbor to develop practical modifications of harbor policies, regulations, and slip leases/permits where needed to promote BMPs. Boatyard or State Lands Commission or CCC leases could be structured to require the implementation of particulate matter reduction practices and technologies. Consider requiring service companies, maintenance workers, and others to sign a "Clean Worker Contract" and keep it on file.

b) Promote three simple rules to reduce spills during work at boat slips: 1) nothing is left on the dock, 2) nothing goes in the water, and 3) no spray painting or varnishing. Encourage the use of boatyards for bottom repairs. Restrict types of work done outside designated areas or in boat slips through conditions included in marina use contracts or berthing agreements, if necessary.

Step 5: Improve Control and Filtering of Runoff

Evaluate priority areas and identify feasible solutions for each harbor to improve control and filtering of runoff from parking lots, unregulated work areas and waste collection areas. Assist harbors in securing funding to implement BMPs for runoff control. Examples include: retrofitting drainage sumps with oil absorbent materials, rerouting drainage to settlement basins and vegetated buffer strips, and installing parking lot oil traps and spill containment structures around dumpsters or oil collection facilities. Wash down areas for trailerable boats may also be constructed or retrofitted to drain to the sanitary sewer or other containment system.

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 12. *Institutional Responsibilities and Staffing Requirements for Strategy M.5, Topside/Haul-out Maintenance.*

Primary Activity	Lead	Primary Support	Person Months
1 Ensure Compliance with Existing Regulations	RWQCBs, CDFG	Harbormasters, Boatyards	1
2 Promote New Stripping & Refinishing Technologies	Boatyards, Harbormasters	AMBAG, Retailers, Manufacturers	2
3 Improve Containment & Filtering of Paint	Boatyards, Harbormasters		1
4 Review Policies Re: Work in Slips & Parking Lots	Harbormasters		1
5 Improve Control & Filtering of Runoff	Harbormasters	RWQCBs	10

FUNDING

Table 13. *Costs for Completing Activities and Funding Sources for Strategy M.5, Topside and Haul-out Maintenance.*

Primary Activity	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Ensure Compliance with Ex. Regulations	–	<5	–	<5	–	<5	<5	–	–	–
2 Promote New Stripping & Refinishing Technologies	–	–	–	<5	–	<5	<2	–	In-kind Services	–
3 Improve Containment & Filtering of Paint	–	–	–	<5	–	<5	<2	–	In-kind Services	–
4 Review Policies Re: Work in Slips/Parking Lots	–	–	–	<5	–	–	–	–	In-kind Services	–
5 Improve Control & Filtering of Runoff	–	–	–	20-30	–	20-30	–	–	Grants	DBW, Gas Taxes, Prop 99

Note: Estimated costs for step 5 are for site assessments, planning and funding search only.
Implementation costs for runoff control will vary greatly depending on site and BMP selected.

Strategy M.6
Underwater Hull Maintenance

WHAT

Initiate a program targeted at boat hull maintenance that promotes less toxic paints and improved underwater cleaning practices to reduce discharges to harbor waters. Distribute information on less toxic paints and results of demonstration projects which evaluate new materials and maintenance methods that reduce discharges. Consolidate and promote guidelines for bottom paint preparation to reduce excessive sloughing of paint. Initiate a training and certification program for divers who conduct underwater cleaning to reduce discharges from hull cleaning practices.

WHY

Anti-fouling paints, which are commonly used on marine vessels below the waterline, contain toxic compounds which leach directly into the water or are sloughed off as particles into harbor bottom sediments. This process is accelerated by divers scrapping hulls to remove heavier growth. In the process, hull scraping releases toxic paint particles into the water column. These particles bioconcentrate in the food chain and settle into the sediment. High concentrations of contaminants and disposal of dredge material may increase the costs associated with harbor dredging.

Boat owners and divers are not always aware of the potentially harmful effects of the materials and maintenance practices in use, and do not have ready access to safer methods. In addition there is limited acceptance of less toxic paint products due to concerns about higher costs and a general distrust of untested products.

HOW

Step 1: Promote Safe Marine Products

Identify and promote the use of marine supplies such as bottom paints, primers, and cleaning materials, whose contents are less toxic or that break down quickly within the marine environment. Compile a list of options for less toxic products from existing summaries, and distribute them through boatyards and marine products stores.

Step 2: Promote Results of Demonstration Events

Promote results of existing demonstration events or evaluations of new "marine-friendly" products by manufacturers and distributors, and develop additional demonstrations as needed. Distribute results which analyze alternative paints and maintenance procedures for environmental benefits and cost-effectiveness. Paint manufacturers claim that more expensive paints last longer and require less frequent abrasive cleaning, but boaters may need to be shown this through demonstrations.

Step 3: Improve Bottom Paint Preparation

Consolidate and promote regional guidelines for bottom paint preparation to decrease premature detachment from hulls. These guidelines should include limiting double-coating, to decrease detachment caused by paint build-up. Encourage businesses involved in hull painting to adhere to these guidelines, while building upon existing BMPs *(Link with M.2 Technical Training Strategy).*

Summary of Strategy M.6

Activities:

- Promote safe marine products
- Promote results of demonstration events
- Improve bottom paint preparation
- Initiate hull training & cleaning certification

Participating Institutions:

- Boatyards*
- Harbor Masters*
- Dive Groups*
- Sea Grant*
- Manufacturers
- SOS
- Vendors
- MBNMS
- CCC
- RWQCBs

Schedule: See Table 1

Approximate Cost:

$22,000 to $33,000 over three years
<$5,000 for an annual on-going program

Step 4: Initiate a Hull Cleaning Training and Certification Program

a) Review the structure and effectiveness of underwater cleaning programs developed in other regions. For instance, in San Diego and the San Francisco Bay Area, efforts are underway to promote underwater BMPs for divers through diver trade organizations and Sea Grant UC Extension. Harbors in other areas have used a regional "Clean Worker Contract" policy as a way to establish expectations and discourage use of less professional divers, maintenance workers, etc.

b) Identify preferred underwater cleaning practices to be used by divers in the Sanctuary region, and develop a simple regional guidebook. These may include: offering customers an option to clean their hulls more frequently but at a lower cost; discontinuing scraping of barnacles and hard growth (vessels which have extensive marine growth should be hauled out for cleaning); limiting the use of power scrubbing equipment, and encouraging customers to refinish with harder or less toxic finishes.

c) In coordination with local diver organizations and businesses, initiate a short-course training and certification program for underwater hull cleaning which is recognized at all harbors. Include information for divers on preferred practices and low-discharge cleaning techniques, and how these practices should be tailored based on case-by-case conditions such as degree of growth, paint type used, environmental conditions, etc. Provide periodic updates as needed when paint types change. *(Link with M.2 Technical Training Strategy).*

d) Develop a list of certified hull-cleaning divers and post the list at each harbor, and encourage boaters who need underwater cleaning to hire the certified divers. With assistance from the harbors, evaluate the feasibility and need for harbor districts to adopt a formal policy of only allowing trained, certified divers to undertake hull cleaning within the districts.

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 14. *Institutional Responsibilities and Staffing Requirements for Strategy M.6, Underwater Hull Maintenance.*

Primary Activity	Lead	Primary Support	Person Months
1 Promote Safe Marine Products	Harbormasters, Boatyards	Manufacturers, SOS, Sea Grant	1
2 Promote Results of Demonstration Events	Harbormasters, Boatyards	Manufacturers, Sea Grant, Vendors	1
3 Improve Bottom Paint Preparation	Harbormasters, Boatyards		1
4 Initiate Hull Training & Cleaning Certification Program	Diver Groups, Sea Grant	Harbormasters, MBNMS, RWQCBs, CCC Clean Boating Network	2

FUNDING

Table 15. *Costs for Completing Activities and Funding Sources for Strategy M.6, Underwater Hull Maintenance.*

Primary Activity	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Promote Safe Marine Products	–	<5	–	–	–	–	–	–	In-kind Services	–
2 Promote Results of Demonstration Events	–	<5	–	<5	–	–	–	–	In-kind Services	–
3 Improve Bottom Paint Preparation	–	–	–	<5	–	–	–	–	In-kind Services	–
4 Initiate Hull Training & Cleaning Certification Program	–	–	–	5-10	–	<5	<5	–	In-kind Services	–

Strategy M.7
Harbor Pollution Reduction Progress Review

WHAT

Develop simple procedures and checklists for harbormasters to assess the current status of their pollution control efforts, and to track annual progress towards pollution reduction. The self-assessment should review four general areas: (1) education and training programs available to harbor, boatyard and fuel dock staff and to the boating community, and estimates of their use and success; (2) waste facilities available to harbor users and evaluation of their use; (3) programs and ordinances used to maintain and enhance resource protection measures; and (4) simple estimates of the degree of pollution problems, including public reports and staff observations of spills, marine debris and hazardous material disposal, illegal discharges, dredging and disposal operations, etc.

This self-evaluation would initially provide a source of measures available to harbormasters and staff to manage harbor resources, identify successful practices already in place, and highlight potential areas for improvement. Annual follow-up evaluations would be used by harbormasters to track progress, suggest modifications to adopted practices, and keep harbors moving towards a goal of reduced contamination. The self-evaluation program should also provide simple annual reports to harbor boards and other interested groups. Harbors within the Sanctuary region making significant progress towards pollution reduction should be publicly recognized through an annual Clean Harbor award from non-profit groups.

WHY

All of the harbors within the Sanctuary region have addressed pollution problems to varying degrees. There are currently no guidelines for harbors to use to assess effectiveness of their efforts, compare progress relative to other regions, or relative to past years within their own districts. Lack of such an assessment hampers efforts to identify pollution problems, target needed improvements to practices and facilities, and obtain public recognition of successful pollution control efforts.

Summary of Strategy M.7

Activities:

- Develop report format and checklist
- Develop tracking system
- Annual review & recommendations
- Develop "Clean Harbor" Recognition program

Participating Institutions:

- AMBAG*
- Harbor Masters*
- MBNMS*
- SOS*
- CMC*
- Surfrider*
- WQPP
- RWQCBs
- Co. Envir. Health
- Sea Grant
- CCC

Schedule: See Table 1.

Approximate Cost:

$30,000 to $40,000 over three years
<$15,000 for an annual on-going program

HOW

Step 1: Develop Report Format and Checklist

Develop a simple report format and checklist which identifies the major types of pollutants in harbors and the associated boating or marina-related sources. This format should use and build upon existing daily logs or other recording methods used in each harbor, and minimize additional paperwork. It should include a Best Management Practices Checklist for Harbors and Marinas in the Monterey Bay Sanctuary Region, and a checklist on the condition and use of harbor waste facilities. The checklists should include simple means to estimate and record: a) the use and condition of harbor waste facilities, including pumpouts and trash bins; b) the incidence of small spills and illicit discharges; and c) amounts and types discarded debris and hazardous materials, including those in dredged materials. These checklists and guidelines should be drawn from existing sources such as Sea Grant publications, Marin County's Harbor Guide, etc. and modified in collaboration with the harbormasters to fit local conditions and staff practices.

Step 2: Develop Tracking System

Develop and implement procedures for management and staff to use the checklist to regularly track progress on pollution control measures. Identify efficient methods and incentives to include pollution control observations/procedures as part of routine staff and management activities. Incorporate the checklist and tracking procedures into an ongoing training program which includes information on how to observe and assess pollution problems. Investigate feasibility of using volunteers to assist with some of the tracking or observations, e.g. assessments of debris. *(link with M.2 Technical Training strategy)*

Step 3: Annual Review and Recommendations

Harbormasters review on an annual basis the projects, policies, education and training efforts, and pollution reports addressed in the checklist, and provide simple summary reports to harbor district boards and other interested parties. Develop annual pollution control priorities and modifications based upon report, and work with other agencies and groups to obtain funding to address identified problem areas.

Step 4: Develop a Sanctuary "Clean Harbor" Recognition Program

Develop a Clean Harbor program which annually recognizes harbors for making significant progress towards reducing pollution, and obtains positive media coverage by highlighting the pollution-control accomplishments of each harbor. The recognition program, sponsored by nonprofit environmental groups, should promote partnership between the harbors and the Sanctuary, encourage consistent harbor staff involvement, and heighten boater awareness of water quality issues. Determine a minimum qualifying standard for recognition and design a "Clean Harbor" symbol/sign associated with the program. This "Clean Harbor" designation could be posted in high traffic areas to alert all harbor users, including transient boaters, of the need to keep the area clean.

WHEN

See Table 1.

WHERE

Monterey, Moss Landing, Santa Cruz, and Pillar Point Harbors.

WHO

Table 16. *Institutional Responsibilities and Staffing Requirements for Strategy M.7, Harbor Pollution Reduction Review.*

Primary Activity	Lead	Primary Support	Person Months
1 Develop Report Format & Checklist	MBNMS	Harbormasters, AMBAG, RWQCBs, Sea Grant	1
2 Develop Tracking System	Harbormasters, MBNMS	AMBAG, RWQCBs, Sea Grant	2
3 Annual Review & Recommendations	Harbormasters	RWQCBs, Sea Grant	0.1*
4 Develop "Clean Harbor" Recognition Program	SOS, CMC, Surfrider, AMBAG	CCC, Co. Environ. Health, Sea Grant, MBNMS, WQPP, RWQCBs	0.1*

* = Full-time equivalents (for ongoing staff needs)

FUNDING

Table 17. *Costs for Completing Activities and Funding Sources for Strategy M.7, Harbor Pollution Reduction Review.*

Primary Activity	Cost Estimates in $1,000							Funding Sources		Funding Source
	1996		1997		1998		Ongoing	Existing	Potential	Institution
	Capital	Labor & Services	Capital	Labor & Services	Capital	Labor & Services	Cost/yr			
1 Develop Report Format & Checklist	–	<5	–	–	–	–	–	–	In-kind Services	–
2 Develop Tracking System & Implement	–	–	–	5-10	–	<5	<5	–	In-kind Services	–
3 Annual Review & Recommendations	–	–	–	5-10	–	<5	<5	–	In-kind Services	–
4 Develop "Clean Harbor" Recognition Program	–	–	–	–	–	<5	<5	–	In-kind Services	–

References

Association of Monterey Bay Governments. 1995. Harbor Best Management Practices Project. Survey mailed to 3000 slip holders in Santa Cruz, Moss Landing, and Monterey harbors.

Boyd, J. 1995. James Boyd Paint Company, Oakland, CA. Personal Communication, July, 1995.

Garrett, D. 1995. Breakwater Cove Marina Manager, Monterey, CA. Personal Communication, July, 1995.

Gravelle, R. 1995. Gravelle's Boatyard, Moss Landing, CA. Personal Communication, June, 1995.

Johnson, L. 1995. Sea Grant Extension Program, University of California San Diego, Personal Communication, July, 1995.

Johnston, D. 1994. California Department of Fish and Game. Personal Communication, Deborah Johnston, DFG, letter to Warden Gloria Lopez, RE: Gravelle's Boatyard, May 27.

McMahon, J. 1995. San Mateo County Harbor District, Pillar Point Harbormaster. Personal Communication, August, 1995.

METRO. 1992. *Maritime Industrial Waste Project Reduction of Toxicant Pollution from the Maritime Industry in Puget Sound*, Municipality of Metropolitan Seattle Water Pollution Control Department. Seattle, WA.

Milliken, A.S., and V. Lee. 1990. *Pollution Impacts from Recreational Boating: A Bibliography and Summary Review.* Rhode Island Sea Grant Publications, University of Rhode Island Bay Campus, Narragansett, R.I.

Nelson, E. 1994. *Making Sense of Antifouling Paints.* Sail. April, pp. 50-55.

National Oceanic and Atmospheric Administration (NOAA). 1992. Final Environmental Impact Statement/ Management Plan. Silver Spring, MD. pg. I-4.

NOAA. 1994. *Monterey Bay National Marine Sanctuary Water Quality Protection Program Workshop summary: Preliminary identification of issues and strategies.* Silver Spring, MD: 113 pp.

NOAA. 1995. *Monterey Bay National Marine Sanctuary Water Quality Protection Program working document: Comparison of the California Water Quality Assessment and the January 1994 workshop results.* Silver Spring, MD. 76 pp.

O'Hara, K.J., Iudicello, S., and Biece, R. 1988. *A Citizens Guide To Plastics In The Ocean: More Than A Litter Problem.* Center for Environmental Education, Washington, DC.

PSWQA. 1990. *1991 Puget Sound Water Quality Management Plan.* Puget Sound Water Quality Authority. Seattle, WA.

SWRCB. 1995. *California State Mussel Watch, Water Quality Monitoring Report, Summary 1987-1993 Data.* State Water Resources Control Board, Division of Water Quality.

U.S. EPA. 1985. *Coastal Marinas Assessment Handbook.* U.S. Environmental Protection Agency, Region IV EPA, Atlanta, GA.

U.S. EPA. 1990. *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters.* U.S. Environmental Protection Agency, Washington DC.

U.S. EPA. 1994. *Aquatic Toxic Information Retrieval Database.* U.S. Environmental Protection Agency, Environmental Research Laboratory. Electronic Bulletin Board.

Definitions of Acronyms

AMBAG ..... Association of Monterey Bay Area Governments

AQMD ..... Air Quality Management District

AST ..... above ground storage tanks

BOD ..... biological oxygen demand

BMP ..... best management practice

Cal EPA ..... California Environmental Protection Agency

CBNMS ..... Cordell Banks National Marine Sanctuary

CCC ..... California Coastal Commission

CCRWQCB .. Central Coast Regional Water Quality Control Board

CDFG ..... California Department of Fish and Game

CMC ..... Center for Marine Conservation

CWA ..... Clean Water Act

CZARA ..... Coastal Zone Act Reauthorization Amendments

DBW ..... Department of Boating and Waterways

DOH ..... Department of Health Services

DTSC ..... Department of Toxic Substances Control

IWMB ..... Integrated Waste Management Board

GFNMS ..... Gulf of the Farallones National Marine Sanctuary

HAZMAT ..... Hazardous Material

MARPOL ..... Marine Plastic Pollution Research and Control Act

MBNMS ..... Monterey Bay National Marine Sanctuary

MBUAQMD . Monterey Bay Unified Air Quality Management District

MOA ..... Memorandum of Agreement

MOU ..... Memorandum of Understanding

MPRSA ..... Marine Protection, Research, and Sanctuaries Act

MSO ..... Marine Safety Office

MSD ..... Marine Sanitation Devices

NERR ..... National Estaurine Research Reserve

NMS ..... National Marine Sanctuary

NOAA ..... National Oceanic and Atmospheric Administration

NPDES ..... National Pollutant Discharge Elimination System

NPS ..... Nonpoint Source Pollution

OCRM ..... Office of Ocean and Coastal Resource Management

OPA ..... Oil Pollution Act

OSPR ..... Oil Spill Prevention and Recovery Act

PG&E ..... Pacific Gas and Electric

ppb ..... parts per billion

ppt ..... parts per trillion

PSWQA ..... Puget Sound Water Quality Management Plan

RCRA ..... Resource Conservation and Recovery Act

RWQCB ..... Regional Water Quality Control Board

SFRWQCB .... San Francisco Regional Water Quality Control Board

SOS ..... Save Our Shores

SRD ..... Sanctuaries and Reserves Division

SWRCB ..... State Water Resources Control Board

TAC ..... Technical Advisory Committee

TBT ..... Tributyltins

UC ..... University of California

USC ..... United States Code

USCG ..... U.S. Coast Guard

USDA ..... U.S. Department of Agriculture

USFWS ..... U.S. Fish and Wildlife Service

USEPA ..... U.S. Environmental Protection Agency

WDR ..... Waste Discharge Requirements

WQPP ..... Water Quality Protection Program

Appendix A. WQPP Committees

Representative	Institution/Affiliation	City/State
PROJECT DEVELOPMENT TEAM		
Papadakis, Nick*	AMBAG	Marina, CA
Strnad, Les	CCC Santa Cruz	Santa Cruz, CA
Sheehan, Linda	Center for Marine Conservation	San Francisco, CA
Johnston, Deborah	Department of Fish and Game	Monterey, CA
Maki, Steven	Monterey County Planning and Building Inspection	Salinas, CA
Ueber, Ed	NOAA, Gulf of the Farallones NMS	San Francisco, CA
Jackson, Terry*	NOAA, Monterey Bay NMS	Monterey, CA
Carlin, Michael	RWQCB, Region 2	Oakland, CA
McCann, Lisa	RWQCB, Region 3	San Luis Obispo, CA
Herzberg, Sam	San Mateo County Planning	Redwood City, CA
Bradford, Donna	Santa Cruz County Planning	Santa Cruz, CA
Martinson, Stan	SWRCB	Sacramento, CA
Starr, Rick	University of California Sea Grant Extension Program	Moss Landing, CA
McGovern, Cheryl	US EPA	San Francisco, CA
PROGRAM REVIEW COMMITTEE		
Walsh, Michael	U.S. Army Corps of Engineers	San Francisco, CA
Del Piero, Marc*	Cal EPA and SWRCB	Sacramento, CA
Baird, Brian	California Resources Agency	Sacramento, CA
Grove, Tami*	CCC Santa Cruz	Santa Cruz, CA
Saunders, Rachel	Center for Marine Conservation	Pacific Grove, CA
Wright, Mary	Department of Parks and Recreation	Monterey, CA
Silberstein, Mark	Elkhorn Slough Foundation	Moss Landing, CA
Kimple, Steve	Elkhorn Slough NERR	Watsonville, CA
Nutter, Richard	Monterey County Agricultural Commissioner	Salinas, CA
Patterson, Richard	Monterey County Hospitality Association	Pebble Beach, CA
Carney, Bud	Monterey County Planning and Building Inspection	Salinas, CA
Ricketts, Mike	Monterey Fishermen's Marketing Association	Carmel Valley, CA
Abbott, Steve	PG&E, Industry	Moss Landing, CA
Vacant*	RWQCB, Region 2	Oakland, CA
Jagger, Paul*	RWQCB, Region 3	San Luis Obispo, CA
Laurent, Bud	San Luis Obispo County & Council of Governments	San Luis Obispo, CA
Ricker, John	Santa Cruz County Environmental Health	Santa Cruz, CA
Townsend, Joe	Santa Cruz Port District	Santa Cruz, CA
Reis, John	U.S. Coast Guard	Monterey, CA
Jordan, Kathleen	USDA Forest Service	King City, CA
Greene, Alisa	U.S. EPA	San Francisco, CA
Cerna, Al	USDA Natural Resources Conservation Service	Salinas, CA
PROGRAM PLANNING AND SUPPORT		
Price, Holly	Program Director	Monterey, CA
Cotter, Patrick	NOAA, Monterey Bay NMS & CCC, Santa Cruz	Monterey, CA
Evans, Kip	NOAA, Monterey Bay NMS	Monterey, CA
Laughlin, Steve	NOAA, Monterey Bay NMS	Monterey, CA
Green, Rich	NOAA, Monterey Bay NMS & Sea Grant	Monterey, CA
Olmsted, Don	NOAA, Monterey Bay NMS & AMBAG	Monterey, CA

* Monterey Bay National Marine Sanctuary Water Quality Protection Program MOA Signatory Representative

Appendix B. Marinas and Boating Workshop Participants

The following individuals participated with the WQPP Committee members in a series of workshops and "write-up" sessions to develop the Marinas and Boating strategies.

Bill Allayaud, California Coastal Commission
Frank Barron, AMBAG
Lee Bradford, C-Care
Robert Byington, Santa Cruz Port District
John Chamberlain, Save Our Shores
Jack Compton, Moss Landing Harbor District
Larry Espinosa, California Department of Fish and Game
Brian Foss, Santa Cruz Port District
Dave Garrett, Monterey Bay Boat Works
Ron Gravelle, Gravelle's Boatyard
Don Hoover, Fluid Systems
Jon Jennings, Monterey County Environmental Health
Robert Johnson, Pillar Point Harbor
Chad Keane, Harbor Marine, Santa Cruz
Tom McCray, Moss Landing Commercial Fisherman's Association
Steve Monowitz, California Coastal Commission
Vicki Nichols, Save Our Shores
Forest Roberts, Down Under Dive Service
Steve Scheiblauer, City of Monterey, Monterey Harbor
Steven Schneider, Santa Cruz County Environmental Health
Larry Steffen, Moss Landing Harbor
Dan Temko, Pillar Point Harbor
Joe Townsend, Santa Cruz Port District
Ted Warburton, Santa Cruz Port District
Larry White, Elkhorn Yacht Club
Jim Wieland, Moss Landing Community Organization
Julie Wyman, San Mateo County Environmental Health

Appendix C. Descriptions of Marinas and Boating Existing Programs

Summary

Existing programs related to water quality were identified from three primary sources: The AMBAG Boating and Marinas Study, the Regulatory Matrix compiled by the Northern California Marine Association and through questionnaires distributed by the WQPP in January 1995. This listing of existing programs is preliminary and will be updated as needed during plan implementation.

From these sources, a total of 32 government agency programs were identified that contain elements addressing marinas and boating (Table C-1). These include 13 Federal programs, 14 State programs and 5 local or regional programs.

Tables C-2 and C-3 identify the sources, activities and management focus of these programs. The types of problems and pollutants addressed by the programs are shown in Table C-4.

As denoted in Table C-1, five federal programs directly address activities associated with marinas and boating, either through regulations, permitting or education. The U.S. Coast Guard is responsible for three of these programs— Marine Sanitation Devices, Discharge of Oil and Sewage from Vessels, and the Marine Plastic Pollution Research and Control Act (MARPOL). Although other agencies have regulatory powers in this area, the U.S. Coast Guard is the chief agency assigned to enforce pollution-control laws for recreational and commercial vessels as well as marinas.

The operating regulations of the Monterey Bay National Marine Sanctuary specifically prohibit discharges to ocean waters that may result in injuries to Sanctuary resources or qualities. This includes discharges directly to Sanctuary waters, as well as discharges beyond Sanctuary boundaries, such as in harbors and land-based sources, which have the potential to injure Sanctuary resources. The U.S. Army Corps of Engineers and EPA regulate all harbor dredging and fill activities.

Six State of California government programs directly address marinas and boating activities. These include the California Coastal Management Program, implemented by the Coastal Commission. All nearshore development is reviewed by the Coastal Commission. In addition the California Ocean Plan, administered by the SWRCB, sets standards or limits on toxic chemicals and wastes that may be discharged into marine waters. The California Ocean Resources Management Plan, developed by the California Resources Agency, focuses on reaching resource management goals through enhanced interagency coordination. The Regional Water Quality Control Boards also implement Section 401 of the Clean Water Act, which requires (certifies) that modifications to a water body, such as filling or dredging, do not adversely affect water quality.

The California Department of Fish and Game, under Section 5650 of the State code, reviews permit applications for harbor and marina projects, including dredging and construction of new boat slips. Larger harbors and marinas are also subject to the State storm water permit program administered by the Regional Boards under the General Industrial/ General Construction Activities Storm water Permit program (Federal Clean Water Act, Section 402).

Local and regional programs specifically targeted at marinas and boating include: the Association of Monterey Bay Area Government's Harbor Best Management study for Moss Landing and Monterey harbors; local municipal codes which regulate land use and resource protection adjacent to harbors; and the Monterey Bay Area Unified Air Quality Management District, which under the federal Clean Air Act, has the authority to monitor and regulate sanding and spray paint operations at harbors and marinas.

Federal supporting programs include: the Oil Pollution Act of 1990, which monitors oil transport within the waters of the U.S.; and the Resource Conservation and Recovery Act (RCRA), which regulates the siting, handling and storage of hazardous materials including fuel oil.

Supporting State programs include: monitoring and research undertaken by the California Sea Grant Program, the SWRCB's Bay Protection and Toxic Cleanup Program, and the California Department of Health Preharvest Shellfish Certification Program; and the management of the National Pollutant Discharge Elimination System for storm water and point discharges, administered by the Regional Boards.

Among the 32 programs, harbor activities and operations (including dredging and disposal,

construction, and discharges) are targeted by the greatest number of government programs (23), while recreational and commercial boating activities are targeted by the fewest programs (8). The largest number of programs (21) are involved in permitting or permit review; six programs involve setting and/or enforcing water quality standards or marine debris controls; four programs involve monitoring and/or research and one program —the AMBAG Harbor Best Management Practices study— primarily targets boater education. It should be noted, that public education is an important component for 14 of the identified programs.

Table C-1. *List of Existing Programs that Address Marinas and Boating.*

Programs	Lead Agency
Federal	
Specific	
Discharge of Oil & Sewage From Vessels in Navigable Waters and Harbors	U.S. Coast Guard
Dredging/Fill Placement--CWA Section 10 &404	U.S. Army Corps of Engineers, EPA
Rivers and Harbors Act (CWA Sections 9 and 10)	U.S. Army Corps of Engineers
Marine Sanitation Devices	U.S. Coast Guard, U.S. EPA, SWRCB
Marine Plastic Pollution Reserach & Control Act (MARPOL)	U.S. Coast Guard, U.S. EPA
MBNMS (MPRSA Title III)	NOAA SRD, MBNMS, GFNMS, CBNMS
National Pollution Discharge Elimination System (NPDES)	SWRCB, RWQCB, U.S. EPA
Supporting	
Marine Protection, Research and Sanctuaries Act (Title I)	U.S. EPA, Army Corps of Engineers
Oil Pollution Act of 1990 (OPA)	U.S. Coast Guard
Endangered Species Act	U.S. Fish & Wildlife Service
National Sea Grant College Program	NOAA, U.C. System
Resource Conservation & Recovery Act (RCRA)	U.S. EPA
Storage of Petroleum Products & Chemicals in Above Ground Storage Tanks	U.S. EPA, SWRCB
State	
Specific	
General Industrial Storm Water Construction Permit Program	SWRCB, RWQCBs
California Coastal Management Program	CA Coastal Commission
California Fish and Game Code Sect. 5650	CA Dept. Fish & Game
California Ocean Plan	SWRCB, RWQCBs
California Ocean Resources Management Program	CA Resources Agency
Water Quality Certification Program (CWA Section 401)	SWRCB, RWQCBs
Supporting	
Basin Plans	SWRCB, RWQCBs
Bay Protection & Toxic Cleanup Program	State Water Resources Control Bd.
Cal EPA Dept. of Toxic Substances	Cal EPA
Landfill Permits/Waste Reduction	Cal EPA IWMB
Oil Spill Prevention and Response Act	CA Department of Fish and Game
California State Storm Water Program	SWRCB
Pre-Harvest Shellfish Sanitation Program	CA DOHs, Food & Drug Branch
California Fish and Game Code Sect. 1600	CA Dept. Fish & Game
Local	
Specific	
Harbor Best Management Practices (Monterey & Moss Landing)	AMBAG
Sanding & Spray Paint Operations-Clean Air Act	Monterey Bay Area Unified AQMD
Local Municipal Codes/General Plans/Local Coastal Plans	Coastal Municipalities
Annex N Small Spill Response Guide for the Central Coast	U.S. Coast Guard
Supporting	
Haz. Materials/Soils,Storage Tanks Programs. (RCRA&CA Title 22 &23)	County Environmental Health Depts.

Table C-2. *Source/Activity and Coverage/Management Focus of Programs that Specifically Address Marinas and Boating.*

Program/Plan	Watersheds	Source/Activity*				Management Focus						
		Boatyards/Boat Repair	Marinas	Dredging	Vessel Discharges	Education	Enforcement	Permitting	Regulation	Research	Monitoring	Data Exchange
Federal Programs												
Discharge of Oil & Sewage From Vessels	All				•	•	•		•			
Dredging and Fill Placement-CWA Sect 404 &10	All	•	•	•		•	•	•	•		•	•
Rivers and Harbors Act (CWA Sections 9 and 10)	All	•	•	•			•	•	•			
Marine Sanitation Devices	All		•		•	•	•					
Marine Plastic Pollution Research & Control Act (MARPOL)	All	•	•		•	•	•		•	•	•	
MBNMS Regulations	All	•	•	•	•	•		•	•	•	•	•
National Pollution Discharge Elimination System (NPDES)	All	•	•	•		•	•	•	•	•	•	•
State Programs												
General Industrial Storm Water Construction Permit Program	All	•	•				•	•	•			
California Coastal Management Program	All	•	•	•		•	•	•	•		•	•
California Fish and Game Code Sect. 5650	All	•	•	•	•		•	•				
California Ocean Plan	All	•	•	•	•			•	•		•	•
California Ocean Resources Management Program	All	•	•	•	•	•				•	•	•
Water Quality Certification Program (CWA Section 401)	All	•	•	•				•	•			•
Local Programs												
Harbor Best Management Practices (Monterey & Moss Landing)	MB06a,MB07	•	•	•	•	•					•	•
Sanding & Spray Paint -Clean Air Act (MBUAQMD)	All	•	•			•	•				•	
Local Municipal Codes/General Plans/Local Coastal Plans	All	•	•			•	•	•	•			
Annex N Small Spill Response Guide for the Central Coast	All				•	•						

Table C-3. *Source/Activity and Coverage/Management Focus of General Programs.*

Program/Plan	Watersheds	Source/Activity				Management Focus						
		Boatyards/Boat Repair	Marinas	Dredging	Vessel Discharges	Education	Enforcement	Permitting	Regulation	Research	Monitoring	Data Exchange
Federal Programs												
Marine Protection, Research and Sanctuaries Act (MPRSA Title I)	All			•			•	•	•	•	•	•
Oil Pollution Act of 1990	All		•		•	•	•	•	•	•	•	•
Endangered Species Act	All		•	•	•	•			•			
National Sea Grant College Program	All	•	•			•				•		
Resource Conservation & Recovery Act (RCRA)	All	•							•		•	
Storage of Petroleum Products & Chemicals in ASTs	All	•	•				•	•	•			
State Programs												
Basin Plans	All	•	•			•			•		•	
Bay Protection and Toxic Cleanup Program	All		•	•	•					•	•	•
Cal EPA Dept. of Toxic Substances	All					•	•	•	•	•	•	
Landfill Permits/Waste Reduction	All						•	•	•			
Oil Spill Prevention and Response Act	All				•	•	•		•			
California State Stormwater Program	All	•	•					•			•	
Pre-harvest Shellfish Sanitation Program	All				•			•	•		•	
California Fish and Game Code 1600	All			•				•			•	
Local Programs												
Haz. Materials/Soils, Storage Tanks Programs	All					•	•		•		•	

Table C-4. *Problems and Pollutants Addressed by Programs Specific to Marinas and Boating.*

Program/Plan	Watersheds	Problems				Pollutants					
		Habitat Degradation	Toxic Pollutants	Human Health	Sedimentation	Heavy Metals	Petroleum Hydrocarbons	Suspended Sediments	Pesticides	Fertilizers	Microorganisms
Federal Programs											
Discharge of Oil & Sewage From Vessels in Nav Waters/Harbors	All	•	•	•		•	•				
Dredging,Fill Placement - CWA Sect 10 & 404	All	•	•	•	•	•	•	•	•		
Rivers and Harbors Act (CWA Sections 9 and 10)	All	•	•	•	•	•	•	•	•		
Marine Sanitation Devices	All		•	•							•
Marine Plastic Pollution Research & Control Act (MARPOL)	All	•		•							
MBNMS Regulations	All	•	•		•	•	•	•			•
National Pollution Discharge Elimination System (NPDES)	All	•	•	•	•	•	•	•	•	•	•
State Programs											
General Industrial Storm Water Construction Permit Program	All	•	•		•	•	•				
California Coastal Management Program	All	•	•	•	•	•	•	•			
California Fish and Game Code Sect. 5650	All	•	•		•	•	•	•	•	•	
California Ocean Plan	All	•	•	•	•	•	•	•	•		•
California Ocean Resources Management Program	All	•	•	•	•	•	•	•	•	•	•
Water Quality Certification Program (CWA Section 401)	All	•	•	•	•	•	•	•			
Local Programs											
Harbor Best Management Practices (Monterey & Moss Landing)	MB06a, MB07	•	•	•	•	•	•	•			
Sanding & Spray Paint Operations-Clean Air Act	All		•	•		•	•				
Local Municipal Codes/General Plans/Local Coastal Plans	All	•	•	•	•	•	•	•			
Annex N Small Spill Response Guide for the Central Coast	All	•	•	•		•	•				

Descriptions of Existing Programs

Descriptions of individual federal, state, and local programs related to marinas and boating water quality issues are provided below.

Federal Programs That Specifically Address Marinas and Boating

Discharge of Oil and Sewage From Vessels in Navigable Waters and Harbors

Lead Agency: U.S. Coast Guard

This program, implemented by the U.S. Coast Guard (33 USC 1321b) with assistance from the California Department of Boating and Waterways, regulates the discharge of untreated sewage within the three-mile limit of U.S. waters, and responds to and mitigates oil and HAZMAT releases into navigable waters.

This program requires a financial responsibility certification for large vessels and marine terminals. Under this program, any marina which receives funding from the CA Department of Boating and Waterways must provide vessel pumpout, oil recovery and recycling receptacles.

Lead Agency Contact:
LTJG. John G. White
U.S. Coast Guard, MSO San Francisco Bay
Bldg. 14, CG Island
Alameda, CA 94528

Dredge and Fill Materials Disposal — Clean Water Act Section 404

Lead Agency:
U.S. Army Corps of Engineers
Supporting Agencies:
U.S. EPA, National Marine Fisheries Service, U.S. Fish and Wildlife Service, MBNMS, CCC, RWQCB

In California and most states, the U.S. Army Corps of Engineers is responsible for issuing permits under Section 404 of the Clean Water Act , which regulates the discharge of dredge and fill materials within the waters of the U.S. The EPA reviews the Corps porposed permits to determine whether the project complies with EPA regulations.

Lead Agency Contact:
Calvin Fong, Chief Regulatory Branch
San Francisco District
U.S. Army Corps of Engineers
211 Main Street
San Francisco, CA

Rivers and Harbors Act (CWA Sections 9 and 10)

Lead Agency:
US Army Corps of Engineers
Supporting Agencies:
US EPA Region IX, National Marine Fisheries Service, US Fish and Wildlife Service, CCC, RWQCB

Under this program, the US Army Corps of Engineers regulates dredging and the placement of structures or other work in navigable waters. The Corps issues permits for construction and planning projects including dredging, docks, groins and jetties. Permit applications are reviewed by other agencies with jurisdiction in the marine environment including: the US Fish and Wildlife Service, the National Marine Fisheries Service, US EPA, CCC and the Regional Water Quality Control Boards.

Under the Rivers and Harbors Act, the Corps also provides construction assistance to local flood control projects and floodplain management services.

Lead Agency Contact:
Calvin Fong, Chief Regulatory Branch
San Francisco District
U.S. Army Corps of Engineers
211 Main Street
San Francisco, CA

Marine Sanitation Devices

Lead Agency:
U.S. Coast Guard
Supporting Agencies:
US Environmental Protection Agency, US Fish and Wildlife Service

The Marine Sanitation Devices (MSD) program, implemented by the U.S. Coast Guard, enforces Federal regulations (Clean Water Act Section 312) for the design, construction and operation of sewage treatment facilities on boats, ships and on-shore marina facilities. The U.S. Coast Guard inspects boats for operable MSDs during vessel boardings and scheduled inspections.

The chief activity conducted under this program is education. The U.S. Coast Guard conducts education programs for the boating community, and provides technical advice to local governments and harbor districts for developing best management practices for sewage treatment and disposal.

Lead Agency Contact:
LTJG. John G. White
U.S. Coast Guard MSO San Francisco Bay
Bldg. 14, CG Island
Alameda, CA 94528

Marine Plastic Pollution Research and Control Act (MARPOL)

Lead Agency: U.S. Coast Guard

The Marine Plastic Pollution Research and Control Act, implemented by the U.S. Coast Guard, enforces federal regulations to reduce the amount of garbage and plastics discharged into the marine environment. The program is enforced through vessel boardings, facility inspections, and investigations of citizens' complaints to determine compliance.

The program also conducts education programs to increase the public's knowledge of practices to reduce, reuse, recycle and properly dispose of wastes.

Lead Agency Contact:
LTJG. John G. White
U.S. Coast Guard MSO San Francisco Bay
Bldg. 14, CG Island
Alameda, CA 94528

Monterey Bay National Marine Sanctuary Regulations

Lead Agency:
NOAA, Monterey Bay National Marine Sanctuary (MBNMS)

The MBNMS encompasses over 5,300 square miles of marine waters, extending from the Marin headlands south to Cambria. Prohibited activities within the marine sanctuary include: (1) exploring for, developing or producing oil, gas or minerals; (2) discharging materials, with exceptions including permitted activities such as fish and fish parts; (3) altering the seabed; and, (4) disturbing marine mammals, sea turtles and birds.

Lead Agency Contact:
Terry Jackson, Sanctuary Manager
Monterey Bay National Marine Sanctuary
299 Foam Street, Suite D
Monterey CA, 93940

National Pollution Discharge Elimination System (NPDES)

Lead Agency:
California State Water Resources Control Board
California Regional Water Quality Control Board
U.S. Environmental Protection Agency

The federal Clean Water Act requires that direct point source discharges, including municipal and industrial, obtain NPDES permits that regulate their discharges and achieve effluent limitations. The NPDES permitting system also has specific requirements for storm water discharges or so-called non-point source discharges and currently requires the following entities to comply: (1) Municipalities with populations greater than 100,000; (2) Facilities associated with industrial activity; and (3) Those storm waters that cause violations of water quality standards or contribute significant concentrations of pollutants to receiving waters. Storage and work areas within harbors and marinas may be subject to NPDES stormwater permits.

The U.S. EPA provides overall policy guidance for the NPDES program including the development of federal water quality standards. The California Regional Water Quality Control Boards are responsible for administering NPDES storm water permits.

Lead Agency Contact:
Adam White
RWQCB, Central Coast Region
81 Higuera St.
San Luis Obispo, CA 93401

John Wolfenden
RWQCB, San Francisco Bay Region
2101 Webster St., Suite 500
Oakland, CA 94612

Federal Programs With Elements That Address Marinas and Boating

Marine Protection, Research and Sanctuaries Act (MPRSA)

Lead Agency:
US Environmental Protection Agency (EPA)
Region IX

Supporting Agencies:
US Army Corps of Engineers

Under this program, EPA designates ocean disposal sites for dredged material disposal which minimize effects on fisheries, navigation and water quality; manages ocean dumping sites; reviews MPRSA Sect 103 permit applications to determine compliance with ocean dumping criteria; develops monitoring programs; and, grants permits for transportation and dumping of non-dredged wastes into the ocean.

Lead Agency Contact:
Amy Zimpfer
US Environmental Protection Agency
Region IX
75 Hawthorne Street
San Francisco, CA 94105

Oil Pollution Act of 1990 (OPA 90)

Lead Agency:
U.S. Coast Guard
Supporting Agencies:
US EPA, CA Dept. Fish & Game, CA Oil Prevention Recovery Act, CCC

OPA 90, implemented by the U.S. Coast Guard, increases federal oversight of oil transport and oil spills by setting new mandates for vessel inspections, crew licensing, a broader enforcement authority, and an established $1 billion fund for oil spill clean-up operations. OPA 90 authorizes the U.S. Coast Guard to initiate education, enforcement, permitting, technical assistance, best management practices, research, monitoring and data exchange activities.

Lead Agency Contact:
LTJG C. A. Dahl
U.S. Coast Guard MSO, San Francisco Bay
Coast Guard Island
Alameda CA 94501-5100

Endangered Species Act

Lead Agency:
U.S. Fish and Wildlife Service (USFWS)
Supporting Agency:
National Marine Fisheries Service

The primary mission of the U.S. Fish and Wildlife Service is to identify and list endangered or threatened species, develop recovery plans for these species, primarily through designation of federally designated "critical habitat", develop mitigation plans in the event a project is approved that might

affect endangered or threatened species, and take action against those parties who harm threatened or endangered species and/or critical habitats.

The USFWS participates with the Corps and EPA in the review and approval of Section 10 and Section 404 permits, and participates with state agencies in emergency oil and hazardous materials spills. The agency also administers the National Wildlife Refuge Act, Migratory Bird Treaty Act and provides funds under the Estuary Protection Act to acquire wetlands and conserve estuarine areas.

Lead Agency Contact:
Ms. Diane Noda
U.S. Fish and Wildlife Service
2493 Portola Road, Suite B
Ventura CA 93003

National Sea Grant Program

Lead Agency:
National Oceanic and Atmospheric Administration
Supporting Agency:
University of California, Davis

California Sea Grant supports applicant-oriented marine research, and educational activities to communicate research results to government agencies, marine-related industries, scientists, fishermen, aquaculturalists and consumers. The program promotes the wise development of the nation's marine resources through "responsive research," education and advisory services. The National Sea Grant Program is sponsored by the National Ocean Service, National Oceanic and Atmospheric Administration.
Lead Agency Contact:
Rick Starr
California Sea Grant Extension Office
P.O. Box 440
Moss Landing, CA 95039

Resource Conservation and Recovery Act (RCRA)

Lead Agency:
U.S. Environmental Protection Agency

EPA under RCRA is responsible for identifying hazardous wastes sites, establishing control standards, and issuing permits for hazardous wastes treatment, storage and disposal facilities. Under the Hazardous and Solid Waste Amendments of 1984, EPA sets deadlines for issuance of permits, prohibits land disposal of many types of hazardous wastes, requires use of special containment and collection facilities, and regulates underground storage tanks. EPA has delegated responsibilities under RCRA to state and local agencies. EPA maintains a data base of all known RCRA "generators" within any one region.

Lead Agency Contact:
Keith Takata
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Storage of Petroleum Products and Chemicals in Above Ground Storage Tanks (ASTs)

Lead Agency:
State Water Resources Control Board
Supporting Agency:
US Environmental Protection Agency

This program, enforced by the State Water Resources Control Board, requires a Spill Prevention Control and Counter Measures Plan for owners and operators of above ground storage tanks (ASTs) containing in excess of 660 gallons, and those tanks located where spilling products could reach navigable waters. Owners and operators of ASTs must file a storage statement and pay a fee to the State Board every two years.

Lead Agency Contact:
State Water Resources Control Board
901 P Street
Post Office Box 944213,
Sacramento, CA 942344-2130

State Programs That Specifically Address Marinas and Boating

General Industrial/General Construction Activities Stormwater Permit

Lead Agency:
Regional Water Quality Control Board No. 2 (San Francisco Bay Area and No. 3 (San Luis Obispo)

The General Industrial/General Construction Activities Stormwater Permit regulates stormwater runoff from industrial facilities and construction activities. This program is authorized by the Clean Water Act-Section 402 and is implemented by the Regional Water Quality Control Boards. Program elements include education, enforcement, permitting, regulation, technical assistance, best management

practices, and monitoring activities as authorized under the Clean Water Act Reauthorization of 1987. The primary activities conducted under this program are the compliance with general stormwater permits and the review of monitoring reports.

Lead Agency Contacts:
Adam White
Central Coast Regional Water Quality Control Board
81 Higuera St. Suite 200,
San Luis Obispo, CA 93401.

Michael Carlin
San Francisco Bay Regional Water Quality Control Board
2101 Webster St. Suite 500
Oakland, CA 94612

California Coastal Management Program

Lead Agency:
California Coastal Commission

This statewide program, implemented by the California Coastal Commission, undertakes education, enforcement, permitting, regulation, technical assistance, best management practices, and monitoring activities as authorized under the California Coastal Act. The program is funded by the State of California, the National Oceanic and Atmospheric Administration Coastal Zone Management Grants, and other state and federal grant funds for specific projects. Primary activities are the development of local coastal plans, public works plans, and long range development plans; the review and issuance of coastal development permits; the implementation of a statewide coastal access program; and the supply of information about coastal management issues to the public and other agencies. The Coastal Commission also reviews federal actions within the coastal zone to assure that these activities are consistent with the California Coastal Management Program.

Lead Agency Contact:
Peter Douglas, Executive Director
California Coastal Commission
45 Fremont St., Suite 2000
San Francisco, CA 94105.

California Fish and Game Code Section 5650

Lead Agency:
California Department of Fish and Game

The California Department of Fish and Game implements Section 5650, which gives the agency authority to address pollution of waters including the review of dredging proposals. The primary activities conducted under this code are legal enforcement, bioassays, and the monitoring of physical water chemistry parameters.

The program focuses on problems such as toxic pollutants.

Lead Agency Contact:
Deborah Johnston
California Department of Fish and Game
20 Lower Ragsdale Drive, Suite 100
Monterey CA 93940

California Ocean Plan

Lead Agency:
California State Water Resources Control Board (SWRCB)

The California Ocean Plan sets standards for beneficial uses of coastal waters. The plan contains numerical standards for toxic chemicals, bacteria, physical waste characteristics and toxicity as well as narrative standards for protection of aquatic life. The Ocean Plan receives a triennial review. Current issues before the SWRCB related to the plan include revision of bacterial standards, revision of chronic toxicity testing protocols, re-examination of existing chemical objectives and the effects of discharges from desalination facilities.

The chief activities under the California Ocean plan are permitting, regulating and monitoring discharges and construction activities in or near California's ocean waters.

Lead Agency Contact:
Frank Palmer
State Water Resources Control Board
901 P Street
Post Office Box 944213,
Sacramento, CA 942344-2130

California Ocean Resources Management Program

Lead Agencies:
California Resources Agency

The purpose of the California Ocean Resources Management Program is to ensure comprehensive and coordinated management and to conserve and enhance California's ocean resources for their

intrinsic value. This statewide program, developed by the California Resources Agency, considers interagency coordination, education, enforcement, permitting, regulation, technical assistance, best management practices, research, monitoring, and data exchange issues as authorized by Assembly Bill 205, Chapter 1027, 1991. The primary activity conducted under this program is the development of a program within the California Resources Agency to carry out management and conservation goals.

The program focuses on a broad range of policy issues related to water quality including coastal and wetland habitat degradation, dredged material disposal, fish population declines, point sources, urban and agricultural runoff, and water quality monitoring.

Lead Agency Contact:
Brian Baird, Ocean Program Manager
California Resources Agency
1416 Ninth St., Suite 1311, Sacramento, CA 95814.

Water Quality Certification Program (Clean Water Act Section 401)

Lead Agency :
Regional Water Quality Control Board No. 2 (San Francisco & No. 3 (San Luis Obispo)
Supporting Agency:
State Water Resources Control Board

EPA has delegated enforcement of the CWA Section 401 Water Quality Certification Program to the State of California and the State Water Resources Control Board (SWRCB). Under this program the Regional Boards have the responsibility to review and verify that filling, dredging, or other modification of a waterbody contained in a Section 404 application does not cause an adverse effect. Following their review, the Regional Boards recommend either a waiver or conditional approval of a Water Quality Certification to the Executive Officer of the State Water Resources Control Board.

Lead Agency Contact:
Oscar Balaguer
State Water Resource Control Board, Division of Water Quality
901 P Street/Post Office Box 944213
Sacramento, CA 94244-2130

State Programs With Elements That Address Marinas and Boating

Basin Plans

Lead Agencies:
Regional Water Control Boards (San Francisco and San Luis Obispo)

The Basin Management Plans establish regional water quality control plans for specific hydrologic regions within the state. Beneficial uses, water quality objectives, and implementation strategies are assigned to surface waters in the region. Development activities are then analyzed for their consistency with the basin plan or beneficial uses identified for the watercourse. The regional plans, implemented by the State Water Resources Control Board and the Regional Water Quality Control Board, undertake enforcement, permitting, regulation, best management practices, and monitoring activities as authorized under the Porter-Cologne Water Quality Act.

Lead Agency Contact:
John Ladd, State Water Resources Control Board,
901 PST, P.O. Box 944213
Sacramento, CA 94244

Bay Protection and Toxic Cleanup Program

Lead Agency:
State Water Resources Control Board

The Bay Protection and Toxic Cleanup Program identifies toxic "hot spots" in the harbors and estuaries with the state, and prepares mitigation and cleanup plans at these sites. The program also incorporates information about toxic "hot spots" into the pollution prevention strategies of the State's Basin Plan. Currently State and Regional Board staff have begun identification of toxic hot spots. Screening and confirmation of toxic sites is ongoing.

Lead Agency Contact:
Craig Wilson
State Water Resources Control Board
Division of Water Quality
901 P Street/ P. O Box 944213

Cal EPA DTSC Hazardous Waste Management Program

Lead Agency:
CA Department of Toxic Substances Control

The Department of Toxic Substances Control regulates the treatment, storage, disposal and transportation of hazardous wastes in the State of California. Through MOUs with counties they regulate landfills, commercial discharges, industrial discharges, HAZMAT sites, and hazardous/toxic spills. The Department initiates education programs, including Best Management practices, provides technical assistance, and conducts research and monitoring, in addition to its enforcement and permitting activities.

Lead Agency Contact:
Ted Raugh, Deputy Director
Hazardous Waste Management Program
Department of Toxic Substances Control
400 P Street, P.O. Box 806
Sacramento, CA 95812-0806

Landfill Permits/Waste Reduction

Lead Agency:
Cal EPA Integrated Waste Management Board

The California Integrated Waste Management Board is responsible for working with local governments, private industry and the public to achieve a 50 percent reduction in solid waste disposal by the Year 2000. The department is also responsible for insuring environmentally sound and adequate landfill capacity in the State of california; and is the lead state agency for regulating and permitting local landfills. To assist localities in source reduction programs the Integrated Waste Management Board offers grants for activities including used oil recycling, used tires recycling, household hazardous materials management, in addition to programs to clean up illegal disposal sites.

Lead Agency Contact:
Mr. John Firth
California Environmental Protection Agency Integrated Waste Management
8800 Cal Center Drive
Sacramento, CA 95826

Oil Spill Prevention and Recovery Act (OSPR)

Lead Agency :
California Department of Fish and Game

Under OSPR, the California Department of Fish and Game (CDFG) is responsible for preparing and implementing oil spill contingency plans within the State of California. CDFG also specifies marine safety requirements for tankers, barges, and marine terminals operating in marine waters. California Fish and Game has regulatory and enforcement powers under OSPR to implement marine safety programs and to collect funds for oil spill clean up purposes.

Lead Agency Contact:
Pete Bontadelli
California Department of Fish and Game
1416 9th Street
Sacramento, CA 95814

California State Stormwater Program

Lead Agency:
State Water Resources Control Board

Under the Section 402(p) of the federal Clean Water Act, the U.S. Environmental Protection Agency conducts studies with the states on storm water characterization and mitigation. EPA has delegated to State Board and Regional Board implementation of this section of the Clean Water Act, which regulates storm water discharges through the NPDES (National Pollution Discharge Elimination System) permit. The program targets large industrial sites and municipalities serving 100,000 persons or more. As noted above under the National Discharge Elimination System Program, the US Environmental Protection Agency delegates to the State of California responsibility for enforcing NPDES permits for stormwater discharges.

Lead Agency Contact:
Bruce Fujimoto
State Water Resources Control Board
Division of Water Quality
901 P Street/P.O. Box 944213
Sacramento, CA 94244-2130

Preharvest Shellfish Sanitation Program

Lead Agency:
California Department of Health Services

The Preharvest Shellfish Sanitation Program determines the certification status of sloughs for purposes of growing and harvesting bivalve shellfish to sell for human consumption. This statewide program, implemented by the Department of Health Services, undertakes permitting activities as authorized under the California Health and Safety Code. Primary activities conducted under this program are monthly water sampling, coliform bacteria analyses, and bivalve meats testing.

Lead Agency Contact:
Kenneth H. Hansgen
Preharvest Shellfish Sanitation Unit
California Department of Health Services
601 N. 7th St., MS-396, P.O. Box 942732
Sacramento, CA 94234-7320

California Fish and Game Code Section 1600

Lead Agency:
California Department of Fish and Game

Under this program, the California Department of Fish and Game regulates activities (grading, filling, dredging) that occur in state waters (rivers, streams, and lakes). The primary activities conducted under this code are the review of construction plans and the issuance of construction permits. The code focuses on toxic pollutant problems which derive from mining activities, landfills, boatyards/boat repair, marinas, timber harvesting, grading, golf courses, road cuts, construction runoff, dams, bulkheads/ revetments, and erosion control.

Lead Agency Contact:
Deborah Johnston
California Department of Fish and Game
20 Lower Ragsdale Drive, Suite 100
Monterey, CA 93940

Local Programs that Specifically Address Marinas and Boating

Harbor Best Management Practices (Monterey & Moss Landing)

Lead Agency:
Association of Monterey Bay Area Governments

The purpose of the Harbor Best Management Practices Plan, prepared with a CWA 205(j) grant, is to reduce overboard discards of human, solid and bilge wastes, fuels, sanding residues, and marine by-products. The plan promotes education of boaters and marina-related businesses regarding water quality issues and pollution prevention.

Contact:
Frank Barron
AMBAG
P.O. Box 809
Marina, CA 93933

Sanding and Spray Paint Operations - Clean Air Act

Lead Agency:
Monterey Bay Unified Air Pollution Control District

Under federal (Clean Air Act) and state (CA Health and Safety Code Sec. 41700) laws, the Monterey Bay Unified Air Pollution Control District regulates the emissions of air contaminants and other materials that have the potential to affect public health or safety. The District enforces rules for acceptable emissions from sanding, spray painting, fuel dispensing and the use of organic solvents such as cleaners and degreasers.

Local Contact:
Fred Thoits, Engineering Division Manager
Monterey Bay Unified Air Pollution Control District
24580 Silver Cloud Court
Monterey, CA 93940

Local Municipal Codes/General Plans/Local Coastal Plans

Each of the nine coastside incorporated cities within the Sanctuary region and the four counties all undertake regulatory activities as authorized under State Government and Public Resources Codes, Planning and Zoning Laws, the Subdivision Map Act, the Coastal Act, the Alquist-Priolo Earthquake Fault Zoning Act, and the Surface Mining and Reclamation Act. Each jurisdiction bordering coastal waters is required to develop and adopt Local Coastal Plan in addition to a general. Both plans guide land use development and resource protection. These plans provide the basis for permitting and regulating land uses.

Monterey County: Steven Maki, Department of Planning and Building Inspection, Post Office Box 1208, Salinas, CA 93902-1208

San Mateo County: Sam Herzberg, San MAteo County Planning Department 590 Hamilton, Redwood City, CA

Santa Cruz County: Daniel Shaw, Director, Santa Cruz County Planning Department, 701 Ocean St., Santa Cruz, CA 95060.

San Luis Obispo County: John Euphrate, Department of Planning and Building, County Government Center, San Luis Obispo, CA 93408

Annex N Small Spill Response Guide for the Central Coast Area

Lead Agency:
U.S. Coast Guard
Supporting Agencies:
California Department of Fish and Game, OSPR
NOAA, Monterey Bay National Marine Sanctuary

The goal of the annex is to protect the sanctuary, harbor, and sensitive resources of Elkhorn Slough National Estuarine Reserve from small spills that occur from small pleasure craft, fishing boats, and research vessels for which the owner or operator is not otherwise subject to oil spill planning requirements. It is intended as a guide for boater owners, and local, state, and federal agency representatives who will most likely respond to small spills or the threat of such spills without the aid of an established Oil Spill Response Organization. Spill types, causes, and spill reponse roles and responsibilities are described for the central coast area.

Lead Agency Contact:
U.S. Coast Guard MSO, San Francisco
Coast Guard Island
Alameda, CA 94528

Local Programs With Elements That Address Marinas and Boating

Excavation & Removal of Upland Contaminated Soil and Debris, Hazardous Materials Programs **and** ***Regulation of Underground Storage Tanks - RCRA Title 40/California Hazardous Wastes Control Law (Title 22 &23)***

Lead Agency : County Environmental Health Departments

County health departments in the four-county Sanctuary region and regulate the operations of landfills and underground storage tanks. In addition each county is responsible for preparing a hazardous waste plan, a hazardous materials program, and an emergency response program. The programs set and enforce standards for the handling and accumulation of hazardous wastes, including waste oil. Program elements include cleanup standards using public health and environmental risk procedures .The county health departments also direct education programs and monitoring activities as authorized under the California Hazardous Waste Control Law.

Lead Agency Contacts:
Monterey County: John Jennings, Department of Environmental Health, 1270 Natividad Rd., Salinas, CA 93906. (408) 755-4541.

Santa Cruz County: Steve Schnieder, Environmental Health Services, 701 Ocean St. Rm. 312, Santa Cruz, CA 95060

San Luis Obispo County: Mike Doherty, Department of Environmental Health, 2156 Sierra Way, San Luis Obispo, CA 93401

San Mateo County: William Lent, Environmental Health, 590 Hamilton Street, Redwood City, CA 94063

Generalized framework for developing Action Plans to support the Water Quality Protection Program.