TOMALES BAY

VESSEL MANAGEMENT PLAN

APRIL 2013

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
NATIONAL MARINE SANCTUARY PROGRAM

CALIFORNIA STATE LANDS COMMISSION

ABOUT THIS DOCUMENT:

This document includes two distinct elements: 1) the *Tomales Bay Vessel Management Plan* (TBVMP), and 2) the accompanying *Environmental Assessment/Initial Study* (EA/IS) as required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The environmental impact assessment portion of the document can be found in Appendix I, directly following the TBVMP, however the EA/IS draws from and refers to the background information and other materials included throughout the TBVMP. This document also includes the proposed Tomales Bay Mooring Program (*Appendix V*), which provides specific criteria for where moorings are allowed on the bay, introduces mandatory specifications for mooring tackle, and lays out requirements for the inspection and maintenance of moorings.

The TBVMP was prepared by Gulf of the Farallones National Marine Sanctuary (GFNMS) and California State Lands Commission (CSLC), in collaboration with the Tomales Bay Interagency Committee (TBIC). The TBIC includes the following agencies:

- California Coastal Commission
- California Department of Boating and Waterways
- California Department of Fish and Wildlife
- California Department of Public Health
- California Department of Transportation
- California State Lands Commission
- California State Parks
- Marin County and Marin County Sheriff's Office
- NOAA's Gulf of the Farallones National Marine Sanctuary
- National Park Service, Point Reyes National Seashore
- State Water Resources Control Board and Regional Water Quality Control Boards

GFNMS and CSLC would like to thank the GFNMS Advisory Council Working Group on Tomales Bay Vessel Management for its contribution to the final recommendations from the GFNMS Advisory Council. This working group consisted of the following participants:

- Dominique Richard, Chair, GFNMS Advisory Council
- Colin Smith, National Park Service
- Nanci Smith, State Lands Commission
- Tom Moore, Dept. of Fish and Game
- Jerry Abbot, Inverness Yacht Club
- Mark Bartolini, Tomales Bay Boaters Association
- George Clyde, East Shore Planning Group
- John Finger, Hog Island Oyster Company
- Fred Smith, Environmental Action Committee of West Marin
- Gordon Bennett, Sierra Club
- Willy Vogler, Lawson's Landing
- Gene Maffucci, Herring Fishman

- Skip Vilicich, Marshall Boat Works
- Jeremy Fisher-Smith, Fisher-Smith Boat Works

List of Preparers for the TBVMP:

Maria Brown, GFNMS
Brad Damitz, GFNMS
Miriam Gordon, GFNMS
Karen Reyna, GFNMS
Tim Reed, GFNMS
Vicki Wedell, ONMS
Theodore M. Beuttler, NOAA General Counsel
Eric Gillies, CSLC
Cy Oggins, CSLC
Grace Kato, CSLC

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY and INTRODUCTION

A. Purpose and Need
B. Process for Developing the TBVMP
C. Participating Agencies
D. Scope of the TBVMP
E. Implementation Process for the TBVMP
F. Summary of Proposed Actions

II. PROPOSED ACTIONS FOR VESSEL MANAGEMENT PLAN

A. Sewage Services
- Issue Statement
- Proposed actions

B. Oil And Bilge Services
- Issue Statement
- Proposed actions

C. Vessel Mooring Program
- Issue Statement
- Proposed actions

D. Boater Education And Outreach
- Issue Statement
- Proposed actions

E. Preventing Introduced Species
- Issue Statement
- Proposed actions

III. EXISTING ENVIRONMENTAL CONDITIONS

A. Physical Environment
1. Location of the Proposed Action and Geologic Conditions
2. Physical Environment Introduction
3. Hydrology/Water Quality

B. Human Environment
1. Socioeconomics—Vessel Use
2. Vessel moorings
3. Vessel-related Facilities
4. Water-based Recreation

5. Aquaculture
6. Recreational and Commercial Fishing
7. Land Use
8. Water Supply and Sewage Treatment

C. BIOLOGICAL ENVIRONMENT
1. Biological Environment Introduction
2. Biological Resources—Seagrass
3. Biological Resources—Wildlife
4. Biological Resources—Fish
5. Biological Resources—Special Status Species

ADDITIONAL REFERENCES
REFERENCES CITED
ACKNOWLEDGEMENTS

LIST OF FIGURES

Figure 1: Map of Proposed Tomales Bay Mooring Zones……..41
Figure 2: Tomales Bay Locator Map…….61
Figure 3: Tomales Bay Bathymetry Map ……62
Figure 4: Public Health and Water Quality Protection Mooring Criteria……65
Figure 5: Existing Moorings in Tomales Bay (from 2006 survey)……..71
Figure 6: Map of Proposed Mooring Zones with Combined Mooring Exclusion Areas and Existing Moorings (from 2006)……75
Figure 7: Shoreline Restroom Facilities……79
Figure 8: Public Safety Mooring Criteria Map ……82
Figure 9: Natural Resource Protection Mooring Criteria Map……95

LIST OF TABLES

Table 1: Summary of TBVMP Proposed Strategies and Activities……18
Table 2: Tomales Bay Boating Facilities……80
Table 3: Tomales Bay Aquaculture Production……87

APPENDICES

APPENDIX I: TBVMP ENVIRONMENTAL ASSESSMENT/INITIAL STUDY
APPENDIX II: DEFINITIONS
APPENDIX III: GOVERNMENT AGENCY JURISDICTION AND REGULATIONS
APPENDIX IV: GFNMS ADVISORY COUNCIL RECOMMEDATIONS
APPENDIX V: TOMALES BAY MOORING PROGRAM
APPENDIX VI: TOMALES BAY GIS PROJECT LAYER DESCRIPTIONS
APPENDIX VII: MOORING ANCHOR PULL TEST REPORT

LIST OF ABBREVIATIONS AND ACRONYMS

AWAF	Abandoned Watercraft Abatement Fund
BMP	Best Management Practice
CalTrans	California Department of Transportation
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
CDBW	California Department of Boating and Waterways
CDP	Coastal Development Permit
CDPH	California Department of Public Health
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CMSP	Coastal and Marine Spatial Planning
CSLC	California State Lands Commission
CSP	California State Parks
CWA	Clean Water Act
EFH	Essential Fish Habitat
GGNRA	Golden Gate National Recreation Area
GFNMS	Gulf of the Farallones National Marine Sanctuary
GIS	Geographic Information System
MP	Tomales Bay Mooring Program
MPN	Most Probable Number
MPWC	Motorized Personal Watercraft

MSD	Marine Sanitation Device
NCDEM	North Carolina Department for Environmental Management
NDZ	No-Discharge Zone
NEPA	National Environmental Policy Act
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NSSP	National Shellfish Sanitation Program
OLE	NOAA, Office of Law Enforcement
ONMS	NOAA, Office of National Marine Sanctuaries
PRNS	Point Reyes National Seashore
RWQCB	Regional Water Quality Control Board
SWRCB	State Water Resources Control Board
TBIC	Tomales Bay Interagency Committee
TBVMP	Tomales Bay Vessel Management Plan
TBWC	Tomales Bay Watershed Council
TBSP	Tomales Bay State Park
TMDL	Total Maximum Daily Load
USCG	United States Coast Guard
U.S. EPA	United States Environmental Protection Agency

I. EXECUTIVE SUMMARY AND INTRODUCTION

A. PURPOSE AND NEED

Traditionally, vessel use has played an important role throughout the modern history of Tomales Bay, for both commercial and recreational purposes—and boating continues to be a popular activity for residents and visitors to the bay. Boats were identified as one of several sources of pollution causing Tomales Bay to be listed as an impaired water body under the U.S. Clean Water Act, due to pathogens from discharge of human waste (San Francisco Bay RWQCB, 2005). Because of these potential adverse impacts the need for a proactive plan was recognized to ensure that boating activities do not adversely affect the bay. Accordingly, the Tomales Bay Draft Vessel Management Plan (TBVMP) was developed as the result of a long-term multi-agency effort to streamline and coordinate vessel management activities for the benefit of the public. The TBVMP aims to improve water quality, protect wildlife and habitat, protect public health and ensure recreational opportunities in Tomales Bay. It was developed by National Oceanic and Atmospheric Administration's (NOAA) Gulf of the Farallones National Marine Sanctuary (GFNMS) staff and the California State Lands Commission (CSLC) staff in collaboration with nine other local, state and federal agencies with jurisdiction in Tomales Bay collectively known as the Tomales Bay Interagency Committee (TBIC). Additionally, the TBVMP is consistent with a San Francisco Regional Water Quality Control Board (RWQCB) requirement to develop a multi-agency precautionary plan addressing pollution from pathogens due to discharge of human waste from boats. The RWQCB's *Water Quality Control Plan, San Francisco Bay Region* (Basin Plan) specifies required implementation measures necessary to protect and restore beneficial uses of the bay; one of these implementation measures requires the Regional Board to: "coordinate with participating agencies and rely on their interests and authorities to develop and implement a Tomales Bay boating management plan that includes: evaluation of existing moorings and water quality impacts; permitting and enforcement procedures to ensure compliance with applicable mooring requirements and to ensure no sewage discharge from boats" (San Francisco Bay RWQCB, 2005).

GFNMS has been vested with the authority, in accordance with the National Marine Sanctuaries Act (NMSA; 16 U.S.C 1431-1445c), to provide comprehensive and coordinated conservation and management of 967.8 square nautical miles of nearshore and offshore waters and submerged lands off California. Since its designation in 1981, GFNMS has the authority to regulate certain activities within its boundaries, pursuant to the NMSA. The primary objective of the NMSA is resource protection, which is carried out in regulations codified at 15 CFR Part 922, and through the issuance of permits and coordination with other local, state, and federal agencies and by outreach, education, research, monitoring, and enforcement.

The GFNMS Management Plan is the site-specific planning and management document that guides the operation of the sanctuary for the next five to ten years, helping the sanctuary set budget and project priorities each year in preparation of its annual operating plan (GFNMS, 2008). The management plan was developed during a multi-year public process that identified priority sanctuary resource management issues. This plan includes

a resource protection strategy (Strategy RP-12) that directs GFNMS, in coordination with ten other local, state and federal agencies, to develop and implement "a comprehensive plan to ensure the protection of water quality, wildlife, habitats, and safety in Tomales Bay." The strategy includes specific guidance to address vessel management issues such as moorings and moored vessels, sewage waste disposal, derelict and abandoned vessels, and other habitat and water quality issues in the bay. Strategy RP-12 is being implemented through the development of the TBVMP.

CSLC was established in 1938 with authority detailed in Division 6 of the California Public Resources Code. CSLC manages nearly 4 million acres of "Sovereign Lands" underlying the state's navigable and tidal waterways, including the beds of more than 120 rivers, streams and sloughs; nearly 40 non-tidal navigable lakes; the tidal navigable bays and lagoons including Tomales Bay; and, the tide and submerged lands adjacent to the entire coast and offshore islands of the state from the mean high tide line to three nautical miles offshore.

Persons who place moorings on ungranted sovereign land under the jurisdiction of the CSLC are required to obtain a lease from the CSLC. While most of the moorings on the bay are located on these "sovereign lands", the vast majority are not currently authorized by a CSLC lease or permit from GFNMS or any other resource protection agency and are therefore considered in trespass and illegal.

The TBVMP addresses the following issues:

1) Planning for Sewage Services;
2) Planning for Oil and Bilge Services;
3) Adopting a *Tomales Bay Mooring Program* that provides a mechanism to allow for legal moorings on the bay while meeting the mandates and regulations of GFNMS and CSLC;
4) Outlining a Boater Education and Outreach Plan; and
5) Preventing the Introduction of Introduced Species.

The TBVMP is consistent with the *Interim Framework for Effective Coastal and Marine Spatial Planning* and has been scaled to the specific needs of the agencies that regulate and the people who use Tomales Bay (Interagency Ocean Policy Task Force, 2009). Coastal and Marine Spatial Planning (CMSP) is one of the nine priority objectives proposed in the Interim Report of the Interagency Ocean Policy Task Force (Interagency Ocean Policy Task Force, 2009).

The plan also implements the mandates and regulations of both GFNMS and CSLC. It represents extensive input from the boating community and other local stakeholders, and addresses numerous issues including vessel sewage discharge, impacts from moorings, derelict or deserted vessels, introduction of invasive species, disturbance of wildlife, and discharges of oil, fuel, and vessel maintenance products. GFNMS has regulatory authority over all these issues, and the applicable regulations can be found at 15 CFR Part 992 Subpart H.

Goals and Objectives
The participating agencies developed the following set of goals and objectives for the TBVMP, which represent the collective agency mandates to protect public health and ecological resources in Tomales Bay:

1. Protect public health and improve water quality by:
   - Preventing the improper discharge of vessel-related sewage;
   - Preventing the discharge of oil, gas, and toxic substances including vessel maintenance products;
   - Providing adequate facilities for proper sewage disposal;
   - Designating Tomales Bay as a No-Discharge Zone for vessels under the Clean Water Act (CWA), following installation of sewage services;
   - Addressing vessel desertion and abandonment of harmful matter aboard deserted vessels;
   - Removing and preventing illegal and inappropriate mooring materials;
   - Removing abandoned or deserted vessels; and
   - Reducing the potential for closures of commercial shellfish harvest due to poor water quality caused by vessel related activities.

2. Protect habitat and decrease threats to and disturbance of wildlife by:
   - Permitting moorings that avoid seagrass beds, seal haul-out areas, and aquaculture lease areas;
   - Preventing the introduction of invasive species;
   - Preventing anchoring in seagrass protection areas;
   - Removing and preventing unpermitted and improperly placed moorings; and
   - Removing and preventing grounded, derelict, and deserted vessels.

3. Ensure safe and enjoyable water-related recreation by:
   - Removing and preventing moorings in areas where there is a high concentration of recreation, such as, swimming beaches; and
   - Removing and preventing grounded, derelict, and deserted vessels.

Background
GFNMS has regulatory authority over the submerged lands and waters of the sanctuary, including Tomales Bay, to the mean high water line. CSLC manages the ungranted tidelands and submerged lands of California. Both agencies work in coordination with other federal, state and local agencies and governments. As an area of exceptional biological significance, supporting a diversity of flora, fauna and habitats, the bay has long been recognized by citizens, local, state, and federal agencies as a special place deserving a high level of ecosystem protection. In 1962, portions of Tomales Bay on the west shore were established as part of the Point Reyes National Seashore (PRNS). The tide and submerged lands extending .25 miles into Tomales Bay along the west shore of the bay were conveyed by statute by the state of California to the NPS in 1965 (Chapter 983, Section 1, Statutes of California, July 9, 1965). In 1980, additional areas of Tomales Bay on the east shore, that include some tide and submerged lands, were designated as part of the Golden Gate National Recreation Area (GGNRA). In 1979, the California

Coastal Commission (CCC) designated Tomales Bay as a "Special Resource Area". Under the State Water Resources Control Board's (SWRCB's) non-point source coastal pollution regulatory program, Tomales Bay is listed as one of the state's Critical Coastal Areas. In 1981, the majority of Tomales Bay was designated as part of the GFNMS. Tomales Bay was also designated in September 2002 by the United Nations as a "Wetland of International Significance" in an international treaty known as the Ramsar Convention on Wetlands.

Tomales Bay is a significant biological community that supports a diversity of habitats, including eelgrass beds, intertidal sand and mud flats, and salt and freshwater marshes. Thousands of species of birds, other vertebrates, invertebrates and plants, including numerous threatened and endangered species, inhabit the bay. The watershed is especially important to approximately 20,000 wintering shorebirds, seabirds, and waterbirds, among many other bird species that occur both seasonally and year-round (Kelly, 1998). The waters of Tomales Bay are also important to many fish species, including salmon, eel, sturgeon, halibut, endangered coho salmon, and the commercially important Pacific Herring that rely on its creeks and extensive eelgrass beds to spawn. Several species of marine mammals have been documented in the bay and a resident harbor seal population breeds there—the seal population ranges between 500 and 800 individuals depending on the time of year.

While Tomales Bay has long been considered a pristine body of water, human activity within the watershed has resulted in some degradation of the bay's water quality, habitats, and special status species. The San Francisco Regional Water Quality Control Board listed the bay as an impaired water body for pathogens, sediment, mercury, and nutrients and established a *Tomales Bay Watershed Pathogens Total Maximum Daily Load* (TMDL) as an update to the San Francisco Bay Region Basin Plan. The goal of this TMDL is to minimize human exposure to disease-causing pathogens thereby ensuring protection of water contact recreational uses and Tomales Bay shellfish harvesting (San Francisco Bay RWQCB, 2005).

Vessels and vessel-related facilities, (e.g. including toilets, vessel launch ramps, moorings, marinas, and campgrounds), have the potential to adversely affect the Tomales Bay ecosystem and impact water quality, habitat and public health, recreation and safety. Studies that definitively link past or existing boating or vessel-related activities on Tomales Bay to adverse environmental impacts have not been conducted. However, when improperly managed or maintained, vessels and the facilities that support boating can threaten the valuable resources of Tomales Bay through: pathogen and nutrient impairment of beneficial uses, including aquaculture; decreased water quality from discharges of fuel, oil, and toxic materials; ecological effects of invasive species introduced by vessels; disturbance of wildlife; habitat damage and threats to navigation from anchoring, mooring or deserted vessels that come aground; and public safety threats from improperly moored, grounded, or deserted vessels.

This plan takes a precautionary approach to ensure that future boating activities do not impact the bay. Due to the myriad of federal, state, and local laws, regulations and

ordinances that govern Tomales Bay, there is a need to address vessel management in a coordinated and streamlined manner that is consistent with the diverse set of mandates of the participating agencies.

B. PROCESS FOR DEVELOPING THE TBVMP

Beginning in 1994, a group of local, state, and federal agencies with jurisdiction over various parts of the bay, water quality, and boating met periodically to discuss vessel management, moorings, and water quality concerns for Tomales Bay. In reviewing existing information, the collaborating agencies recognized that vessels and associated facilities may adversely impact the water quality, public health and safety, and wildlife and natural habitats of Tomales Bay.

The mandates of the agencies involved include maintaining or improving water quality, maintaining or improving native wildlife populations and natural habitats, protecting public health, access, and safety, and providing opportunities for recreation and ocean-dependent commercial uses.

Over time, the concerns of the participating agencies evolved from focusing on impacts from vessel sewage discharge, moorings, and derelict or deserted vessels, to also include threats from the introduction of invasive species, disturbance to wildlife, and discharges of oil, fuel, and vessel maintenance products. The participating agencies committed to acting in a coordinated manner to address all of these vessel-related management issues including the consideration of vessel storage needs in Tomales Bay. GFNMS facilitated this collaborative process through establishing the TBIC. CLSC is a co-lead with the GFNMS in developing the TBVMP.

In 2007, GFNMS and CSLC produced the document, "Protecting Tomales Bay by Managing Vessel Usage: A Document for Public Input." The document was a multi-agency effort to coordinate current and future vessel-related activities to improve water quality, protect wildlife and habitat, and protect public health and ensure recreational opportunities in Tomales Bay. The document presented participating agencies' current activities as well as new concepts for vessel management. The purpose of this document was to solicit vessel management recommendations from individuals and organizations in the local community and users of Tomales Bay to protect the ecosystem and public health in the bay. The document was released for a 60-day comment period and two "brainstorming" workshops were held.

As a result of public comments on the 2007 initial public input document, GFNMS intensified its efforts to engage boaters and the local community to provide input on the development of a draft vessel management plan for Tomales Bay. To that end, the GFNMS Advisory Council initiated a Working Group for Tomales Bay Vessel Management. The working group consisted of representatives of boating associations, shellfish growers, commercial fishermen, boat services operations, conservation organizations, shore-side property owners, and state and federal agencies with jurisdiction in Tomales Bay. GFNMS facilitated seven working group meetings through April 2009. Working group topics included: vessel sewage and oil waste disposal

services; mooring criteria; mooring fields; mooring tackle; mooring permitting process; and boater education. These meetings resulted in a list of recommendations to the GFNMS Advisory Council. In December 2009 the Advisory Council reviewed the working group recommendations and forwarded a final list of recommendations to GFNMS (*Appendix IV*). These recommendations were reviewed by GFNMS and CSLC staff, in coordination with the Tomales Bay Interagency Committee, and then incorporated into a Draft TBVMP, which was released for public comment on August 23, 2012.

Following a 30-day comment period and a public hearing held in Point Reyes Station on September 18, 2012, GFNMS and CSLC received comments on the Draft TBVMP-EA/IS from over 50 individuals and organizations, including local stakeholders and the Tomales Bay boating community. Based on these comments and further evaluation of the proposed actions in the Draft TBVMP, changes and updates were made, which are represented in this Final Tomales Bay Vessel Management Plan dated April 2013. Some of the substantive changes made include:

- ***Revised Mooring Tackle Requirements:*** CSLC and GFNMS received public comment regarding the proposed mooring tackle requirements in the draft Plan. Based on this feedback the requirements for mooring tackle in the proposed Tomales Bay Mooring Program were revised and now allow 55-gallon drums. Mid-water floats are no longer required and helical anchors (i.e. screw type) and elastic rodes are *not* allowed. The standard Tomales Bay system, using concrete filled 55-gallon drums and galvanized chain, is provided as an example in the plan.

- ***Updates to proposed Mooring Zones at Marconi Cove***: Based upon a review of California State Parks (CSP) land ownership, the area between Mooring Zones 7 and 8 is no longer considered to be part of a CSP No Mooring Zone. Mooring Zone 7 was expanded to include this popular mooring area and the previous Zone 8 was removed. Mooring Zones 9-11 were then renamed Zones 8-10.

- ***Revisions to requirements in the Mooring Program:*** Several of the requirements of the MP were revised based on review of comments from the local community. Changes to the updated MP include: allowing for guest use of moorings for up to 30 days; allowing concrete as a mooring anchor material; no longer requiring use of a mid-water float; allowing for transfer of mooring leases by littoral property owners, with the adjacent property, to a new owner or lessee; establishing priority processing of mooring lease applications for littoral property owners and existing mooring owners during the initial 90-day period after the TBVMP is approved, and; proof of mooring ownership is required for owners of pre-existing moorings applying for a mooring lease for existing mooring tackle in the same location, but proof no longer needs to predate 2006.

- ***Revised language to better recognize the significance of boating in the bay***: Several commenters noted that the draft Plan appeared unfairly critical of boaters and boating. The text has been revised to acknowledge boating as an important tradition on

Tomales Bay. Updates to the Plan also clarify that although boats do have the potential to contribute to ongoing water quality problems, they are only one among several potential contributors.

- ***Updates to language on agency jurisdiction and boundaries***: Changes were made throughout the document to reflect the most up to date information on agency jurisdiction, regulatory authority and land ownership.

- ***Additional language added to explain why the TBVMP is required***: The Plan was revised to include more detailed descriptions of why the Tomales Bay Mooring Program is a necessary requirement. Updated information includes an explanation of the Regional Water Quality Control Board requirement to develop this plan to address potential pollution from vessels on Tomales Bay. More detailed explanations have been added to better clarify why current GFNMS and CSLC statutes and regulations require such a program.

GFNMS and CSLC staff will finalize MP requirements and protocols, develop an outreach plan and introduce the program to the community. The Tomales Bay Mooring Program will then be implemented over a set timeframe to ensure adequate time for public notification. When the Mooring Program is introduced, a mooring lease application along with instructions and guidance materials will be made available for individuals seeking a CSLC Recreational Lease for mooring of recreational vessels on Tomales Bay.

C. PARTICIPATING AGENCIES

The TBVMP was prepared by GFNMS and CSLC.

NOAA - Gulf of the Farallones National Marine Sanctuary (GFNMS)

GFNMS includes all submerged lands and waters of Tomales Bay to the mean high water line throughout the bay, except for the Point Reyes National Seashore owned tide and submerged lands on the western shore of Tomales Bay as depicted in *Figure 6*, and identified as *Area Outside GFNMS Jurisdiction*. Pursuant to the NMSA, NOAA has the authority for comprehensive and coordinated conservation and management of the sanctuary, including Tomales Bay. The subsequent designation of the site in 1981, as a National Marine Sanctuary, provided GFNMS with the authority to regulate certain activities within its boundaries, pursuant to the NMSA.

With certain exceptions, GFNMS regulations prohibit the following activities within the sanctuary (for the complete text of the GFNMS prohibitions and exceptions, refer to 15 CFR Part 922.82.):

- Discharging or depositing of materials or other matter directly into the sanctuary;
- Discharging or depositing of materials from outside the sanctuary that enter and injure Sanctuary resources;
- Constructing any structure other than a navigational aid;
- Placing or abandoning any structure;

- Dredging or otherwise altering the submerged lands of the Sanctuary;
- Using motorized personal watercraft (MPWC - defined as a vessel which uses an inboard motor powering a water jet pump as its primary source of motive power, and which is designed to be operated by a person sitting, standing, or kneeling on the vessel rather than the conventional manner of sitting or standing inside the vessel);
- Taking, harassing or disturbing seabirds, marine mammals, and sea turtles;
- Attracting white sharks;
- Deserting a vessel aground, at anchor, or adrift in the Sanctuary;
- Leaving harmful matter in a deserted vessel;
- Moving or removing historic resources (such as shipwrecks); and
- Anchoring in Tomales Bay seagrass protection zones.

California State Lands Commission (CSLC)
CSLC has jurisdiction over all state-owned filled and unfilled tidelands, submerged lands, and beds of navigable waterways (sovereign lands). The state acquired ownership of all such lands within its boundaries upon its admission to the United States in 1850. These lands include, but are not limited to, the beds of more than 120 navigable rivers and sloughs, nearly 40 navigable lakes, and the three-mile wide band of tide and submerged lands adjacent to the coast and offshore islands of the state. The state holds these lands pursuant to the common law Public Trust Doctrine for the benefit of all its people for public trust purposes such as water related commerce, navigation, fisheries, water oriented recreation, and open space.

The CSLC derives its authority from both the Public Resources Code and the California Code of Regulations. Public Resources Code section 6301 grants exclusive jurisdiction to the CSLC over all ungranted tidelands and submerged lands owned by the state, and the beds of navigable rivers, streams, lakes, and bays. CSLC administers this authority, including the leasing of state lands for marinas, docks, and moorings, pursuant to Title 2, Division 3, Chapter 1, California Code of Regulations. Moorings located on these sovereign lands are required to have a valid lease from CSLC.

Generally, Tomales Bay involves ungranted sovereign land under the jurisdiction of CSLC and lands the state patented through various tideland surveys, including, but not limited to, Tideland Surveys 1 (Marin County), 157 (Marin County), 107 (Marin County), 99 (Marin County), 145 (Marin County), 241 (Marin County), and 170 (Marin County), 172 (Marin County). Tomales Bay also involves lands that are subject to certain Boundary Line Agreements and Title Settlement Agreements, including certain portions of the areas of Marconi Cove and Chicken Ranch Beach.

The proposed mooring areas located within Tomales Bay are located waterward of lands the state patented and on ungranted sovereign land under the jurisdiction of the CSLC.

The Tomales Bay Interagency Committee (TBIC)
GFNMS and CSLC have worked as members of the Tomales Bay Interagency Committee (TBIC). The TBIC includes the numerous local, state, and federal agencies with legal and regulatory interest in the waters of Tomales Bay and the nearshore

adjacent areas. TBIC agencies include:

- California Coastal Commission
- California Department of Boating and Waterways
- California Department of Fish and Wildlife
- California Department of Public Health
- California Department of Transportation
- California State Lands Commission
- California State Parks
- Marin County and Marin County Sheriff's Office
- NOAA's Gulf of the Farallones National Marine Sanctuary
- National Park Service, Point Reyes National Seashore
- State Water Resources Control Board and Regional Water Quality Control Boards

The TBIC and the process to develop the Tomales Bay Vessel Management Plan are described in *Process for Developing the TBVMP* above. A more detailed description of TBIC agencies (and other agencies with jurisdiction over boating or Tomales Bay) and pertinent regulations are contained in *Appendix III*.

D. SCOPE OF THE TOMALES BAY VESSEL MANAGEMENT PLAN

The TBVMP provides recommendations to achieve its stated goals. It reflects a multi-agency effort to streamline and coordinate management of future vessel-related activities. The intended outcome is to have a coordinated, collaborative plan that provides guidance to the agencies and the public for managing boater-related uses of Tomales Bay. This plan does not establish any new legal authorities; none of the proposed actions will alter existing authorities with regard to management of resources or regulation of activities within Tomales Bay. The TBVMP planning process has evaluated a number of alternatives to establish mooring areas. The plan is consistent with the planning criteria identified in the document.

The TBVMP is not intended to be a static plan, but rather a living document based upon an adaptive management approach; thus, allowing flexibility for the plan to adapt to changing circumstances. To ensure that it is still meeting its goal and objectives, the TBVMP will be reviewed and evaluated occasionally. Any revisions and additions to the TBVMP, if and when necessary, will ensure that it is responsive to emerging issues and includes input from the TBIC and local stakeholders as needed. Moreover, implementation of the proposed actions in the TBVMP is contingent upon availability of funding over time; therefore modifications to the strategies and activities may need to be made due to unforeseen circumstances.

E. IMPLEMENTATION PROCESS FOR THE TBVMP

Once the final TBVMP and EA/IS have been approved, a Tomales Bay Mooring Program (MP) will be implemented over a set timeframe to ensure adequate time for public notification. A mooring lease application along with instructions and guidance materials will be made available for individuals seeking a CSLC Lease for mooring of recreational

vessels on Tomales Bay. These materials will assist individuals with the application process and will include a Tomales Bay Vessel Mooring Handbook and an interactive map showing mooring zones, restricted areas, and other points of interest. The MP will provide a streamlined approach that minimizes, to the extent possible, the time for permitting agency staff to process applications by addressing the lease requirements, including where moorings will be allowed, what types of equipment will be acceptable, and how the moorings should be installed, inspected, and maintained. To ensure that all requirements are appropriate for the specific conditions of Tomales Bay, further details of the MP, such as requirements for inspections of individual moorings, will then be developed with input from the TBIC and stakeholders with expertise and local knowledge.

F. SUMMARY OF PROPOSED ACTIONS

The TBVMP covers five categories of issues: 1) Sewage Services; 2) Oil and Bilge Services; 3) Vessel Mooring Program; 4) Boater Education and Outreach; and 5) Preventing the Introduction of Non-native Species. The discussion of each issue area includes specific strategies to address existing problems and is further divided into specific actions, or "activities" for the agencies' staff to carry out. Activities will be implemented, contingent on funding, to achieve the goals and objectives of the TBVMP. *Table 1* is a summary of the issues, strategies and activities. For an overview of the structure of the proposed actions and detailed discussion about the issues, strategies and activities, see *Section II, Proposed Actions for the Vessel Management Plan*.

TABLE 1 — PROPOSED ACTIONS SUMMARY TABLE		
Issue	**Strategy**	**Activity**
SEWAGE SERVICES (SS)	**SS-1: *Plan for and implement adequate vessel-based sewage services for Tomales Bay.***	**SS 1.1 -** Establish at least three portable toilet dump stations adjacent to Tomales Bay.
		SS 1.2 - Establish one sewage pumpout station adjacent to Tomales Bay.
	SS-2: *Designate Tomales Bay as a No-Discharge Zone for Vessel Sewage.*	**SS 2.1 -** Recommend that the U.S. Environmental Protection Agency (EPA) designate Tomales Bay as a No Discharge Zone (NDZ).
	SS-3: *Plan for and implement additional land-based sewage services for Tomales Bay.*	**SS 3.1 -** Recommend that NPS or Marin County determine the feasibility of installing and maintaining portable toilet facilities (i.e. "Port-a-John") in or near areas of known water recreation that may not have adequate facilities.
		SS 3.2 - Encourage the development of public boating facilities at Marconi Cove.
	SS-4: *Ensure that future sewage services needs are met for Tomales Bay*	**SS 4.1 -** Recommend to TBIC agencies that no new waterfront facilities or expansion of existing waterfront facilities be permitted without documentation/assurance of adequate sewage waste management facilities.
	SS-5: *Develop a boater outreach plan for vessel sewage practices.*	**SS 5.1 -** Ensure that a boater outreach plan for vessel sewage practices is included as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1).*

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
OIL AND BILGE SERVICES (OS)	<u>OS-1</u>: ***Implement an oil absorbent exchange program for Tomales Bay.***	**OS 1.1 -** Identify funding sources and pursue planning for absorbent exchange program.
		OS 1.2 - Implement a "pilot" bilge absorbent exchange program at two initial locations.
		OS 1.3 - Evaluate effectiveness of the two absorbent exchange program "pilot" sites and adapt as necessary.
	<u>OS-2</u>: ***Develop a boater outreach plan for vessel oil and bilge practices.***	**OS 2.1 -** Compile and distribute existing educational materials and information on Best Management Practices (BMPs) for proper management of oil fuel and other boat maintenance products.
		OS 2.2 - Compile and analyze information on all existing used vessel oil recycling locations.
		OS 2.3 - Conduct a needs assessment and develop new educational materials regarding proper management of vessel oil, fuel and other maintenance products.
		OS 2.4 – Ensure that vessel oil management is included as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1).*

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
VESSEL MOORING PROGRAM (VM)	**VM-1: *Implement siting criteria and zones for vessel moorings in Tomales Bay based on a marine spatial planning approach.***	**VM 1.1-** Adopt the following Mooring Criteria for siting of vessel moorings on Tomales Bay:
		1. Seagrass: No vessel moorings shall be allowed in seagrass beds. *2. Wildlife Disturbance: No moorings shall be allowed in areas within 300 feet of seal haul-out areas.* *3. Parcels Under Private Ownership Outside of CSLC Jurisdiction: No vessel moorings shall be allowed on tidelands and submerged lands under private ownership, unless a mechanism can be determined for legally authorizing moorings on private parcels.* *4. NPS-owned Tide and Submerged Lands Outside of GFNMS Jurisdiction: Other than as necessary for NPS administrative use, no moorings shall be allowed on the submerged lands owned by NPS.* *5. Swimming Beach/Boat Launch Areas: No moorings shall be allowed within 100 feet of swimming beaches and boat launch ramps.* *6. State Parks Criteria: No moorings shall be allowed within 1000 feet offshore of State Parks property.* *7. Aquaculture: No moorings shall be allowed within areas that fail to meet the California Department of Public Health calculations for safe distances between moorings and aquaculture lease areas pursuant to a valid lease, permit, license or other authorization issued by the State of California. No moorings shall be located within state water bottom lease areas for aquaculture unless directly associated with aquaculture pursuant to a valid lease, permit, license or other authorization issued by the State of California.* *8. Navigation Channels: No moorings shall be allowed within navigation channels of Tomales Bay.*

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
VESSEL MOORING PROGRAM (VM)	**VM-1: (CONTINUED)** ***Implement siting criteria and zones for vessel moorings in Tomales Bay based on a marine spatial planning approach.***	**VM 1.2-** Implement mooring zones sited within historically used mooring locations of the bay that are consistent with the criteria in Activity VM 1.1, and regulatory requirements of all TBIC agencies.
	VM-2: ***Implement a Tomales Bay Vessel Mooring Permitting Process based on a marine spatial planning approach***	**VM 2.1 -** Develop CSLC lease terms and conditions that are consistent with all TBIC agencies' mandates, regulations and policies, and are in compliance with mooring criteria established in Activity VM 1.1.
		VM 2.2 - Establish policies/regulations limiting the maximum number of moorings allowed under the Tomales Bay Mooring Program to no more than 165 moorings.
		VM 2.3 - Implement mooring tackle requirements to include specifications for mooring tackle and a program for inspection and maintenance.
	VM-3: ***Introduce a process for compliance with Vessel Mooring Program that includes a clear public education and outreach component.***	**VM 3.1 -** Implement a process to introduce the Vessel Mooring Program and permitting process to the community.
		VM 3.2 - Continue to implement a process for removing derelict and deserted moorings.
		VM 3.3 - Define and implement a process for ensuring future compliance with the Vessel Mooring Program.
	VM-4: ***Strengthen existing Tomales Bay enforcement partnerships to ensure compliance with all vessel-related mandates, policies and regulations***	**VM 4.1 -** Conduct an analysis of Tomales Bay enforcement capabilities and review and determine if a formal agreement is needed among enforcement agencies.
		VM 4.2 - Ensure adequate patrol of bay from aircraft, vessels and by on-foot observation.

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
BOATER EDUCATION AND OUTREACH PROGRAM (EO)	**EO-1**: ***Develop a Tomales Bay Boater Education and Outreach Program.***	**EO 1.1-** Ensure local businesses receive existing boater education materials.
		EO 1.2– Conduct outreach to inform Tomales Bay boaters of the TBVMP and promote boater compliance with the Vessel Mooring Program and other laws, regulations and policies.
		EO 1.3- Develop a Tomales Bay boater website and a map (interactive and hard copy).
		EO 1.4- Develop and provide new outreach materials and programs specific to Tomales Bay boating.
		EO 1.5- Develop an educational program for proper boat anchoring practices.
INTRODUCED SPECIES (IS)	**IS-1**: ***Encourage vessel operators to prevent the introduction of non-native species.***	**IS 1.1 –** Promote Best Management Practices (BMPs) by distributing recommendations on how to prevent introduced species to the Tomales Bay boating community.
	IS-2: ***Encourage on-going monitoring of introduced species***	**IS 2.1 –** Support efforts by agencies and organizations that conduct regular monitoring of introduced species, including writing letters of support for specific projects.

II. PROPOSED ACTIONS FOR THE VESSEL MANAGEMENT PLAN

This section provides an overview of all management actions proposed by CSLC and GFNMS. Actions are divided among the following topics: sewage services, oil and bilge services, vessel mooring program, education and outreach program, and introduced species prevention. The first section, "Structure", describes how each issue is addressed in the TBVMP.

STRUCTURE

Issue Statement
The issue statement concisely explains "why" this is an issue to be addressed by GFNMS and/or CSLC. It may include a brief description of the current situation or problem, and areas that need attention.

Strategies and Activities
This section describes how the issue will be addressed. Each strategy addresses the issue and is divided into specific activities for the agency staff to carry out. Activities are designed to achieve the goals and objectives of the TBVMP.

In certain cases anticipated products associated with implementation of the activities are listed in the descriptions. These anticipated products were projected during the development of the TBVMP; however as the strategies and activities are completed over time and/or funding is made available, different or additional products may become more appropriate.

Where applicable, *potential partners* and *estimated cost* are listed below the activity descriptions. The potential partners are organizations or entities that GFNMS and CSLC have identified who have shown interest in contributing or could possibly lead, provide support, or otherwise be involved in the implementation of that particular activity. The current potential partners identified in the TBVMP are also partners of the TBIC. This list does not limit the potential partners or establish a commitment for those currently on the list, but merely serves as a guide when implementing the activity.

Budget numbers listed under estimated costs represent a rough estimate of expenses associated with conducting the activity described. These estimates are contingent on a number of factors:

1) Funding for a GFNMS Tomales Bay Project Coordinator is obtained;
2) A budget is available each year from appropriated funds;
3) There are both availability of and opportunity to receive additional funding;
4) The estimates do not take into account increasing personnel costs each year or inflation;
5) The estimates do not take into account unexpected events, emergencies or unforeseen projects.

Due to existing limited resources and existing mandates and workload priorities, it would be necessary for GFNMS to hire a dedicated staff position to coordinate the implementation of the activities in this plan, conduct the required collaboration between agencies, ensure ongoing input from local stakeholders, and facilitate the TBIC. This position is the *Tomales Bay Project Coordinator*, which is referenced throughout this plan. Although the specifics of this new project coordinator position have not been thoroughly discussed, it is envisioned to be a part time position.

Finally, most of the strategies and activities in the *Proposed Actions* of the TBVMP were developed by the GFNMS Advisory Council Working Group on Tomales Bay Vessel Management, reviewed and refined by the GFNMS Advisory Council, which provided them to the sanctuary superintendent for consideration in the development of the TBVMP. For more information on this stakeholder process, see the *Process for Developing the TBVMP* in the *Executive Summary and Introduction* section. To see the GFNMS Advisory Council recommendations and the sanctuary superintendent's response, see *Appendix IV*.

A. SEWAGE SERVICES

Issue Statement:

Boating, for both commercial and recreational purposes, has long been an integral part of the local culture on Tomales Bay—and this tradition has continued to this day. Despite the level of vessel use, there are currently no pumpout stations and only one dump station (for onboard portable toilets) on or around Tomales Bay where boaters can dispose of their waste. A study conducted by California Department of Boating and Waterways (CDBW) documented the number and type of vessels and vessel-related facilities near Tomales Bay. This study determined that there were 87 vessels requiring a dump station and 71 vessels requiring a pumpout, on and around the bay. Based on these results CDBW made a recommendation to SWRCB that, at a minimum, one pumpout station and one dump station are needed in Tomales Bay to provide adequate sewage waste facilities (CDBW, 2004). To address the need for vessel sewage services for Tomales Bay, Marin County, in 2012, installed and now operates a dump station at Miller Park.

Tomales Bay is currently on the Section 303(d) Clean Water Act (CWA) list of impaired waterbodies due to elevated fecal coliform levels. Fecal coliform bacteria are "indicator" organisms commonly measured in water quality testing to establish the presence of human waste and other potentially harmful pathogens. Although the source of these elevated coliform levels has not been targeted to a specific activity, water-related recreational and commercial uses have the potential to contribute fecal coliform bacteria and pathogens contaminating the bay. In particular, overboard human sewage discharges to the bay can impact the commercial oyster industry in Tomales Bay, and can threaten public health through the consumption of contaminated shellfish or from water contact recreational uses such as swimming.

Studies demonstrate a correlation between boating activity and elevated levels of fecal coliform, especially in areas of poor water circulation (North Carolina Department for Environmental Management [NCDEM], 1990; Sawyer & Golding, 1990; Milliken & Lee, 1990; Gaines & Solow, 1990; Seabloom et al., 1989; Fisher et al., 1987). Fecal coliform levels in marinas and mooring fields become elevated near vessels during periods of high vessel occupancy and usage. The discharge of untreated sewage from one weekend boater can result in the same amount of water-based bacterial pollution as the discharge of treated land-based sewage of 10,000 people for the same time period (Environmental Protection Agency [EPA], 2001). For more detailed information on environmental impacts of sewage refer to the information on pathogens and nutrient impairment in the *Existing Environmental Conditions* section of this document.

Eliminating discharges of human waste into Tomales Bay by providing vessel and land-based sewage services will protect pathogen-impaired beneficial uses such as shellfish harvesting and consumption, water contact recreation (e.g. swimming, scuba diving, and fishing), and non-contact water recreation (e.g. boating and beach camping). Eliminating discharges of human waste into the bay will also protect the aquatic ecosystem, including marine habitat, estuarine habitat, cold and warm freshwater habitat, and wildlife habitat, from other harmful constituents found in human waste. Additional information on sewage impacts can be found in the *Existing Environmental Conditions* section and *Appendix I*, of this document.

With only one dump station and no pumpouts within Tomales Bay, there are currently insufficient facilities in place to provide adequate disposal of sewage waste from existing vessels. Given the potential risks associated with sewage discharge, GFNMS will collaborate with the identified partners to pursue several *strategies* and *activities*. GFNMS staff are expected to play an active role in the implementation of the *Sewage Services* proposed actions described below, and CSLC staff's role will be limited to input provided through their involvement as a member of the TBIC.

Proposed actions:

STRATEGY SS-1: ***Plan for and implement adequate vessel-based sewage services for Tomales Bay.***

GFNMS with its partners would coordinate with existing public and private boating facility operators to encourage development of adequate sewage pumpout and dump stations. Coordination would include facilitation of necessary permits and pursuance of public funding sources to support construction of sewage waste facilities.

Activity SS 1.1 Establish at least three portable toilet dump stations adjacent to Tomales Bay.

Boaters use dump stations to empty portable toilets (port-a-potties) carried onboard their vessels. These facilities consist of a dedicated piece of equipment that typically resembles a large sink basin, often equipped with a water hose to flush out the portable toilet units.

GFNMS staff, with partner agencies, would encourage and facilitate the installation of dump stations at Lawson's Landing and Marconi. Other potential locations include Marshall Boat Works and Tomales Bay Resort. CDBW offers grants for up to 75% of the installed cost of dump stations, including the cost of new equipment, piping, on-site holding tanks, pier or dock modifications, signs, permits and other miscellaneous equipment needed for a complete and efficient station (CDBW, 2010).

Potential Partners: Marin County, NPS, RWQCB, local property owners
Estimated Cost: CDBW estimates that dump stations can cost anywhere from $500 - $10,000 each to install depending upon site conditions. Maintenance costs are typically $100 - $500 annually (CDBW, 2004). Grants may cover up to 75% of the installation costs. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

Activity SS 1.2 Establish one sewage pumpout station adjacent to Tomales Bay.

Pumpout stations, typically installed at locations with easy boat access, consist of dedicated equipment, which empties the onboard holding tanks into a landside sewage system or a municipal sewage line. These facilities consist of a pump unit with an associated suction hose and shut-off valve. GFNMS staff, with partner agencies, would encourage and facilitate the installation of a pumpout station at either Nick's Cove or Marshall Boat Works.

CDBW offers grants for up to 75% of the installed cost of pumpout stations. This includes the cost of new equipment, necessary pumps, piping, lift stations, on-site holding tanks, pier or dock modifications, signs, permits and other miscellaneous equipment needed for a complete and efficient station (CDBW, 2010).

Although Sacramento Landing was also suggested and considered as a potential location for a pumpout station, at this time the location is not open to the public and lacks the on-site staffing and supervision that would be necessary to operate a pump-out station. Additionally, the shore-side land access to this area needed to service the site is limited because the road to the site is unpaved and can be impassible during the rainy season. These limitations make it currently unfeasible to construct and operate a public station at this location.

Potential Partners: Marin County, NPS, RWQCB, local property owners
Estimated Cost: CDBW estimates that installation of a pumpout station can range in cost from $3,000 - $20,000 each depending upon site conditions. Maintenance costs vary between $100 and $2,500 per year (CDBW, 2004). Grants may cover up to 75% of the installation costs. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

STRATEGY SS-2: *Designate Tomales Bay as a No-Discharge Zone for Vessel Sewage.*

A No Discharge Zone (NDZ) under the authority of Section 312 of the U.S. Clean Water Act (CWA) prohibits discharges of any human waste, treated or untreated, into Tomales Bay. An NDZ is a portion of a water body or an entire water body (e.g. Tomales Bay) into which the discharge of sewage (whether treated or untreated) from all or a certain class of vessels is completely prohibited with no exceptions. In Tomales Bay, discharges would be prohibited from all vessels. Although Tomales Bay is part of a proposed larger NDZ along the entire California coast, the larger NDZ's prohibition would be specific to passenger vessels of 300 gross tons or more and ocean-going vessels of 300 gross tons or more that have at least two days of sewage holding capacity; however, the size class of vessels which use Tomales Bay is much smaller than this and would therefore not be affected by the designation of the larger NDZ.

Activity SS 2.1 - Recommend that the U.S. Environmental Protection Agency (EPA) designate Tomales Bay as an NDZ.

GFNMS staff would submit a letter of support to the EPA for the designation of an NDZ, and provide support to SWRCB in applying to the EPA for designation under § 312(f)(4)(A) of the CWA.

Potential Partners: SWRCB, RWQCB, EPA, United States Coast Guard (USCG)

Estimated Cost: Costs are limited to staff time. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

STRATEGY SS-3: *Plan for and implement additional land-based sewage services for Tomales Bay.*

While there are numerous onshore restroom services around Tomales Bay, there are still locations that experience high levels of boating and water recreation-related use but lack facilities. GFNMS would work with partner agencies and the Tomales Bay Watershed Council (TBWC) to identify funding sources for new facilities at these locations. In addition to conventional restroom facilities and portable units, composting toilets should be considered for more remote locations.

Activity SS 3.1 - Recommend that NPS or Marin County determine the feasibility of installing and maintaining portable toilet facilities (i.e. "Port-a-John") in or near areas of known water recreation that may not have adequate facilities.

This activity would involve a review of existing facilities, vessel mooring areas and public use. If the need for new facilities is determined, then GFNMS would make a recommendation to the adjacent public land owner, including Marin County, CSP or NPS

to designate and maintain portable toilet facilities at appropriate locations to address increased public use.

Potential Partners: NPS, Marin County, CSP

Estimated Cost: In addition to staff time, costs for portable toilet installation and maintenance would depend on the number and types of new facilities being designated. A source for funding this activity currently has not been identified.

Activity SS 3.2 - Encourage the development of public boating facilities at Marconi Cove.

The private Marconi Cove parcel (Marin County Assessors Parcel No. 106-301-11), currently used as a boat ramp, is an optimal location for launching of boats on Tomales Bay. Tomales Bay State Park (TBSP) owns an adjacent parcel with a former marina site at Marconi Cove and identified it as an area to be developed as the park's primary recreational east shore bay access; the TBSP General Plan proposes providing a small campground, a picnic area, and boat launching facilities (TBSP, 2004), and there are currently plans in place to develop this by 2015 using Caltrans mitigation funds and grants from California Department of Boating and Waterways.

It is recommended that the private property be purchased and designated as a public boat launching facility and that a dump station and restrooms be installed on the TBSP-owned site. GFNMS staff would send a letter to partner agencies to investigate the status of the property, identify potential purchasers, and encourage its purchase for public boating use.

Potential Partners: Marin County, CSP
Estimated Cost: Availability of and cost for acquiring this property are currently not known.

STRATEGY SS-4: ***Ensure that future sewage services needs are met for Tomales Bay.***

Activity SS 4.1 - Recommend to TBIC agencies that no new waterfront facilities or expansion of existing waterfront facilities be permitted without documentation/assurance of adequate sewage waste management facilities.

This action would involve GFNMS staff submitting a formal letter to all agencies charged with permitting of facilities adjacent to Tomales Bay recommending that they institute a new requirement to provide sewage waste management facilities, appropriate to number and size of vessels and number of visitors for all new waterfront businesses such as restaurants, marinas and vessel repair facilities or proposed expansion of existing facilities.

Potential Partners: Marin County, CCC

Estimated Cost: Costs are limited to staff time. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

STRATEGY SS-5: ***Develop a boater outreach plan for vessel sewage practices*****.**

GFNMS would work with partners to develop and implement an education and outreach plan for all vessel users (overnight and day users) on proper management of vessel sewage waste.

Activity SS 5.1 - Ensure that a boater outreach plan for vessel sewage practices is included as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1).*

This proposed action would involve GFNMS staff working with partners to develop and implement an education and outreach plan for all vessel users (overnight and day users) on proper management of vessel sewage waste. The plan would include Best Management Practices, as well as locations for all vessel and land-based sewage services on the bay (including restroom facilities, and sewage dump/pumpout stations when available).

Potential Partners: NPS, CCC, CDBW

Estimated Cost: Costs are limited to staff time. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

B. OIL AND BILGE SERVICES

Issue Statement:

Although boating on the bay has been a long-popular activity, there are currently no oil and bilge services existing adjacent to or nearby Tomales Bay (with the exception of used oil recycling at Lawson's Landing and Greenbridge Auto and Gas in Point Reyes Station). Fortunately, many of the environmental impacts from vessel oil can be easily avoided. Because of the significant threat that oil can have on Tomales Bay, promoting recycling of used boat oil and implementing an oil absorbent exchange program can help to protect sensitive ecosystems by preventing the discharge of oil from vessels, and are therefore included as proposed actions in the TBVMP.

The use of motor-driven vessels has the potential to increase petroleum hydrocarbons in the bay. Vessels can release fuel, oil, and other hydrocarbon-based pollutants to the water through emissions of marine engines, discharges of fuel and oil from engines and

bilges, spills associated with fueling, spills occurring during oil changes and used oil transfer, and spills caused by derelict, deserted and sunken vessels.

The accidental or purposeful discharge of oil, contaminated bilge water, or other toxic materials generated by boating activities can have serious effects on marine organisms. Even at low concentrations, some components are toxic to marine plants and animals and can cause cancer, mutations, and/or birth defects, and behavioral changes in shellfish and fish (Johnson, 1998).

Measures to prevent the discharge of oil can include the use of oil absorbents, which are pads, pillows, or sheets that soak up oil and gas, but do not absorb water. They are placed under a boat's engine where drips may occur and in the bilge. A bilge pump-out station can also prevent oil discharge. Potential establishment of a bilge pump-out station was considered, however initial assessments determined that it would not be appropriate for Tomales Bay due to several factors including: a lack of larger commercial vessels with bilges on the bay which would use this type of facility; high costs; permitting difficulties and maintenance issues.

For more detailed information on environmental impacts of oil and fuel refer to the information on discharges of fuel, oil and toxic vessel maintenance products in the *Existing Environmental Conditions* section and *Appendix I* of this document.

Proposed actions:

STRATEGY OS-1: ***Implement an oil absorbent exchange program for Tomales Bay.***

The oil absorbent exchange program would provide new absorbents and collecting used pads at the same convenient location at no cost to Tomales Bay boaters. There are numerous successful absorbent exchange programs in California, including the *Keep the Delta Clean* program that was recently established for the California Delta.

Activity OS 1.1 - Identify funding sources and pursue planning for absorbent exchange program.

This proposed activity would involve GFNMS staff investigating funding sources, identifying a project lead, and assisting with planning for an oil absorbent exchange program.

Potential Partners: Marin County, CCC, vessel-related facility owners

Estimated Cost: Costs include staff time and funding for education materials. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

Activity OS 1.2 - Implement a "pilot" vessel oil absorbent exchange program at two initial locations.

Marshall Boatworks; Lawson's Landing; Nick's Cove and Tomales Bay Resort have been identified as potential host sites for an absorbent exchange program. GFNMS staff with its partners would further investigate potential locations and recommend two initial locations from this list where an absorbent exchange program can be set up. Once the sites have been selected, GFNMS would provide existing background information to assist with setting up program.

Potential Partners: Marin County, CCC, owners of vessel-related facilities

Estimated Cost: Estimated $2,000 annually per location for all equipment and services: 1,500 absorbent sheets, and 3-4 pickups of used oil absorbent. However, additional funding for coordination and administration services for such a program would be required.

Activity OS 1.3 - Evaluate effectiveness of the two absorbent exchange program "pilot" sites and adapt as necessary.

Once the program has been underway for at least six months, GFNMS staff and partners would conduct an evaluation to determine whether adjustments to the program are necessary. Adjustments could include modifications to equipment or procedures and establishment of additional sites or relocation of equipment from "pilot" sites to alternate locations. The proposed evaluation would consider the number of absorbents distributed, volume of used oil collected, and identification of issues and challenges for personnel for each site.

Potential Partners: Marin County, CCC, vessel-related facility owners

Estimated Cost: Costs are limited to Partner Agency staff time. Funding for a GFNMS Tomales Bay Project Coordinator may be necessary.

STRATEGY OS-2: ***Develop a boater outreach plan for vessel oil and bilge practices.***

GFNMS staff plans to develop and implement an education and outreach plan for all vessel users (overnight and day users) on proper management of vessel oil, fuel and other maintenance products.

Activity OS 2.1 - Compile and distribute existing educational materials and information on BMPs for proper management of oil fuel and other boat maintenance products.

Staff from GFNMS and partner agencies would compile and review existing information and educational materials regarding BMPs for proper management of vessel oil, fuel and other boat maintenance products. Appropriate educational materials would be distributed

to boaters on the bay as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1* for more information on this proposed program).

Potential Partner Agencies: CCC, CDBW, NPS, Marin County

Estimated Cost: Costs are limited to Partner Agency staff time. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

Activity OS 2.2 - Compile and analyze information on all existing used vessel oil recycling locations.

GFNMS staff would compile locations and contact information for all existing oil recycling facilities for Tomales Bay for inclusion in potential future boater education and outreach products. Additionally, based on the information compiled, GFNMS staff and partner agencies would investigate the need and feasibility for new oil recycling locations near the bay and, if necessary, make recommendations on future locations for these services.

Potential Partner Agencies: NPS, CCC, Marin County

Estimated Cost: Costs are limited to Partner Agency staff time. Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

Activity OS 2.3 - Conduct a needs assessment and develop new educational materials regarding proper management of vessel oil, fuel and other maintenance products.

Following the review of information and materials that are currently available, staff from GFNMS and partner agencies would assess the need for new educational materials regarding management of vessel oil, fuel and other maintenance products. If reviewers identified a need for new materials specifically for Tomales Bay boaters, then additional materials, such as electronic and paper maps, signage and other print materials would be developed for distribution to boaters if the financial and staffing resources were available.

Potential Partner Agencies: CCC, CDBW, Marin County

Estimated Cost: Costs include staff time and funding for the development of educational materials. Funding for a GFNMS Tomales Bay Project Coordinator, or the commitment of dedicated staff time by another agency is needed to implement this recommendation. See *Strategy EO-1* for additional costs for associated outreach materials.

Activity OS 2.4 - Ensure that vessel oil management is included as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1).*

During the implementation of *Strategy EO*-1, GFNMS staff would integrate information compiled and developed while carrying out *Activities OS 2.1, 2.2* and *2.3* is integrated

into the Boater Education and Outreach Program. This program would include BMPs for vessel oil practices, as well as identify locations for all vessel oil services on the bay (including oil absorbent exchange and used oil recycling locations). The program would evolve as more information becomes available and new oil service facilities are constructed.

Potential Partner Agencies: CCC, CDBW, Marin County

Estimated Cost: Costs are limited to staff time. Funding for a GFNMS Tomales Bay Project Coordinator, or the commitment of dedicated staff time by another agency is needed to implement this recommendation.

C. VESSEL MOORING PROGRAM

Issue Statement:

Moored boats have been a familiar and important part of the Tomales Bay landscape and culture for many years, and these moorings have historically been and continue to be concentrated in several primary mooring areas on both the east and west shores of the bay. Mooring vessels in Tomales Bay requires both GFNMS and CSLC authorization. To accomplish this GFNMS will issue a permit, or some other legally supportable mechanism that is acceptable to both agencies, to CSLC to administer the Vessel Mooring Program and CSLC will issue individual leases for each mooring. GFNMS staff, in partnership with CSLC staff, has developed the following proposed Tomales Bay Mooring Program, which includes criteria for where moorings can be sited, specifications for allowable mooring tackle, and requirements for the inspection and maintenance of moorings. The mooring program would be subject to a maximum number of moorings that could not be exceeded on Tomales Bay.

CSLC requires a lease for all private vessel moorings in Tomales Bay on sovereign lands, however only one CSLC private vessel mooring lease has been issued, and that lease expired in 2008 and is no longer valid. There is a permitted mooring field in the north part of the bay at Lawson's Landing, which is under a CSLC commercial lease. On December 16, 1998, the Commission authorized the 25-year lease at Lawson's Landing for an existing marina with a total of 35 moorings (12 side ties and 23 poles); the lease for the marina expires on December 31, 2023. In 1981, when the GFNMS was designated, Sanctuary regulations prohibited the discharge of materials into GFNMS and disturbance to the seabed, which includes the placement of moorings. Non-authorized moorings installed in Tomales Bay after GFNMS designation, except those used for state permitted aquaculture, are illegal pursuant to the National Marine Sanctuaries Act (NMSA), 16 USC §1431 *et seq.*, and regulations thereunder (15 CFR Part 922). Non-compliance of CSLC mooring lease requirements and GFNMS regulations has been a persistent issue in Tomales Bay.

Moorings located within state water bottom lease areas for aquaculture must be directly associated with aquaculture pursuant to a valid lease, permit, license or other authorization issued by the California Department of Fish and Wildlife (CDFW). Moorings used in conjunction with aquaculture activities conducted pursuant to a valid lease, permit, license, or other authorization issued by the State of California are exempt from the GFNMS seabed disturbance regulations in Tomales Bay and are therefore not addressed as part of the TBVMP; however, these moorings are subject to CDFW and California Department of Public Health (CDPH) regulations and must meet all requirements set forth in the terms of the aquaculture lease.

Surveys of moorings in Tomales Bay were conducted in 2002, 2004 and 2006. The 2006 survey (data is shown in *Figure 5* in Section 3, Existing Environmental Conditions) resulted in a total count of 178 moorings in the bay, including 13 moorings located within aquaculture state water bottom lease areas as well as private unauthorized moorings, the 35 moorings within Lawson's Landing, moorings associated with littoral lands, channel markers, demarcation buoys (e.g. those at swimming beaches) and other unidentified, inactive, or abandoned buoys.

If not properly designed and sited, moorings can disrupt the marine ecosystem by displacing, altering or destroying benthic habitat, including seagrass beds that provide an important ecosystem function to the bay. Mooring materials may also contribute to the degradation of the marine ecosystem if the materials contain harmful substances or are abandoned on the seafloor. Moorings that are poorly constructed and/or are not properly maintained can fail causing vessels to break free, threatening public safety, shoreline habitats and property and the aquatic ecosystem. Improper placement of moorings or improperly moored vessels can cause hazardous conditions for navigation. Furthermore, moorings placed in seagrass beds or shallow waters can destroy habitat due to scouring of the seafloor by the chain and other mooring tackle and scarring of the seabed from boat propellers, thereby having long-term impacts on the health of the seagrass community (Walker et al., 1989; Kentworthy et al., 2006).

Derelict or deserted vessels can be hazardous to navigation by entering into or obstructing navigation channels, damaging vessels, damaging habitat, and threatening human health and safety. When derelict vessels sink, they have the potential to release pollutants that damage the environment or threaten wildlife or human health. Derelict or deserted vessels may also drift into other vessels, marina docks or other structures causing damage to both public and private property and potentially causing other vessels to sink (Port of Oakland, 2001).

Vessels that come aground may damage sensitive ecological resources. Grounded and deserted vessels are a problem in many coastal areas, and they are recognized as a significant threat for seagrass habitats (Kentworthy, 2006). In addition to the physical crushing and smothering of habitats, grounded vessels pose a significant danger of oil spills and release of other pollutants. They may impede navigation, block public and private uses of intertidal and subtidal habitats such as aquaculture, become sites for

illegal dumping of waste oils and hazardous materials, become visual eyesores, entrap wildlife, and create public health hazards (Michel et al., 2002).

For more information on vessel use and moorings on Tomales Bay refer to the *Existing Environmental Conditions* section and *Appendix I* of this document.

Proposed actions:

STRATEGY VM-1: ***Implement siting criteria for vessel moorings in Tomales Bay based on a marine spatial planning approach.***

A typical mooring consists of a permanent weight that remains stationary on the seafloor attached to a chain and a buoy. Historically, moorings have long provided Tomales Bay boaters with a convenient method for storing and accessing their boats. A properly designed and maintained vessel mooring located in an appropriate area can provide secure and effective boat storage. Without proper design, maintenance and siting however, moorings can damage the sensitive ecological resources and present a public health and safety threat. In identifying the potential risks to water quality, habitats, and public health, safety, and recreation, staff from GFNMS and CSLC in partnership with TBIC agencies' staff identified sensitive areas in Tomales Bay where biological resources or public health and safety are likely to be negatively impacted by vessel mooring and operation, these areas correspond to the the mooring siting criteria described below and are depicted as *Combined Mooring Exclusion Areas* on *Figure 1*. The practice of mooring vessels in these areas has a high potential to degrade water quality, impact sensitive habitat and/or wildlife, or threaten public safety.

Based on assessments of sensitive areas, identification of zones with jurisdictional limitations and identification of locations within Tomales Bay where vessels have historically been moored, GFNMS and CSLC staff implemented a comprehensive coastal and marine spatial planning process to determine areas that are: 1) suitable for mooring; 2) areas where existing moorings should be relocated; and 3) areas where future moorings should be prevented. This adaptive, integrated, and ecosystem-based approach utilizes the best available information for analyzing current and anticipated uses of Tomales Bay and determining appropriate mooring locations that are consistent with the various mandates of the TBIC agencies and the TBVMP while allowing for continued mooring of boats by the boating community. This approach will help ensure the protection of water quality, natural resources, public health and safety, and recreation, while allowing for mooring in the bay.

More detailed information on these sensitive areas and habitats within Tomales Bay can be found in the *Existing Environmental Conditions* section of this document.

Activity VM 1.1 - Adopt criteria for siting of vessel moorings on Tomales Bay.

Upon consultation with the TBIC, GFNMS and CSLC have established criteria for the siting of moorings on Tomales Bay to achieve the three goals of the plan: 1) Protect public health and improve water quality; 2) Protect habitat and decrease threats to and

disturbance of wildlife; and 3) Ensure safe and enjoyable water-related recreation. This action will involve GFNMS applying the criteria below as part of the conditions of the permit or other legally supportable mechanism issued to CSLC. CSLC will then integrate these criteria into leases issued under the vessel mooring leasing program. These criteria will be applied through the issuance of leases under existing authorities and would not require changes to existing laws and regulations. All moorings on Tomales Bay, with the exception of those used for aquaculture operations within state water bottom lease areas, will be required to meet the following eight criteria:

1. *Seagrass: No vessel moorings shall be allowed in seagrass beds.*

   Because moored vessels can cause significant damage to seagrass (or eelgrass) beds, vessel moorings shall be excluded from these areas. No moorings will be allowed in designated seagrass beds, or within buffer areas surrounding the seagrass beds to ensure that the outside edges are also protected. To determine the locations and extent of seagrass beds in Tomales Bay, eelgrass survey results from the 1992 Department of Fish and Game aerial survey were merged with updates from 2000, 2001, and 2002. Seagrass beds are depicted in *Figure 9: Natural Resource Protection Mooring Criteria Map*. Based on adaptive management, designated seagrass beds will be periodically updated using aerial surveys or side-scan sonar data if funding is available.

   Moorings within designated seagrass beds must be relocated to an approved mooring area meeting all of the mooring criteria. After the chain and buoy are removed, existing deadweight mooring anchors fully submerged in sediment within seagrass areas may be required to be abandoned in-place instead of being removed, as removal in some cases may cause significant impacts to seagrass habitat.

2. *Wildlife Disturbance: No moorings shall be allowed in areas within 300 feet of seal haul-out areas.*

   Using information from the National Park Service's database, several seal haul-out areas have been identified. These areas are depicted in *Figure 9: Natural Resource Protection Mooring Criteria Map*. Since vessels are known to cause disturbance to marine mammals and can negatively affect their resting, breeding and feeding habitats, vessels should be prohibited from mooring within 300 feet of these haul-out areas. This buffer zone is based on the recommended guidelines of the National Marine Fisheries Service.

3. *Parcels Under Private Ownership Outside of CSLC Jurisdiction: No vessel moorings shall be allowed on tidelands and submerged lands under private ownership, unless a mechanism can be determined for legally authorizing moorings on private parcels.*

   Currently, due to the lack of a mechanism for leasing or permitting moorings on privately owned parcels within Tomales Bay, this Vessel Management Plan only covers moorings placed on ungranted sovereign lands under CSLC jurisdiction.

4. *<u>NPS-Owned Tide and Submerged Lands Outside of GFNMS Jurisdiction:</u> Other than as necessary for NPS administrative use, no moorings shall be allowed on the submerged lands owned by NPS.*

   The NPS owned tide and submerged lands that extend off the western shore of the bay extending north from the Northern boundary of Tomales Bay State Park around the tip of Tomales Point to .25 miles offshore are outside of GFNMS jurisdiction. This area can be seen in *Figure 6*, identified as *Area Outside GFNMS Jurisdiction*. The only moorings that currently exist within this entire area are offshore of Duck Cove, which will be removed. Leases cannot be issued on these submerged lands.

   In addition to granted tide and submerged lands, NPS owns and manages formerly private parcels including tide and submerged lands that were acquired by or donated to the NPS along the east and west shore of the bay. These lands are currently outside of all mooring zones and for the purpose of these criteria are considered privately owned parcels. This Vessel Management Plan only covers moorings placed on ungranted sovereign lands under CSLC jurisdiction.

5. *<u>Swimming Beach/Boat Launch Areas</u>: No moorings shall be allowed within 100 feet of swimming beaches and boat launch ramps*.

   There are three designated swimming areas in Tomales Bay: Shell Beach, Hearts Desire Beach and Chicken Ranch Beach. Vessel moorings are restricted from being placed within 100 feet of these areas to eliminate the potential for sewage contamination of public swimming areas. There is one public vessel launch area in Tomales Bay. A 100-foot buffer zone around the launch area will ensure safe access to the ramp. Swimming beaches and boat launch areas are depicted in *Figure 4: Public Health and Water Quality Map*.

6. *<u>State Parks Criteria</u>: No moorings shall be allowed within 1000 feet offshore of State Parks property.*

   Currently CSP policy does not allow moorings within 1000 feet offshore of State Parks property. The CSP no-mooring zones for Tomales Bay can be seen in *Figure 9: Natural Resource Protection Mooring Criteria Map.*

7. *<u>Aquaculture</u>: No moorings shall be allowed within areas that fail to meet the California Department of Public Health calculations for safe distances between moorings and aquaculture lease areas pursuant to a valid lease, permit, license or other authorization issued by the State of California. No moorings shall be located within state water bottom lease areas for aquaculture unless directly associated with aquaculture pursuant to a valid lease, permit, license or other authorization issued by the State of California.*

   Leases and permits for all aquaculture operations are administered by CDFW, while CDPH oversees the quality and safety of the harvested product. CDPH oversees

shellfish monitoring programs to assure food quality and applies national ordinances and guidelines to prevent potential contaminants from human sewage by setting safe distances between vessel moorings and shellfish growing operations. These safe distances between moorings and aquaculture operations are calculated by CDPH based on dilution ratios and must be applied on a case-by-case basis upon review of each MP lease application. Commercial aquaculture moorings within state water bottom lease areas are regulated by CDFW and will be excluded from this criterion.

Aquaculture lease areas, as provided by CDFW, are depicted in *Figure 4: Public Health and Water Quality Map*. Additional information on Tomales Bay aquaculture and related potential public health impacts and agency policies and regulations can be found in the *Existing Environmental Conditions* section.

8. *Navigation Channels: No moorings shall be allowed within navigation channels of Tomales Bay.*
   There are two identified navigation channels in Tomales Bay. These areas serve as important avenues of vessel movement around the shallow bay. To ensure public safety and protect vessel navigation, moored vessels are prohibited from these navigation channels, as well as a 100-foot buffer on the channels. Navigation channels are depicted in *Figure 8: Public Safety Siting Criteria Map*.

Potential Partner Agencies: Marin County Sheriff's Office, NPS

Estimated Cost: Costs for mooring lease application are incurred by the applicant, based on CSLC staff review and processing time. Additionally, as part of the lease terms, the lessee will be required to pay annual rent for the use of sovereign lands under the jurisdiction of the CSLC. Partner agency costs are limited to enforcement staff time to ensure compliance with criteria.

Activity VM 1.2 - Implement vessel mooring zones sited within historically used mooring locations of the bay that are consistent with the criteria in *Activity VM 1.1* and regulatory requirements of all TBIC agencies.

In consultation with the TBIC, GFNMS and CSLC staff have identified eleven proposed vessel mooring zones (depicted in *Figures 1 and 6)* that meet all of the mooring siting criteria in Activity VM 1.1 and fall within areas that have historically been used for mooring boats on Tomales Bay. The areas were determined by analyzing a composite of the best available aerial photos and agency boat-based surveys including: aerial photos taken in 1979 and 2003 for CDBW; a mooring survey conducted by GFNMS and NPS in 2006; and a buoy/vessel count conducted by members of the GFNMS Advisory Council Working Group on Tomales Bay Vessel Management. Using a marine spatial planning approach, these historical mooring areas were then analyzed for consistency with the mooring siting criteria from Activity VM 1.1 above, and a set of initial proposed mooring zones were developed that: 1) meet all mooring siting criteria as described above; 2) are located entirely within public submerged lands under jurisdiction of CSLC; and 3) are large enough, in combined area, to safely accommodate a number of moored vessels up

to the maximum allowed by the TBVMP. The mooring zones being proposed in the TBVMP were established by refining the initial proposed zones based on input from the TBIC and the GFNMS Advisory Council Working Group on Tomales Bay Vessel Management (through a recommendation from the GFNMS Advisory Council to the sanctuary superintendent). Further refinements to these zones were made based on comments received during the public review period following the release of the Draft TBVMP.

Since land-based access to some of the proposed zones will be restricted, all applicants who are not able to provide evidence of their littoral ownership will be required to provide evidence of authorized access to their mooring as a condition of their lease; if the proposed point of access includes entry onto a private parcel, then a letter of permission from the owner of that parcel will be required. If a dinghy is used to access a mooring, then it will be required to be stored and accessed in a manner consistent with current laws and regulations. Additionally, certain zones (e.g. if in proximity to aquaculture operations) may be subject to a limitation of the number of moorings allowed within that zone. A brief description of each proposed mooring zone as well as a map (Figure 1) showing the locations of the zones, is below.

This activity would involve GFNMS and CSLC applying a set of mooring zones and integrating these zones into the MP upon which consideration of individual mooring leases will be based.

<u>All Tomales Bay vessel moorings will be required to be located within the Vessel Mooring Zones with the following four exceptions</u>:

1) State permitted aquaculture moorings used for aquaculture operations within state water bottom lease areas;
2) Permitted moorings located on sovereign lands adjacent to developed littoral properties in compliance with CSLC requirements*, owned by the owner of the adjacent littoral property and meeting all mooring siting criteria from Activity VM 1.1;
3) Permitted moorings in locations meeting all mooring siting criteria from Activity VM 1.1 whereby the owner has provided sufficient evidence their mooring has existed in the same location prior to the adoption of the TBVMP. Proof of access to that mooring will be required, and if access through a private littoral property is necessary then written permission from the littoral property owner must be provided to CSLC and maintained throughout the life of the lease; and
4) Up to thirty-five (35) moorings at Lawson's Landing, subject to the terms and conditions of the 25-year commercial lease issued by CSLC in 1998.

* Additional moorings may be allowed on sovereign lands under CSLC jurisdiction, offshore of developed littoral properties, solely for the use of the owner or the lessee of that property. CSLC may, in its sole discretion, issue leases for more than one mooring, if the property owner can demonstrate that commercial needs or legitimate private needs justify a greater number. All mooring siting criteria from Activity VM 1.1 still apply.

Figure 1: Map of Proposed Tomales Bay Mooring Zones

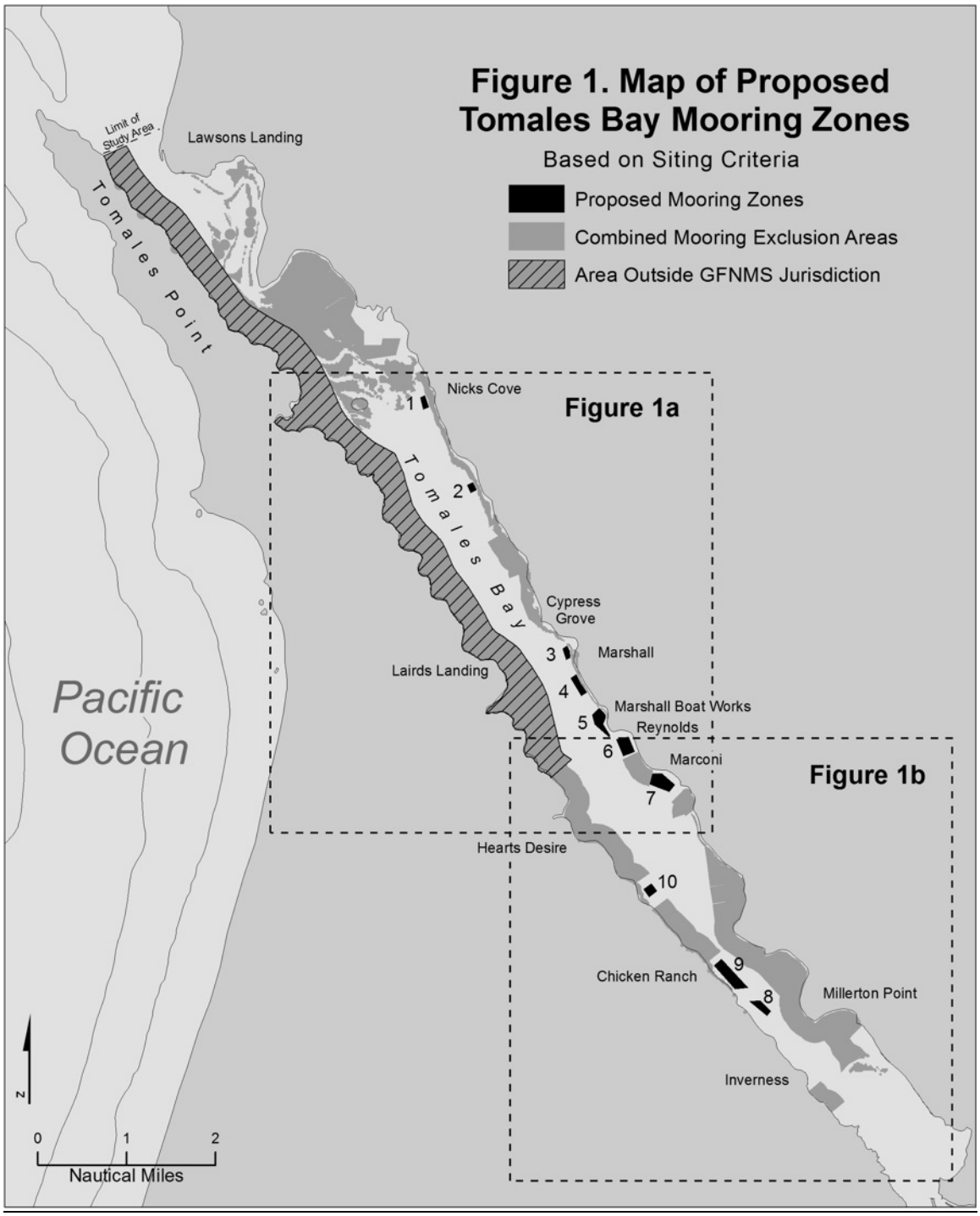


Figure 1a: Map of Proposed Tomales Bay Mooring Zones

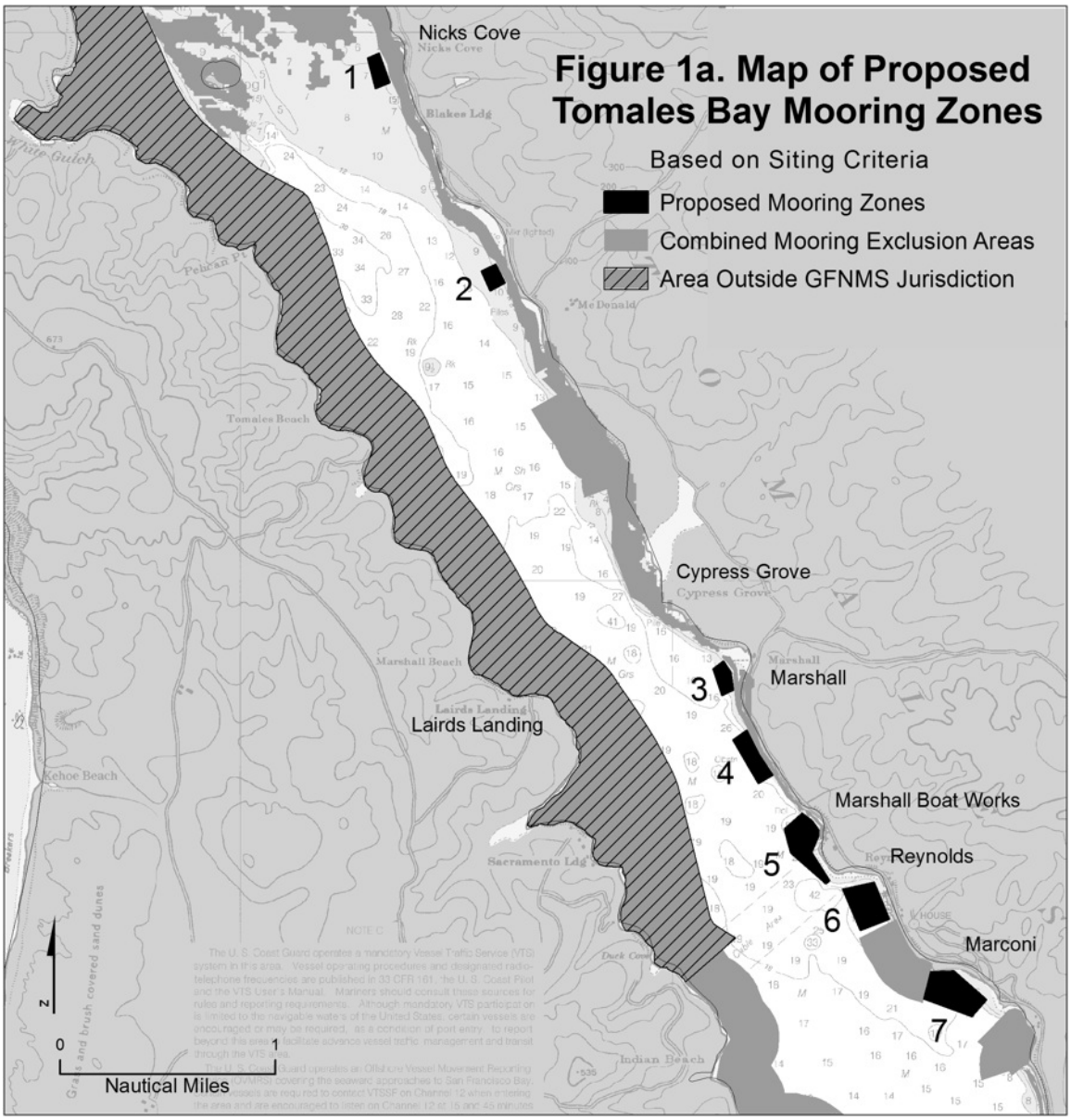
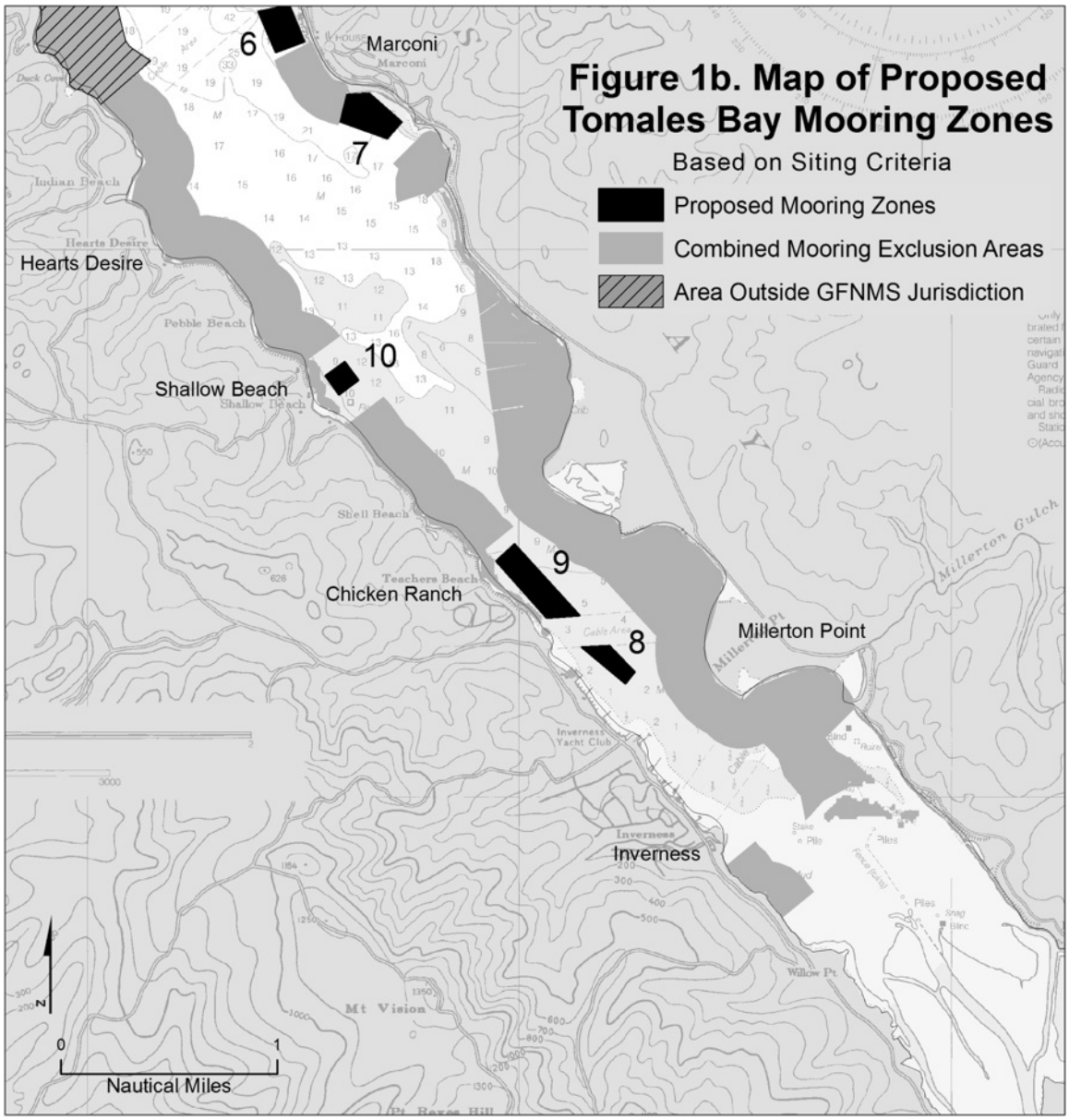


Figure 1b: Map of Proposed Tomales Bay Mooring Zones



Descriptions of Proposed Mooring Zones:

Mooring Zone 1: This is the northernmost of the proposed mooring zones on Tomales Bay, located on the East Shore just south of Miller Park and in the waters offshore of Nick's Cove restaurant. There were eight moorings identified in the vicinity of this zone during the 2006 mooring survey. Due to the presence of seagrass beds in the shallow waters where moorings currently exist, *Mooring Zone 1* was moved directly offshore outside of the eelgrass protection area.

Mooring Zone 2: This proposed zone is located south of Blake's Landing, offshore of several private parcels along Highway 1. There were two moorings identified in the vicinity of this zone during the 2006 mooring survey. Access to this site by land may be complicated due to the private parcels on the shoreline in front of this zone. Eelgrass beds cover the seafloor in the shallow areas between the mooring zone and the shore.

Mooring Zone 3: This proposed zone is located off of Marshall Cove, offshore of shoreline parcel boundaries and eelgrass beds. The 2006 mooring survey identified seven moorings in this area. The zone boundaries were drawn offshore of the existing moorings to avoid eelgrass beds.

Mooring Zone 4: This proposed zone is a narrow rectangular area that runs parallel to the shoreline lengthwise, approximately midway between Marshall Cove and Marshall Boatworks. This zone is located offshore of the private parcels along Highway 1. During the 2006 mooring survey five mooring buoys were identified in this area. *Mooring Zone 4* boundaries were extended further offshore from the existing moorings to avoid eelgrass beds.

Mooring Zone 5: This proposed zone is located directly offshore of Marshall Boat Works within the area of Tomales Bay with the highest concentration of moored vessels. During the 2006 mooring survey, 42 moorings were identified in this area. Most of the existing moorings are located within the proposed boundaries of the zone; however the boundaries were moved slightly offshore since the moorings closest to shore appear to be within or in close proximity to eelgrass beds.

Mooring Zone 6: This proposed mooring zone is located offshore of Reynolds Cove, just beyond several privately owned parcels found along the shoreline. Similar to *Mooring Zone 5,* Reynolds Cove is an area that has historically been used for mooring vessels on Tomales Bay. During the 2006 mooring survey, 32 moorings were identified in the area. The boundaries of this mooring zone were moved slightly offshore to avoid being in privately owned parcels, since there is currently no mechanism to permit moorings located on private parcels. Due to the existence of the private parcels, in order for this mooring zone to be adopted, it will be necessary for boat owners to obtain permission from these landowners to allow access to vessels moored adjacent to their properties. In all mooring areas, applicants will be required to provide documentation that they are able to access the mooring area proposed to be leased.

Mooring Zone 7: This proposed zone is located offshore of Marconi Cove, in an area that has historically been used for mooring vessels on Tomales Bay. Fifteen moorings were identified in the vicinity of this proposed zone during the 2006 mooring survey.

Mooring Zone 8: This proposed zone is located offshore of the Inverness Yacht Club. There were two moorings identified in the vicinity of this zone during the 2006 mooring survey. There is a submarine cable zone identified on the NOAA chart, located in between this zone and proposed Zone 9. No eelgrass beds currently exist in this area. A boat launch ramp is located at the Inverness Yacht Club.

Mooring Zone 9: This proposed zone is located off of Teacher's Beach, adjacent to proposed Zone 8. Eight moorings were present in this area during the 2006 mooring survey, though several of these were swimming beach marker buoys and not vessel moorings. Two swimming beaches lie in proximity to this proposed zone. There are also eelgrass beds along the shoreline; however, the boundaries of the proposed zone were created to avoid this habitat.

Mooring Zone 10: This proposed zone is located offshore of Shallow Beach. Three moorings were identified during the 2006 mooring survey. To avoid eelgrass beds, the proposed zone boundaries were placed offshore of the existing moorings. This is the northernmost zone of the west shore of the bay.

Potential Partner Agencies: Marin County Sheriff's Office, NPS, CDPH

Estimated Cost: Costs for the mooring lease application will be incurred by the applicant, based on CSLC staff review and processing time. Additionally, as part of the lease terms, the lessee will be required to pay annual rent for the use of sovereign lands under the jurisdiction of the CSLC.

STRATEGY VM-2: *Implement a Tomales Bay Vessel Mooring Leasing/Permitting Process based on a marine spatial planning approach*

The primary goals for establishing a mechanism for leasing and permitting moorings in Tomales Bay are to protect habitat, decrease threats to and disturbance of wildlife, and ensure safe and enjoyable water-related recreation by removing and preventing unpermitted and improperly placed moorings and mooring materials. A mooring leasing/permitting process will be developed and implemented as part of the Tomales Bay Mooring Program (MP). All mooring owners will be required to obtain a lease from CSLC for their mooring(s). Moorings that do not hold a valid lease or are not in the process of obtaining a lease may be considered in trespass. The mooring owner is responsible for the cost of removal or decommissioning of an unpermitted or illegal mooring. No current mooring owner is granted an automatic right to moor (except those holding legal CSLC individual or commercial leases) and no moorings will be automatically grandfathered in as exempt from the permitting process described in the TBVMP.

It is necessary that the permitting process meet the statutory requirements and policies of the numerous agencies with jurisdiction on the bay. To reduce the burden to lease applicants, a proposed mooring lease and permitting process has been developed and outlined in the TBVMP.

A major objective of the proposed MP is to develop a streamlined approach that minimizes, to the extent possible, the time for permitting agency staff to process applications. By doing this, costs to mooring owners applying for a lease would likely be reduced. This efficiency is possible because the MP described in this document will lay out in advance most of the lease requirements, including where moorings will be allowed, what types of equipment will be acceptable, and how the moorings should be installed, inspected, and maintained.

Under its authority GFNMS will issue a permit, or some other legally supportable mechanism to CSLC to assist in managing the sanctuary by administering the Tomales Bay Mooring Program. Under GFNMS regulations, a prohibited activity, such as mooring, can be conducted within the sanctuary if it is specifically authorized by, and conducted in accordance with, the scope, purpose, terms and conditions of an issued sanctuary permit (or other legally supportable mechanism). Any permit or legally supportable mechanism will only be issued by GFNMS for the MP if the benefits to the sanctuary outweigh the disadvantages or environmental consequences in both the short and long term. To determine whether or not an activity can be permitted, GFNMS permitting regulations establish evaluation criteria that must consider a proposed activity in terms of duration, effects on sanctuary resources and qualities, potential indirect, secondary, or cumulative effects, and whether it is necessary to conduct the activity in the sanctuary. This permit evaluation process requires an analysis consistent with the National Environmental Policy Act (NEPA) to assess the direct and indirect environmental impacts of conducting the proposed activity. An Environmental Assessment/Initial Study, in accordance with NEPA and the California Environmental Quality Act (CEQA), has been conducted to assess potential environmental and socioeconomic impacts associated with the implementation of the TBVMP.

Under the permit, (or other legally supportable mechanism) from GFNMS, CSLC will consider lease applications for individual moorings on sovereign lands under its jurisdiction within Tomales Bay, consistent with the TBVMP. In order to issue a mooring lease that requires entry onto a private parcel to access the mooring, CSLC will require permission from the adjacent littoral property owners be submitted and maintained throughout the life of the lease.

Under this permitting process the lessee will purchase and own all mooring tackle and incur all installation and maintenance costs. The applicant will also be required to submit an application fee for CSLC review and processing. Additionally, as part of the lease terms, the lessee will be required to pay annual rent for the use of sovereign lands under the jurisdiction of the CSLC.

Activity VM 2.1 Develop CSLC lease terms and conditions that are consistent with all TBIC agencies' mandates, regulations and policies, and in compliance with mooring criteria established in Activity VM 1.1.

CSLC leases require compliance with all other regulatory requirements. For the purpose of compliance with the TBVMP, CSLC staff will include the criteria required by the GFNMS permit (or other legally supportable mechanism). This activity will involve establishing details including: costs and timeframes for holding a mooring lease; procedures for applying for a lease, installing, inspecting, and maintaining a mooring; methods for tracking existing mooring leases; and policies for enforcement of lease conditions and termination of leases.

Potential Partner Agencies: Marin County, CCC

Estimated Cost: CSLC costs include staff time for the processing of the lease application and management to ensure compliance with lease conditions.

Activity VM 2.2 - Establish the maximum number of moorings allowed under the Tomales Bay Mooring Program to no more than 165 moorings.

The total number of moorings allowed in Tomales Bay under the proposed program, will be subject to a cap of 165, including littoral landowner moorings, and the 35 moorings associated with Lawson's Landing. This cap does not include moorings permitted for use by aquaculture operations solely within state water bottom lease areas (see *Figure 7).* This activity requires GFNMS and CSLC adopting 165 as the maximum number of moorings allowed in Tomales Bay.

The maximum number of 165 moorings was determined based upon counts of existing moorings on the bay during a survey carried out in 2006 by GFNMS and NPS. The 2006 survey yielded a count of 178 moorings, however this included 13 moorings associated with aquaculture operations within state water bottom lease areas—since moorings used for aquaculture operations within state water bottom lease areas are not addressed in the TBVMP, the maximum number should be 178 minus 13, or 165 moorings. This maximum number is inclusive of the moorings at Lawson's Landing, which are permitted by a CSLC commercial lease allowing up to 35 moorings. Refer to the explanation in the TBVMP describing the proposed Vessel Mooring Program for more information on how this maximum number of moorings for the bay was established.

Both NPS and NOAA staff have conducted several on-the-water mooring surveys on Tomales Bay to obtain an accurate count of moorings. The first survey was conducted in February 2002 and additional mooring surveys were conducted by vessel in July 2004, October 2004 and February 2006. These surveys generally noted whether the mooring had a vessel attached, whether the vessel had valid registration information and whether the vessel appeared to be derelict or deserted. Staff noted in the October 2004 survey that approximately 30 of the moorings with vessels appeared to be derelict or deserted vessels and documented a total of approximately 165 moorings.

The 2006 survey included the use of a hand-held GPS unit, which allowed staff to record the location of each mooring and to indicate the locations of moorings and derelict vessels on a map. This survey recorded the highest known number of moorings on Tomales Bay with 178 moorings (inclusive of aquaculture operations, demarcation, and other unidentified buoys), concentrated in primary mooring areas including: Lawson's Landing; Marshall Boatworks; Reynolds Cove; and Marconi on the east side of the bay; and Teachers Beach on the western side of the bay. The moorings on the bay were fabricated from a variety of material including concrete-filled steel drums, cement blocks, engines blocks, tires, and wood posts (J. Vilicich, personal communication, 2006).

Potential Partner Agencies: NPS, CCC

Estimated Cost: Past mooring surveys cost approximately $3,200 per survey, which includes vessel and equipment costs and the cost of staff time to conduct the survey and perform the subsequent GIS analysis, maps and reports.

Activity VM 2.3 - Implement mooring tackle requirements to include specifications for mooring tackle and a program for inspection and maintenance.

As part of the MP all mooring tackle will be required to comply with the specifications detailed in *Appendix V: Tomales Bay Mooring Program.* This activity will involve GFNMS adopting these mooring tackle specifications as a permit condition and CSLC integrating these specifications into any leases. These specifications were established using the following criteria:

1. Materials will result in minimal environment impacts; and
2. Tackle will be appropriate for Tomales Bay benthic habitat and geologic and hydrodynamic conditions.

The program will also include requirements for mooring installation, (also detailed in *Appendix V)* and inspection and maintenance (to be developed in collaboration with the TBIC and with input from a workshop with stakeholders with mooring-related expertise).

Current mooring owners applying for a lease from CSLC may request permission for continued use of their existing mooring equipment, however this will be subject to the following conditions:

- Documentation is provided demonstrating that the existing mooring system passes a required inspection in accordance with the mooring inspection requirements specified in the MP, and;
- Mooring location is consistent with the requirements detailed in *Strategy VM-1*.

Existing moorings that meet the above conditions will be required to comply with all mooring siting criteria and all mooring tackle, maintenance, and inspection requirements of the MP.

The MP will utilize an adaptive management approach for decisions regarding various mooring technologies (anchor and all other equipment) in Tomales Bay to select those that are the least damaging to the environment and appropriate for Tomales Bay hydrodynamic conditions. As new information is acquired and analyzed, requirements and specifications could be amended by GFNMS and CSLC.

A GFNMS-approved Mooring Contractor will be required to sign off on a mooring installation form as part of the lease application, which includes: GPS location; mooring tackle specifications; inspection sheet (if applicable); vessel description and up-to-date registration. Additionally, the contractor will be required to sign off and submit a mooring inspection form.

Potential Partners: Approved Mooring Contractors, NPS, CDBW

Estimated Cost: Costs for mooring installation, inspections, and maintenance are incurred by the applicant. Cost to GFNMS is limited to staff time for establishing and maintaining a list of approved mooring services vendors.

STRATEGY VM-3: *Introduce a process for compliance with Vessel Mooring Program that includes a clear public education and outreach component.*

Current laws and regulations will be enforced. No unpermitted moorings are allowed to exist within Tomales Bay. TBIC enforcement agency staff are expected to play an active role in the implementation of the proposed actions described below; and CSLC staff's role will be limited to input provided through their involvement as a member of the TBIC. GFNMS staff will collaborate with enforcement agency partners to:

1. Continue to notify existing mooring owners of the current regulations and address non-compliance;
2. Continue to monitor mooring activities on the bay;
3. Continue to ensure appropriate removal of deserted and derelict vessels;
4. Ensure compliance with the MP; and
5. Ensure appropriate removal or decommissioning of all unpermitted moorings.

Deserted vessels increase the risk of damaging benthic habitat from sinking or grounding, and the likelihood of toxic product, oil, or fuel discharges. To address these concerns, NOAA has a regulation to minimize this threat which prohibits the following: "Deserting a vessel aground, at anchor, or adrift in the Sanctuary and leaving harmful matter aboard either a grounded or deserted vessel in the Sanctuary" (15 CFR 922.82).

GFNMS staff will also continue the long-term plan for the removal of derelict or deserted vessels. Approximately 30 derelict or deserted vessels were identified during surveys conducted by GFNMS, NPS, and the Marin County Sheriff's Office in the last 10 years. With the assistance of grant funding from CDBW and some additional funds from GFNMS, the Marin County Sheriff's Office removed deserted and derelict vessels from 2005 to 2007. The Sheriff's Office is authorized to take such action pursuant to the California Harbors and Navigation Code, section 526.

In addition to addressing priority enforcement actions, GFNMS and the partner agencies identified below will also coordinate their efforts to ensure the following ongoing actions:

1. Enforce boater registration requirements and verify registration of existing vessels;
2. Improve cross-agency cooperation and coordination to maximize use of existing enforcement personnel;
3. Seek funding to assist with removal of identified vessels and moorings; and
4. Implement public education and outreach strategy regarding derelict and deserted vessels and moorings.

One potential source of funding for vessel removal is CDBW's Abandoned Watercraft Abatement Fund (AWAF), which provides grants to local public agencies to remove, store and/or dispose of abandoned vessels and other navigational hazards. The removal of moorings or other unpermitted development may require a Coastal Development Permit (CDP) from the CCC, or other CCC action, as appropriate.

Activity VM 3.1 - Implement a process to introduce the Tomales Bay Mooring Program to the community.

In order to ensure adequate outreach about the MP, GFNMS staff, in partnership with TBIC, will carry out a process to clearly explain the MP to the local community. Potential outreach could include hosting a public presentation or workshop, developing educational products, and sending notifications to local newspapers and to the radio station KWMR. The intent of this proposed process is to ensure that the boating community receives sufficient notification in order to adjust to the requirements of the MP.

If resources are available, GFNMS staff along with partners could develop a TBVMP website where the following materials could be found:

- A *Tomales Bay Vessel Mooring Handbook;*
- A decision tree that summarizes the mooring leasing process;
- An interactive map showing mooring zones, restricted areas, and other points of interest;
- A list of Frequently Asked Questions;
- A list of mooring tackle specification and inspection and maintenance requirements;
- A list of approved Mooring Contractors; and
- Appropriate forms required for a MP mooring lease application.

Potential Partner Agencies: NPS, Marin County Sheriff's Office, CCC, CDBW

Estimated Cost: Costs are limited to staff time. Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation.

Activity VM 3.2 - Continue to implement a process for removing derelict and deserted moorings and vessels.

GFNMS in coordination with TBIC partner agencies conducts enforcement and compliance monitoring and maintains a database of moorings and moored boats on the bay to ensure that vessels are not deserted within Tomales Bay. These efforts include on the water mooring surveys to identify derelict and deserted moorings and vessels. Unpermitted moorings are tagged and if a vessel is present the owner will be notified that the mooring and vessel must be removed within a specified timeframe.

Under this proposed activity current laws and regulations will be enforced—no unpermitted moorings are allowed to exist within Tomales Bay. Since all vessel moorings on public lands within Tomales Bay are required to obtain a CSLC lease, this proposed action will involve GFNMS staff continuing to coordinate with participating agencies to ensure that applicable enforcement actions are taken in the following priority order:

1. Remove derelict vessels posing the greatest threat to public safety, natural resources, and water quality of Tomales Bay;
2. Remove illegal moorings posing the greatest threat to public safety, natural resources, and water quality of Tomales Bay;
3. Prevent anchoring in seagrass beds;
4. Remove derelict and deserted vessels and their associated moorings in Tomales Bay; and
5. Remove unpermitted moorings throughout Tomales Bay.

Potential Partner Agencies: NPS, Marin County Sheriff's Office, CSP, CDBW

Estimated Cost: Partner Agency costs include enforcement staff time. Mooring surveys cost approximately $3,200 each, which includes vessel and equipment costs and the cost of staff time to conduct the survey and perform the subsequent GIS analysis, maps and reports. Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation.

Activity VM 3.3 - Define and implement a process for ensuring future compliance with the Vessel Mooring Program.

GFNMS staff, in coordination with TBIC regulatory agencies will conduct regular ongoing compliance monitoring and maintain a database of permitted moorings on the bay. This will also include a process for identifying and notifying/removing unpermitted moorings and derelict or deserted vessels.

Potential Partner Agencies: NPS, CSP, Marin County Sheriff's Office

Estimated Cost: Partner Agency costs include enforcement staff time. Mooring surveys cost approximately $3,200 each, which includes vessel and equipment costs and the cost of staff time to conduct the survey and perform the subsequent GIS analysis, maps and

reports. Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation.

STRATEGY VM-4: ***Strengthen existing enforcement partnerships to ensure compliance with all vessel-related mandates, policies and regulations for Tomales Bay.***

Enforcement is critical for the MP to achieve its water quality, resource protection, and public safety goals. The Partner Agencies identified in the activities that follow, have considered how best to coordinate the existing authorities, efforts, and resources to implement the overall goals of the TBVMP. Below is a discussion of short- and long-term strategies for ensuring implementation and enforcement of all of the elements contained in the TBVMP.

There are extensive overlapping jurisdictions and authorities within Tomales Bay. The CCC has permitting authority over the entire bay and those portions of the upland areas that are in the coastal zone. The CSLC has leasing authority over the state-owned tidelands and submerged lands. The GFNMS has permitting authority over certain activities in the submerged lands and in the water column to the Mean High Water Line, including activities that alter the seabed within its boundary. PRNS has jurisdiction over the tide and submerged lands of Tomales Bay as depicted in *Figure 6* identified as *Area Outside GFNMS Jurisdiction.* In addition, NPS owns and manages numerous formerly private parcels including tide and submerged lands that were acquired by or donated to the NPS along the east and west shore of the bay. If there is any construction in the tidelands, Marin County Community Development Agency requires issuance of a tidelands permit. The CDFW has authority over the management of oyster lease areas. The RWQCB has permitting authority for all discharges into Tomales Bay, and GFNMS has permitting authority over most discharges as well.

The primary agencies that are involved in the enforcement of county, state and/or federal regulations with respect to boating operation in Tomales Bay include the County of Marin Sheriff's Office, CSP, NPS, CCC, CSLC, GFNMS, and USCG. The NPS has patrol vessels and operators working on Tomales Bay. CSP has one ranger on the west side of the bay and GFNMS has a NOAA law enforcement agent assigned to Tomales Bay. These agencies are currently working together to coordinate enforcement in Tomales Bay. The Coast Guard also has the authority to enforce federal regulations in Tomales Bay.

The CCC's enforcement tools include cease and desist and/or restoration orders and filing complaint(s) for civil penalties. Cease and desist orders are used by the CCC to halt ongoing violations, to order removal of un-permitted development, and to force developers to comply with the permit process; restoration orders are used to bring about the removal of un-permitted development and/or restoration of damaged coastal resources.

The CSLC has authority to enforce the terms of any mooring lease issued under the TBVMP as provided by law, including but not limited to, the enforcement of delinquent

accounts receivables for lease payments, expired insurance, or other violations of lease terms and conditions, or unauthorized use of State-owned property.

Activity VM 4.1 - Conduct an analysis of Tomales Bay enforcement capabilities and review and determine if a formal agreement is needed among enforcement agencies.

GFNMS staff will conduct an analysis of enforcement capability of each of the coordinating agencies to determine the number and type of enforcement officers, the need for cross-deputization or issuance of summary settlement authority, and need for providing public outreach materials to encourage compliance. The analysis will also determine the need for subsequent formal agreements.

Potential Partner Agencies: NOAA Office of Law Enforcement (NOAA OLE), NPS, CSP, and Marin County Sheriff's Department

Estimated Cost: Cost is limited to Partner Agency enforcement and contracting personnel staff time. Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation.

Activity VM 4.2 - Ensure adequate patrol of the bay from aircraft, vessels and by on-foot observation.

GFNMS staff will convene a subcommittee of the TBIC regulatory agencies to develop an annual Tomales Bay patrol operations plan that identifies the following: principal participating agencies, partner agencies, points of contact, regulatory compliance priorities, prioritized patrol activities, directed short-term enforcement actions, and training requirements. This plan will ensure that the bay is patrolled regularly on a continuous basis.

Potential Partner Agencies: NOAA OLE, NPS, CSP, Marin County Sheriff's Department

Estimated Cost: A percentage of the cost to fly the NOAA Twin Otter aircraft over Tomales Bay is approximately $500 per flight, which includes the cost of all staff time. Additional costs are incurred to enforcement and GFNMS regulatory personnel staff time.

Activity VM 4.3 - Enhance training of enforcement personnel on Tomales Bay vessel related issues and regulations.

GFNMS staff will host a training session for all enforcement personnel with enforcement jurisdiction on the bay that will cover existing regulations related to vessel usage and provide education and outreach messages and/or materials to be used as part of an enforcement program.

Potential Partner Agencies: NOAA OLE, NPS, CSP, Marin County Sheriff's Department

Estimated Cost: Costs include staff time for GFNMS and enforcement agency personnel. See *Strategy EO-1* for additional costs for associated outreach materials.

D. BOATER EDUCATION AND OUTREACH PROGRAM

Issue Statement:

Boater education programs, such as the *California Boating Clean and Green Campaign* and *Dockwalkers*, have been shown to be highly effective in changing behaviors and reducing environmental impacts from routine boat operation and maintenance. While several businesses and agencies with jurisdictions adjacent to Tomales Bay do educate visitors about protecting sensitive marine habitat, preventing harmful discharges, or preventing disturbance to wildlife, there is currently no comprehensive boater education and outreach program for Tomales Bay specifically. GFNMS staff will ensure that boaters on Tomales Bay are informed of the importance of protecting the bay, ways to minimize impacts from vessel operation, and the various laws and regulations with which they must comply.

Current education programs and materials related to Tomales Bay as well as general boating information such as the *Clean Boating* pamphlet and the *ABCs of Boating* could be incorporated into the Tomales Bay Boater Education Program. For example, several years ago CDBW produced a pamphlet entitled *Safe Boating Hints on Tomales Bay;* this document could be updated and expanded and distributed to Tomales Bay boaters.

In order to be effective, the proposed education and outreach program must emphasize core messages that can be broadcast through a variety of mediums including brochures, signs, posters, presentations, and print and online media. Elements of the Tomales Bay Boater Education and Outreach Program should include specific products, programs and target locations.

Implementation of the following boater education and outreach proposed actions would require additional funding and staffing resources. Although resources have currently not been identified, GFNMS staff will actively work with the Farallones Marine Sanctuary Association to seek funding for these activities.

Proposed actions:

STRATEGY EO-1: ***Develop a Tomales Bay Boater Education and Outreach Program.***

GFNMS staff will work with partners to develop the Tomales Bay Boater Education and Outreach Program targeted at the local boating community and visiting boaters who use kayaks, sailboats and motor vessels on the bay. This program should encompass the following core messages:

- Take out your trash when you leave the bay;

- Dispose of human waste properly (including locations of all existing disposal sites);
- Dispose of oil, fuel and maintenance products properly (including locations of all disposal sites);
- Respect wildlife;
- Prevent the introduction of non-native species;
- Register your vessel and do not abandon boats;
- Protect eelgrass: don't anchor in eelgrass;
- Do not disturb harbor seal haul-out sites, and
- Reduce noise when operating a vessel.

Activity EO 1.1 - Ensure local businesses receive existing boater education materials.

Numerous boater educational materials exist, including pamphlets and brochures. GFNMS staff will conduct an inventory to determine what materials are available and applicable to Tomales Bay and then request that these materials be distributed at strategic locations for boaters around the bay.

Potential Partner Agencies: NPS, CCC, CDBW

Estimated Cost: The CCC and CDBW provide existing boater materials. Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation.

Activity EO 1.2 - Conduct outreach to inform Tomales Bay boaters of the MP and promote boater compliance with the MP and associated laws, regulations and policies.

In order to ensure boater awareness and compliance with the proposed Tomales Bay Mooring Program, following release of the final TBVMP GFNMS staff, in collaboration with TBIC partners, will conduct outreach to the community that could include a media release announcing the plan, notifications in local newspapers and on the radio, information posted on relevant websites, and presentations to the general public and Tomales Bay area user groups.

The outreach should focus on the goals and objectives of the TBVMP and strategies and activities being introduced that will result in new practices, procedures, or policies being introduced regarding vessel operation or moorings for Tomales Bay.

Potential Partner Agencies: NPS, CCC, CDBW

Estimated Cost: Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation.

Activity EO 1.3 - Develop a Tomales Bay boater website and map (interactive and hard copy).

GFNMS staff will develop a webpage specifically focused on the TBVMP and boating in Tomales Bay. *Phase I* implementation will provide information and downloadable materials related to boating on Tomales Bay, the TBVMP and other existing information

and materials such a mooring permitting handbook and forms. *Phase II* implementation would include periodic updates as new information and products become available, and links to other relevant websites (e.g. websites for other TBIC agencies, educational information about the bay, related organizations, and information on proper boating practices). Additionally, GFNMS staff will request that other websites focused on Tomales Bay or boating on the bay in turn include links to the TBVMP boater website.

GFNMS staff will develop a *Tomales Bay Interactive PDF Map* and a printable map that would be available for download from the website. Key components of the proposed map include: names of places (coves, beaches, locations), aids to navigation (locations of sand bar, eelgrass beds, etc.), marine mammal haul out areas, sensitive bird areas, sewage and oil services locations, public restroom locations, kayak rental companies and camping locations, official launch ramps, tide information, and national, state and county parks.

Potential Partner Agencies: NPS, CCC, CDBW

Estimated Cost: To implement this recommendation, funding would be required for a GFNMS Tomales Bay Project Coordinator and a GIS Specialist.

Activity EO 1.4 - Develop and provide new outreach materials and programs specific to Tomales Bay boating.

Because there is currently a lack of boater outreach and education materials developed specifically for Tomales Bay, GFNMS staff, in partnership with the TBIC, will develop and distribute materials, install signage, and establish new programs. These should incorporate core messages and encourage Best Management Practices for vessel operation on Tomales Bay and promote long-term boater compliance with the laws, regulations and policies of the Tomales Bay Vessel Management Plan and Vessel Mooring Program.

Outreach materials could include pamphlets, tide books, and maps focused on proper vessel operation and mooring practices to protect public health and improve water quality, protect habitat and decrease threats to and disturbance of wildlife, and ensure safe and enjoyable water-related recreation. GFNMS staff, in collaboration with partners, will also determine optimal locations for temporary and permanent signs around the bay. Signs could include placards at formal launch areas and marinas that highlight proper boating practices or show sensitive habitat areas and locations for environmental services. Potential locations for placement of these materials include: Lawson's Landing; Marshall Store; boat launch sites; Blue Waters Kayaking; Inverness Yacht Club; Tomales Bay Resort and Marina; and Nick's Cove.

Additionally, ongoing boater education programs could be developed including a lecture series on specific Tomales Bay topics related to boating and targeted educational efforts such as "peer visits" (e.g. Coastal Commission's Dockwalkers program) to areas of heavy vessel usage during strategic times (e.g. opening of recreational fisheries or on summer

weekends) or providing educational materials and staff presence at Tomales Bay boating events such as the Santa Rosa Sailing Club Regatta.

Potential Partner Agencies: NPS, CCC, CDBW

Estimated Cost: Education, outreach and media staff resources are needed in order to develop all materials. The cost of outreach materials is commensurate with the number, type and distribution of materials. Additionally, funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation. Below is a list of potential outreach materials and approximate cost associated with production (this does not include staff time):

1. Brochures and Maps: $3000 - $7000 for design and initial printing 2,000 - 10,000.
2. Permanent signs: $3000 per large sign.
3. Tidebooks: $800 for 1000 books.
4. Temporary signs: $100 per sign.

Activity EO 1.5 - Develop an educational program for proper boat anchoring practices.

In November 2008, GFNMS established seven Tomales Bay seagrass protection zones. These zones prohibit anchoring any vessel, except as necessary for aquaculture operations conducted pursuant to a valid lease, permit or license [15 CFR § 922.82(a)(16)]. This activity will involve GFNMS employing a two-phase approach to educating boaters about these zones. The first phase would focus on informing boaters through a variety of outreach materials that may include developing pamphlets, brochures and signage that depict the zones, and presenting information to adjacent businesses to promote a stewardship ethic on the bay. The second phase would focus on monitoring for effectiveness of this approach to preventing anchoring in seagrass areas by conducting vessel surveys during heavy-use boating days to determine compliance. If the compliance monitoring indicated that this approach is not effective in preventing anchoring in seagrass, then the approach would be adapted as necessary and may include the use of buoys to demarcate the seagrass protection zones. GFNMS staff will also work with the NOAA Office of Coast Survey to ensure that the zones are clearly represented on both electronic and paper nautical charts issued by NOAA.

Potential Partner Agencies: NPS, NOAA Office of Coast Survey

Estimated Cost: Funding for a GFNMS Tomales Bay Project Coordinator is needed to implement this recommendation. Also, future costs could potentially include the purchase, installation and maintenance of demarcation buoys by GFNMS.

E. PREVENTING INTRODUCED SPECIES

Issue Statement:
The incursion of non-native, introduced species in Tomales Bay can cause the loss of native species and alter habitats. These losses can change food webs and thereby reduce the biological diversity of the bay. Invasive species can compete with commercially important species such as herring, steelhead and coho salmon that rely on the existing biological community structure of Tomales Bay. Introduced species can also impact the surrounding landscape and affect shorelines and navigation. Introduced species may become a new form of predator, competitor, disturber, parasite or disease that can have deleterious effects upon ecosystems.

Non-native invasive species are introduced into Tomales Bay in several ways. Historically, the main sources were ballast water and aquaculture activities. Near-shore currents that carry larvae and plants north from the San Francisco Bay, the most highly invaded estuary in the United States, have caused more recent introductions.

In order to further prevent injury to natural resources and to protect the integrity of the marine ecosystem, GFNMS promulgated a regulation to prevent the intentional introduction of invasive species into the marine environment. The regulation prohibits introducing or otherwise releasing from within or into the GFNMS an introduced species, with the exception of: (1) striped bass released during catch and release fishing activities, and (2) species cultivated by a aquaculture activity within the area of the sanctuary lying within the seaward boundary of the State of California and authorized by a valid lease, permit, license or other authorization issued by the state [15 CFR § 922.82 (a) (10)]. Although this regulation is not 100% effective in preventing the accidental release of introduced species, the regulation does provide a deterrent to deliberate releases and could prevent introductions associated with specific planned programs or projects.

An "introduced species" is defined generally in the regulation as one that is non-native to the ecosystems protected by the GFNMS. The prohibition is designed to help reduce the risk from introduced species that may become invasive, and provides additional protection to the biodiversity of the GFNMS ecosystem.

In addition to GFNMS regulations, various state and federal legislation and regulations have been established to prohibit the introduction of non-native and invasive species into California waterways. These include federal actions such as Executive Order 13112, (February 1999), and the Non-Native Invasive Species Act (50 CFR 58976, 1996) as well as California law including the Coastal Ecosystems Protection Act (SB 497, 2006) and the California Marine Invasive Species Act (AB 433, 2003), AB 703 (1999) and various provisions of the California Fish and Game Code and Public Resources Code.

Additional information on introduced species in Tomales Bay can be found in the *Existing Environmental Conditions* section of this report.

***Proposed actions*:**

STRATEGY IS-1: ***Encourage vessel operators to prevent the introduction of non-native species.***

Activity IS 1.1 - Promote Best Management Practices (BMPs) by distributing recommendations to the Tomales Bay boating community.

GFNMS staff, with partners, will distribute existing information on BMPs for preventing the introduction of non-native species through boating and vessel-based activities. The following recommendations adapted from the *California Clean Marina Toolkit* (California Coastal Commission, 2004) will be encouraged:

- Drain live wells, bilge water, and transom wells before leaving the vicinity of where vessel was used;
- After leaving the water, inspect vessel and vessel accessories, and dispose of any plants or animals by placing them in a garbage bin;
- Empty bait buckets on land, never into the water;
- Never dip bait or minnow bucket into the bay if the bucket contains water from another body of water;
- Never dump live fish or other organisms from one body of water into another one;
- At home, wash your vessel, tackle, downriggers, and trailer with hot water;
- Flush water through the vessel's motor cooling system and other parts of the vessel that normally get wet. If possible, let everything dry for five days in the hot sun before using vessel in another body of water.

These BMPs will be included as key messages in the *Boater Education and Outreach Program* detailed in the previous section (*Section D)*.

Potential Partner Agencies: NPS, CCC, CDBW

Estimated Cost: Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of the dedicated staff time of another agency is needed to implement this recommendation.

STRATEGY IS-2: *Encourage on-going monitoring of introduced species*

Activity IS 2.1 – Support efforts by agencies and organizations that conduct regular monitoring of introduced species, including writing letters of support for specific projects.

GFNMS staff will review projects aimed at monitoring introduced species and support efforts that are consistent with the TBVMP. Support will include existing state and federal agencies and academic institutions that regularly or occasionally conduct scientific research to monitor introduced species populations and assess their effects on the Tomales Bay ecosystem.

Potential Partners: NPS, TBWC, Local researchers

Estimated Cost: Funding for a GFNMS Tomales Bay Project Coordinator or the commitment of the dedicated staff time of another agency is needed to implement this recommendation.

III. EXISTING ENVIRONMENTAL CONDITIONS

This *Existing Environmental Conditions* section includes a description of the existing condition of various aspects of Tomales Bay relevant to the TBVMP. The following information—which includes descriptions of the physical, human and biological environments of the Tomales Bay region—provides a scientific context for the proposed actions in the TBVMP and serves as a baseline for use in assessing potential impacts of the alternatives for the attached EA/IS in *Appendix 1*.

A. PHYSICAL ENVIRONMENT

Physical Environment - Location of the Proposed Action and Geologic Conditions: The Tomales Bay region is located primarily in western Marin County, northwest of San Francisco, with a small portion located in Sonoma County. The bay is a shallow, highly unidirectional, Mediterranean-type coastal estuary, alternating between a classical estuary (net dilutive basin) during the wet winter and a hyper saline estuary (net evaporative basin) during the dry summer. Tomales Bay opens at the southern end of Bodega Bay and extends in a southeasterly direction. The bay is approximately 12 miles long and less than one mile wide with an area at mean low water of 10.9 square miles (28.4 square kilometers). The average depth is approximately 12 feet (3.7 meters) at sea level; its greatest depth is 61 feet with a total volume of 48 x 106 cubic meters (TBWC, 2003).

The San Andreas Fault (the source of the 1906 earthquake that ravaged San Francisco) runs directly through Tomales Bay. The bay is a shallow estuary within the long, straight, submerged "rift" valley that was formed over time between the northwestward-moving Pacific plate and the continental North American plate (NPS, 2007).

The Tomales Bay watershed comprises a total area of land 255 square miles in size—an area almost twenty times as large as the bay itself (TBWC, 2010). This includes nearly one-quarter of the lands in Marin County, extending from Mount Tamalpais and Bolinas Ridge, east to the headwaters of Walker, Nicasio and Lagunitas Creeks, and west to the Inverness Ridge. The lands of the watershed include privately owned ranchlands, parklands, public water districts, and residential areas of nine towns. The watershed is rugged with a maximum elevation of 2605 feet and several other peaks exceeding 984 feet.

Walker and Lagunitas Creeks are the two primary tributaries draining into Tomales Bay. Lagunitas Creek encompasses about 52% of the total watershed drainage, while Walker Creek and its tributaries comprise approximately 35%. About twenty intermittent streams that drain into the bay from the eastern and western shores provide the remaining 13% of the watershed drainage (TBWC, 2007).

Figure 2: Tomales Bay Locator Map

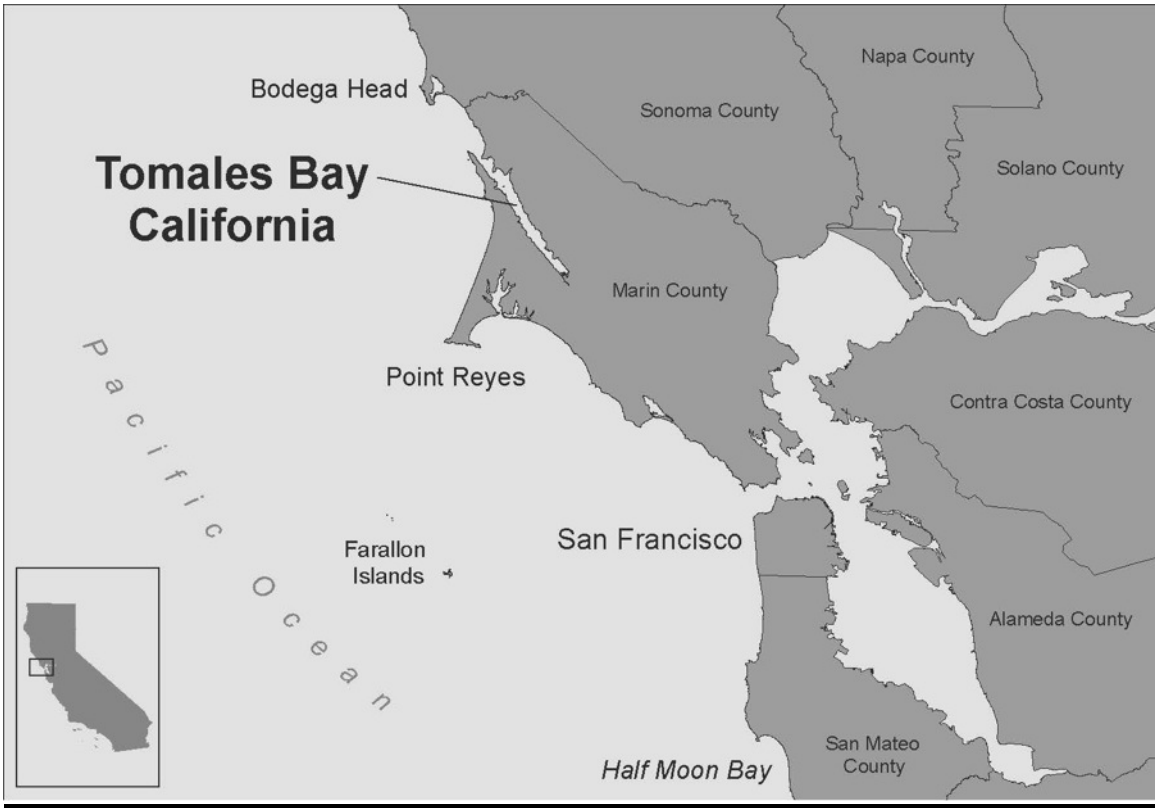
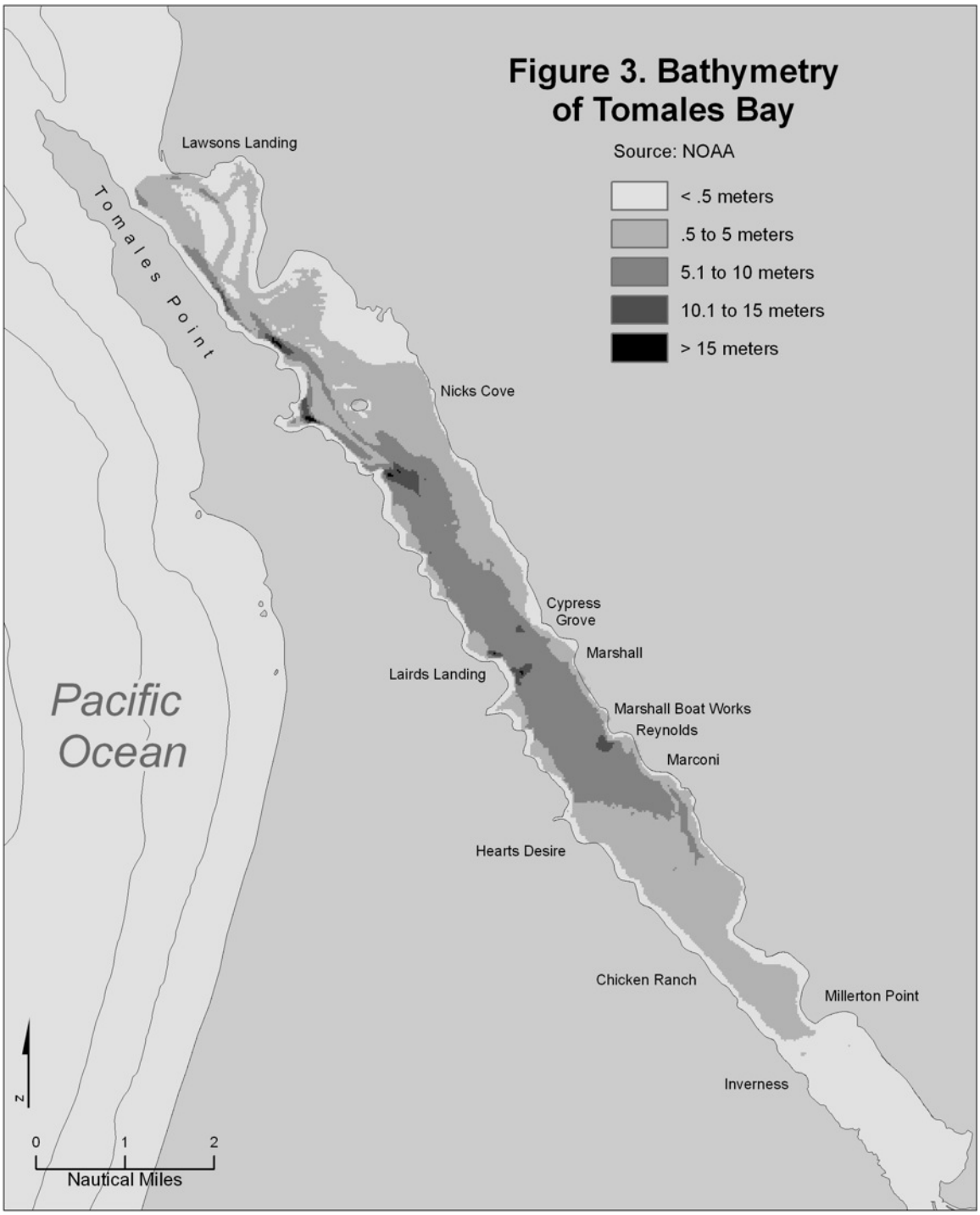


Figure 3: Tomales Bay Bathymetry Map



Physical Environment - Hydrology/Water Quality
Tomales Bay water quality is adversely impacted by human uses including agriculture, failing septic systems, landfill operations, and oil spills. Swimming beaches within the bay and adjacent areas occasionally must be closed due to poor water quality. Additionally, water quality impairments have forced temporary closures in the aquaculture operations, economically impacting one of the primary industries of the bay. During the late 1990s, fecal contamination in Tomales Bay was associated with an outbreak of a virus among people eating oysters raised in the bay. In addition to pollution associated with human waste and discharge of petroleum products, mercury contamination in the sediments of the bay (an artifact of local historical mercury mines inoperative since the 1970s) continues to threaten commercially and recreationally important fisheries (NPS, 2007).

Failure to consistently meet water quality standards led the San Francisco Regional Water Quality Control Board (RWQCB) to designate Tomales Bay as an impaired water body for sediment, nutrients, pathogens, and mercury under Section 303(d) of the CWA. Pursuant to the CWA, a TMDL for pathogens was established for the Tomales Bay Watershed in 2005 and a TMDL for mercury in 2012. A TMDL expresses the total pollutant load a water body can receive and still meet water quality standards. Pursuant to the CWA, California establishes and enforces water quality standards in order to protect activities designated as "beneficial uses" in a particular water body. The TMDL lists shellfish harvesting, water contact recreation, and non-contact water recreation as beneficial uses impaired by pathogen contamination in Tomales Bay. The overall goal of the TMDL is to protect and restore these beneficial uses by reducing the pathogen levels in Tomales Bay and its tributaries (RWQCB, 2005).

Coast Guard regulations set water quality specifications for wastes discharged from boaters' Marine Sanitation Devices (MSDs). For example, a maximum fecal coliform count of 1,000 per 100 ml is allowed for wastes discharged from Type I MSDs, and a lower count for Type II MSDs. Type III MSDs are holding tanks and not treatment devices; therefore they must only be emptied at an onshore pumpout station, with a portable pumpout unit or by a commercial service. Discharge of untreated sewage from a Type III MSD is not prohibited offshore California if the vessel is operating outside of the four California national marine sanctuaries, EPA-designated no-discharge zones, and in the open ocean beyond the three-mile limit of California state waters. This means that if a vessel has a Type III MSD in Tomales Bay, it must be emptied onshore, or the vessel must transit to the nearest legal ocean discharge area, which is currently outside of Tomales Bay North of GFNMS and Cordell Bank National Marine Sanctuary three miles offshore.

Commercial aquaculture is the activity on the bay most significantly affected by fecal contamination; these operations are required to be closed an average of 70 days each year due to high bacteria counts associated with the presence of human waste (RWQCB, 2005). The positive relationship between sewage-polluted shellfish and enteric disease is well documented (Berg, et al, 2000). Because shellfish pump and filter large quantities of water during feeding, rapid intake and concentrations of bacteria, viruses, marine toxins, and other poisonous and deleterious substances may occur. Therefore, shellfish

may contain higher levels of chemical contaminants or pathogens than are found in the water in which they grow (National Shellfish Sanitation Program, 2005). The most likely sources of human sewage contamination to shellfish growing areas are from discharge of a land-based sewage disposal system, improper waste handling on shore, or from overboard discharge by vessels. In May 1998, an illness outbreak occurred affecting at least 171 people, and a similar outbreak of illness occurred in March 2005, affecting at least 14 people. Both of these illness incidents were associated with the consumption of raw oysters from Tomales Bay. The cause of both illness outbreaks was determined to be a Norwalk-like virus—a pathogen that is only found in the presence of human sewage (RWQCB, 2005).

Recreation, too, has been interrupted or halted due to dangerous levels of water contamination in the bay. At various times, human health advisories from CDPH have been posted to warn against swimming at a number of popular swimming beaches on Tomales Bay and along Lagunitas Creek. The County of Marin has implemented a water quality-monitoring program to evaluate conditions for recreational activities, and found that some of the most popular swimming spots were not meeting state standards. Chicken Ranch Beach, Inkwells, and spots along Lagunitas Creek in Samuel P. Taylor State Park and near the Green Bridge were frequently found to be in excess for total coliform, *E.coli*, and Enterococcus bacteria (TBWC 2004). Some studies have found a significant increase in gastrointestinal illness for swimmers at 1,000 fecal coliform per 100 ml - the amount allowed with a Type I MSD. A count of 200 fecal coliform bacteria per 100 ml of water will close public beaches to swimming, and a count of 14 per 100 ml requires a closure of commercial shellfish beds (CDPH, personal communication).

Additional monitoring for pathogens has been conducted during a coastal volunteer monitoring event called "Snapshot Day," a one-day activity where watershed groups partner with state and regional agencies and citizen volunteers to collect water quality data using standardized protocols. Test results from samples taken in May 2003 at more than fifteen different locations within the Tomales Bay watershed showed that the following creeks exceeded the EPA established *Ambient Water Quality Criteria* for *E. coli*, of 235 MPN/100 ml: Haggerty Gulch (2,419.20 MPN/100 ml); Lagunitas Creek (261.30 MPN/100 ml); Olema Creek (387.30 MPN/100 ml); and Tomasini Creek (261.30 MPN/100 ml). Miller Park Pier exceeded the standard for transparency (water clarity) of not less than 25 cm (it was 12.10 cm) (TBWC, 2004).

Figure 4: Public Health and Water Quality Protection Siting Criteria

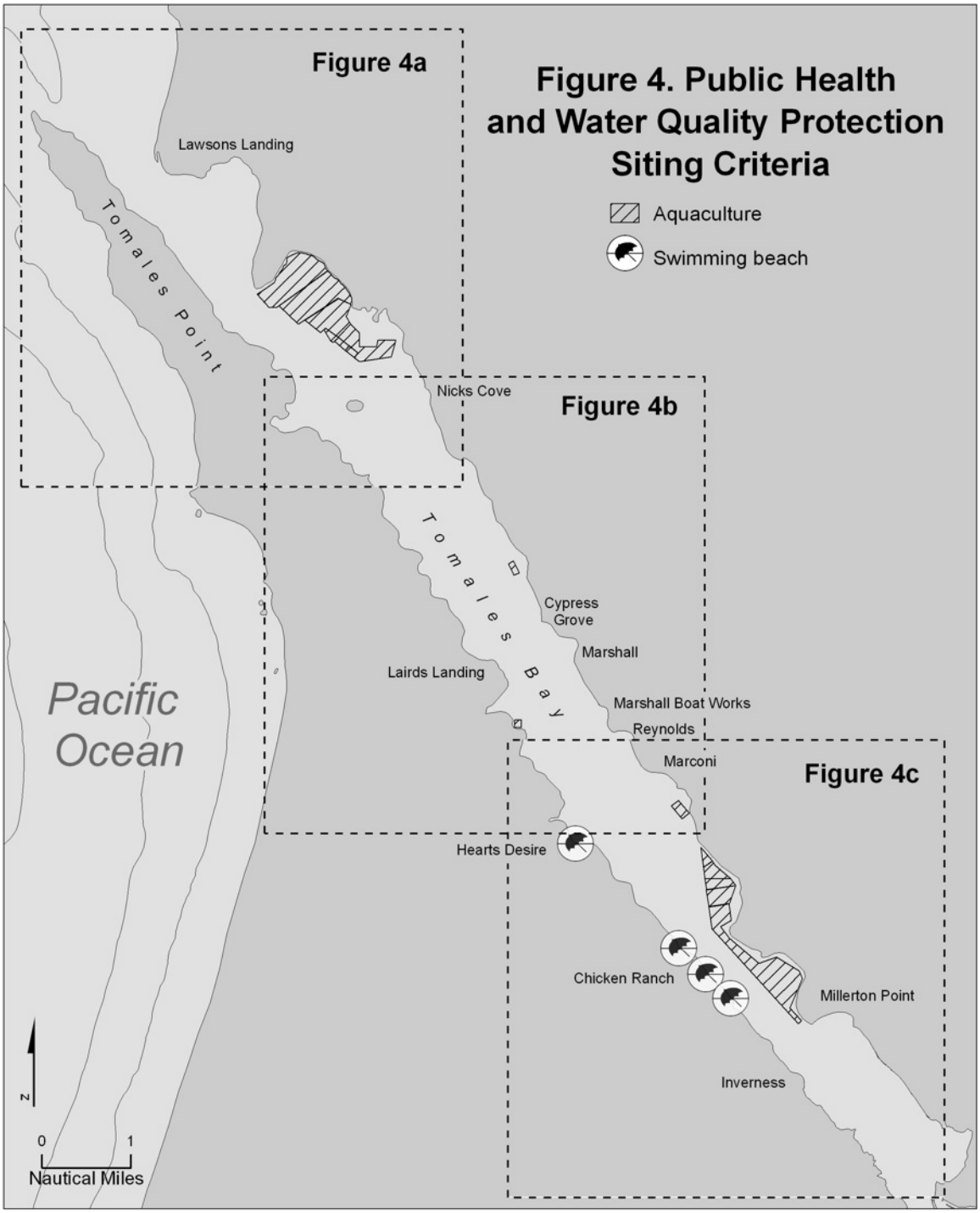


Figure 4a: Public Health and Water Quality Protection Siting Criteria

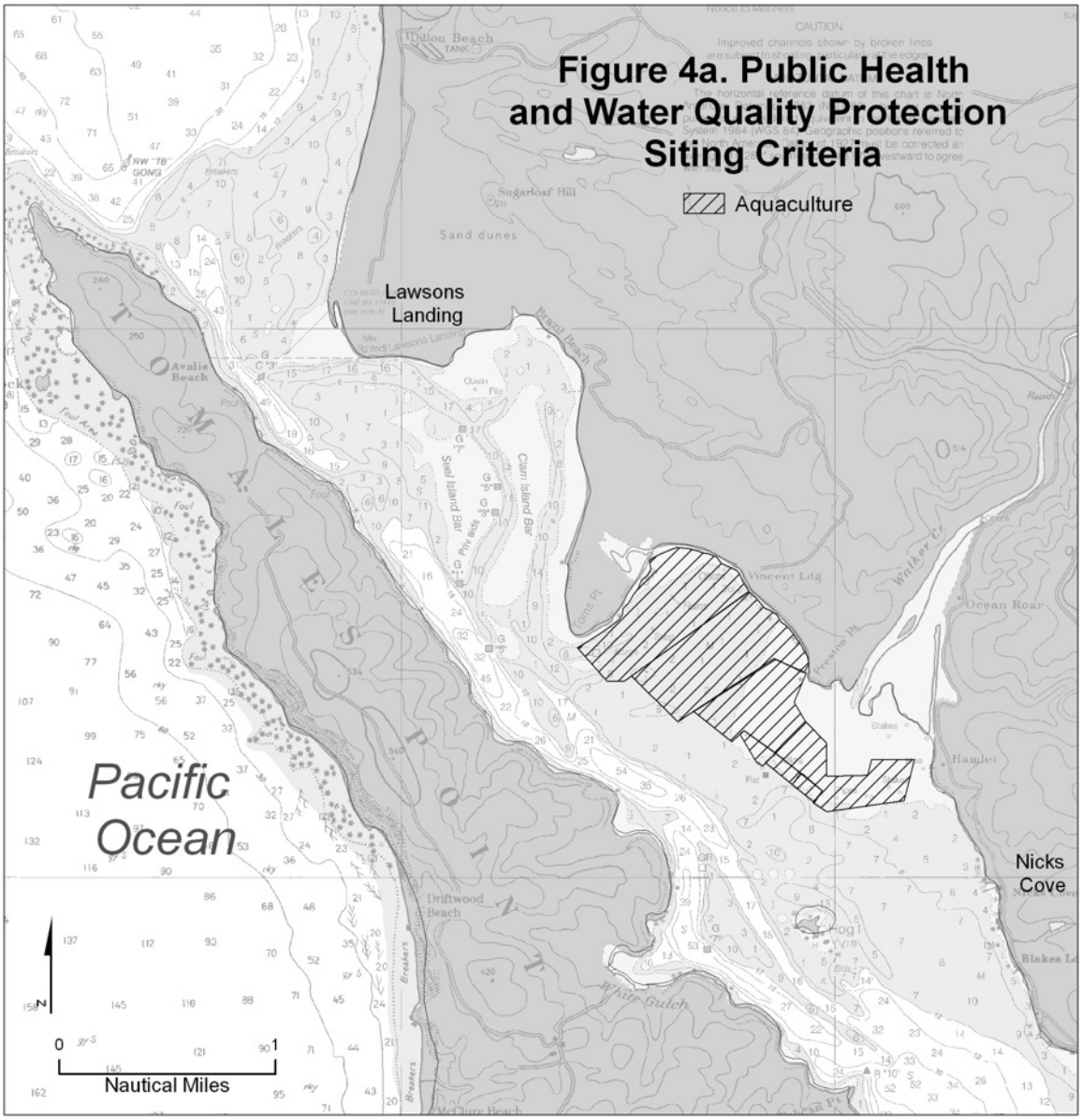


Figure 4b: Public Health and Water Quality Protection Siting Criteria

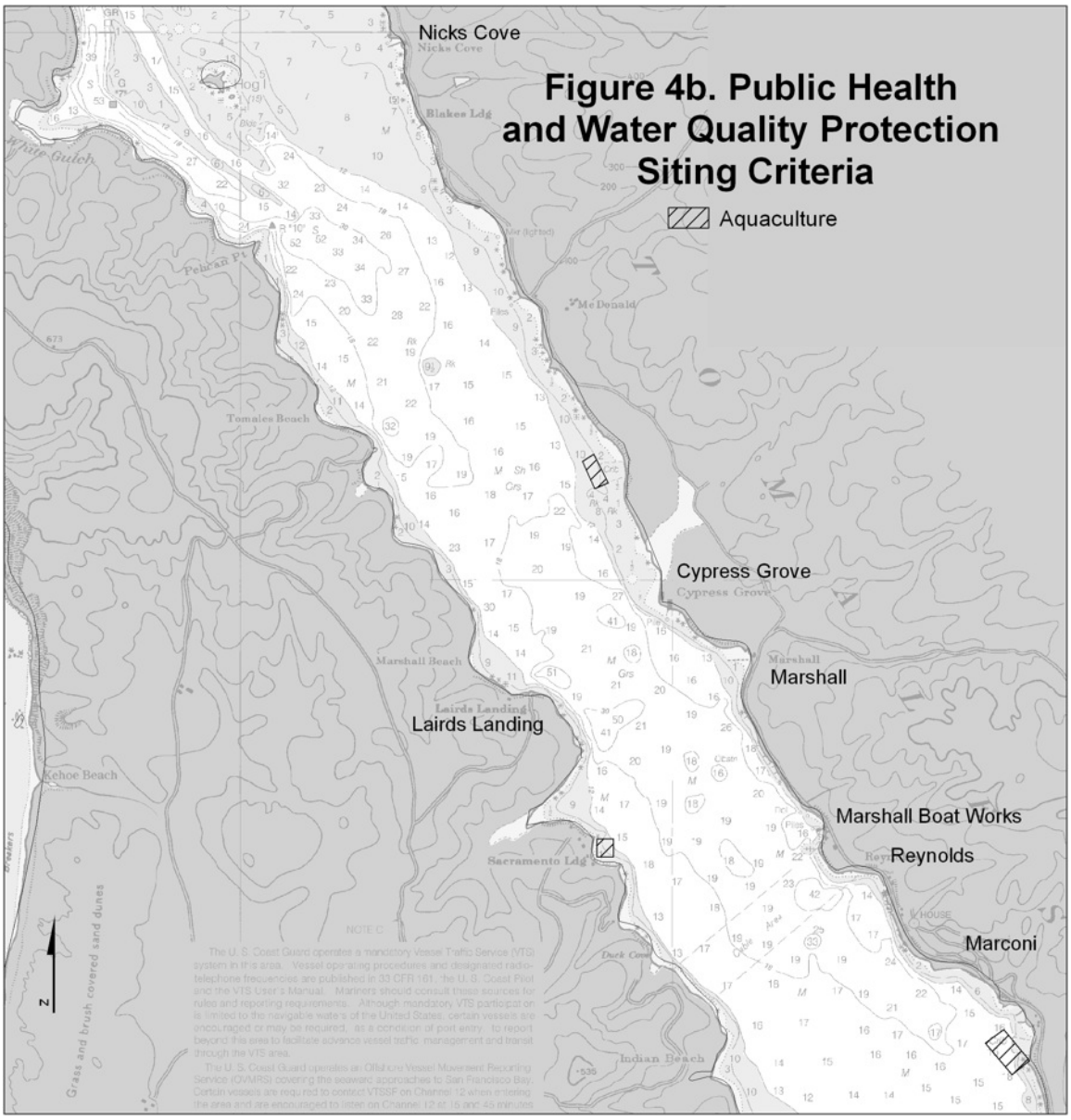
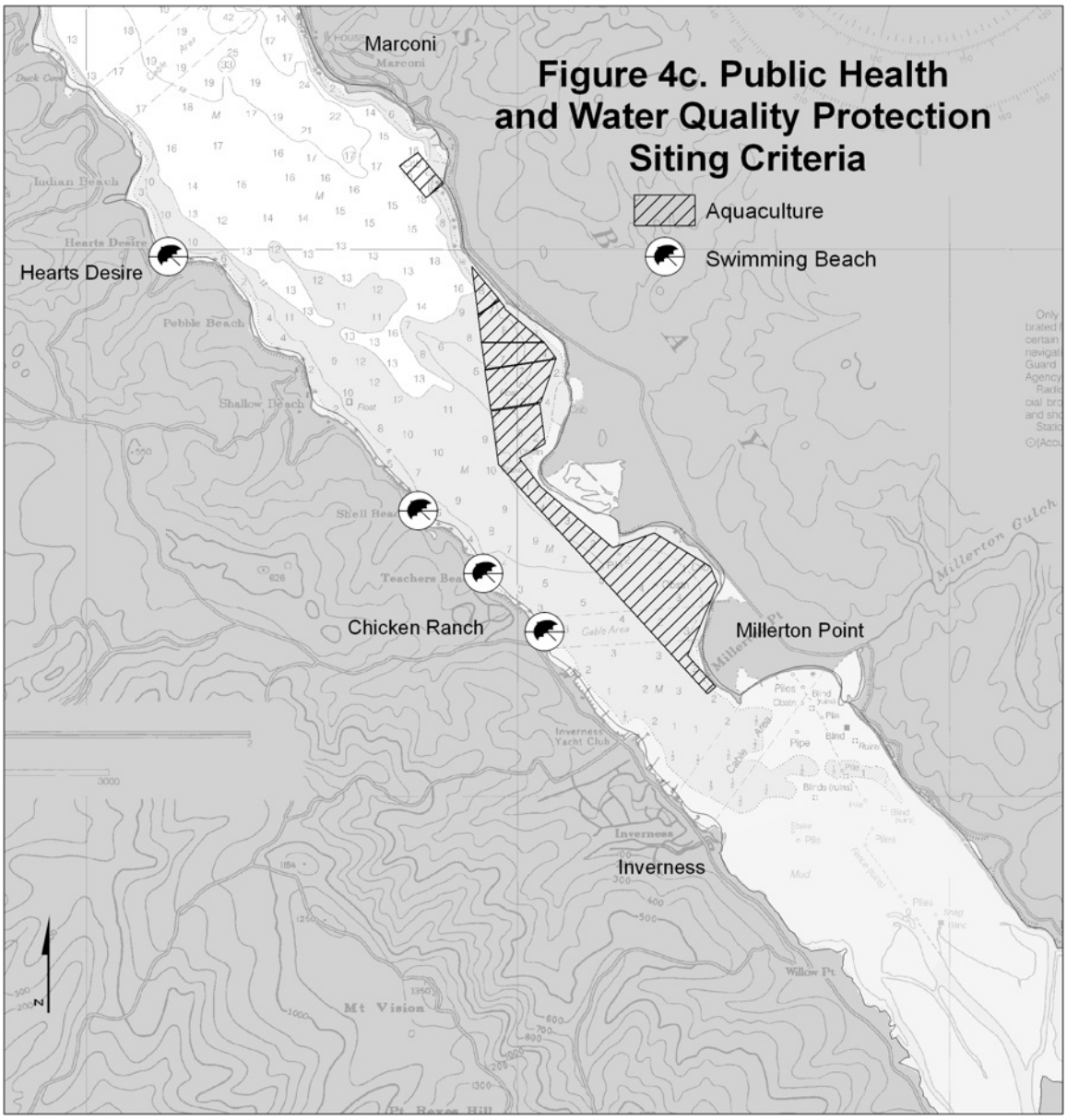


Figure 4c: Public Health and Water Quality Protection Siting Criteria



B. HUMAN ENVIRONMENT

Human Environment – Historical Setting:

Humans and nature have co-existed in the Tomales Bay watershed for at least 5,000 years, and perhaps as long as 13,000 years, since the time of the coastal Miwok. The more than 120 village sites that have been identified within PRNS provide evidence of the Miwok's presence and insight into their way of life. These early inhabitants of the Tomales Bay watershed managed the landscape through burning, weeding, pruning and harvesting, which probably helped to create the coastal prairie that attracted early ranchers to settle the area following the Gold Rush (National Park Service, 2008).

Human Environment – Vessel Moorings

In 2006, there were an estimated 178 moorings located throughout Tomales Bay, including moorings used for aquaculture operations within state water bottom lease areas, channel markers, demarcation buoys (e.g. those at swimming beaches), and other unidentified, abandoned, or inactive buoys. A typical, traditional mooring consists of a permanent weight on the seafloor attached by chain to a buoy that floats at the water's surface.

NPS and NOAA have conducted several on-the-water mooring buoy surveys on Tomales Bay to obtain an accurate count of moorings. The first survey was conducted in February 2002 and additional mooring surveys were conducted in July 2004, October 2004 and February 2006. These surveys generally noted whether the mooring had a vessel attached, whether the vessel had valid registration information and whether the vessel appeared to be derelict or deserted. It should be noted that not all of the buoys recorded during these surveys were active vessel moorings; also included were moorings associated with aquaculture operations (regulated by CDFW), demarcation buoys (e.g. those at swimming beaches), and other unidentified, abandoned, or inactive buoys. Staff noted in the October 2004 survey that approximately 30 of the moorings with vessels appeared to be derelict or deserted vessels and documented a total of approximately 165 moorings.

Information about the different types of moorings placed in the bay over time is largely anecdotal, based on reports from persons who have installed moorings over the years and the knowledge and personal observations by TBIC agency staff and officials. While several individuals from the local boating community have indicated that the majority of moorings in Tomales Bay consist of an anchor of one or two concrete-filled 55-gallon drums and heavy chain, some moorings in the bay are also attached to anchors fabricated from a variety of materials including cement blocks, engines blocks, and tires (John Vilicich, personal communication, 2006). The mooring field at Lawson's Landing uses long wooden poles called piles that are embedded into the seafloor and emerge several feet above the water's surface where boats can then tie into them.

Non-compliance of CSLC mooring lease requirements and GFNMS regulations has been a persistent issue in Tomales Bay. CSLC requires a lease for all private vessel moorings in Tomales Bay; however, to date only one CSLC private vessel mooring lease (lease expired 2008) has been issued. In addition to that one permitted private mooring there is a permitted mooring field in the north part of the bay at Lawson's Landing, which is under a CSLC commercial lease. On December 16, 1998, the CSLC authorized a 25-year lease at Lawson's Landing for an existing marina with a total of 35 moorings (12 side ties and 23 poles); the lease expires on December 31, 2023.

In 1981, when the GFNMS was designated, sanctuary regulations prohibited the discharge of materials into GFNMS and disturbance to the seabed, which includes the placement of moorings. Moorings installed in Tomales Bay after GFNMS designation, except those used for aquaculture activities conducted pursuant to a valid lease, permit, license, or other authorization issued by the State of California, are illegal.

Moorings located within state water bottom lease areas for aquaculture must be directly associated with aquaculture pursuant to a valid lease, permit, license or other authorization issued by the State of California. Moorings used for aquaculture activities conducted pursuant to a valid lease, permit, license, or other authorization issued by the State of California are exempt from the GFNMS seabed disturbance regulations in Tomales Bay and are therefore not addressed as part of the TBVMP. However these moorings are subject to CDFW and CDPH regulations and must meet all requirements set forth in the terms of the aquaculture lease.

Moorings have historically been and continue to be concentrated in several primary mooring areas of the bay. The following maps show the existing mooring buoys and locations from 2006 (*Figure 5)* and the proposed MP Mooring Zones with Combined Mooring Exclusion Areas and 2006 locations (*Figure 6).*

Figure 5 – Existing Moorings in Tomales Bay (from 2006 survey)

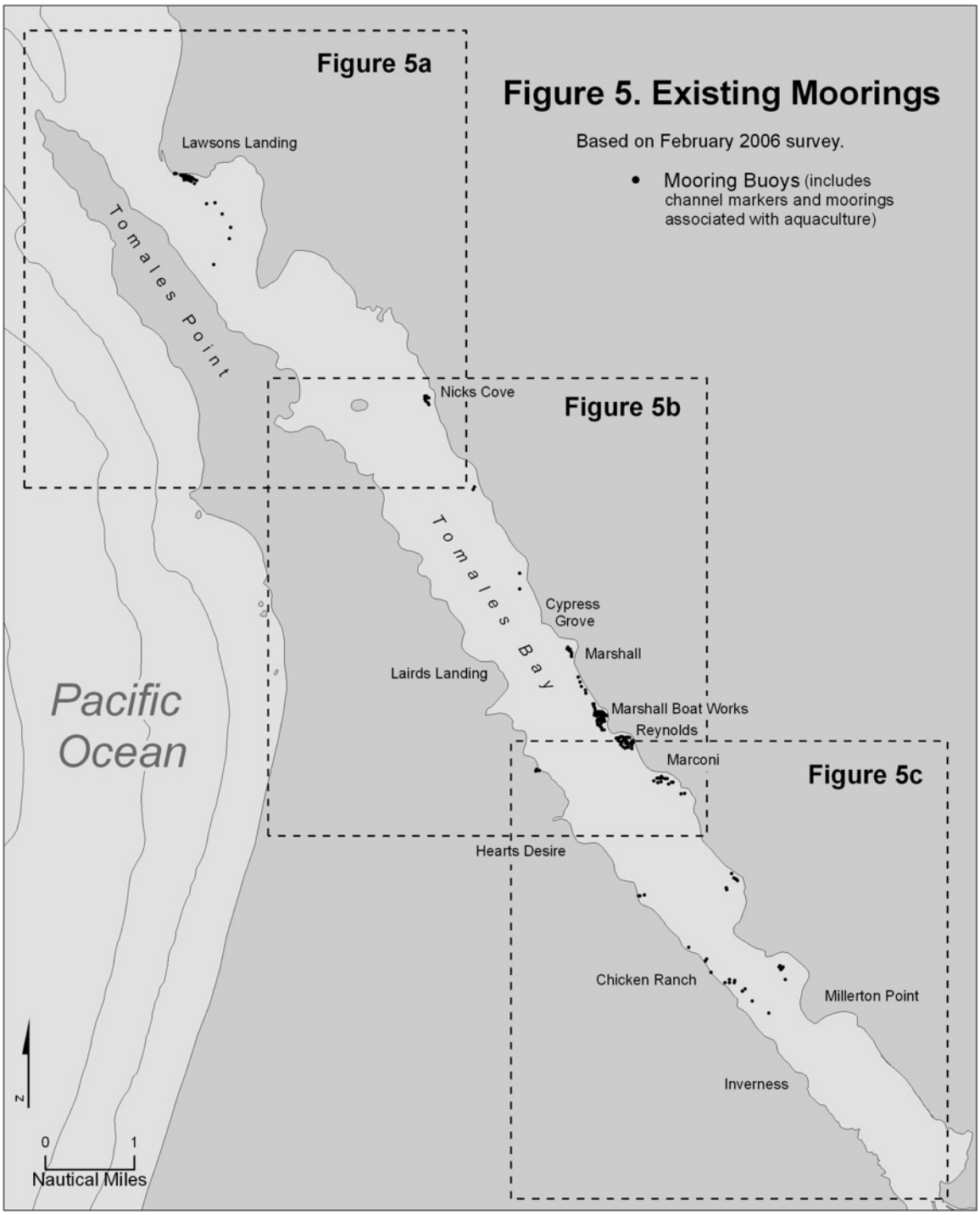


Figure 5a – Existing Moorings in Tomales Bay (from 2006 survey)

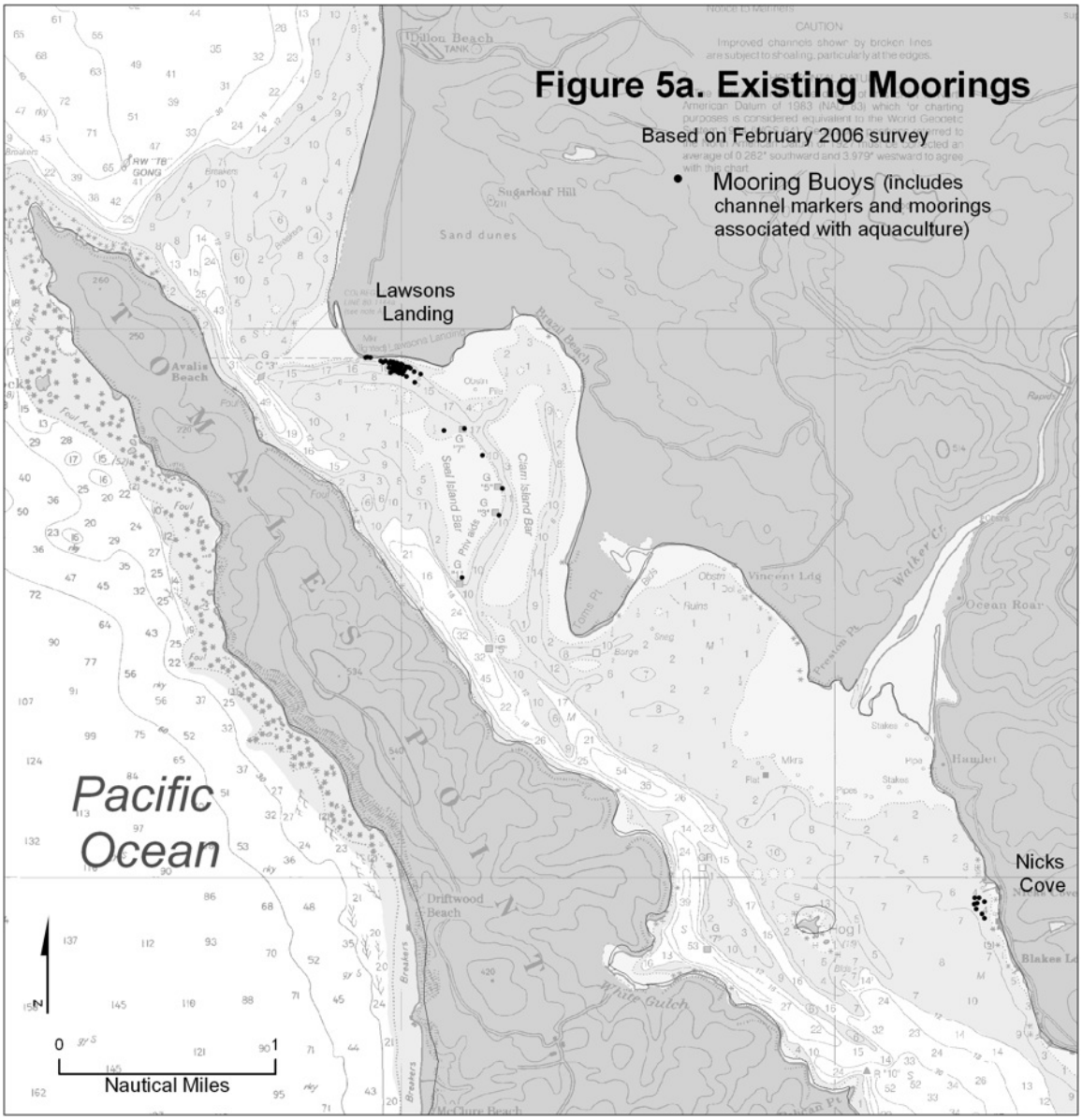


Figure 5b – Existing Moorings in Tomales Bay (from 2006 survey)

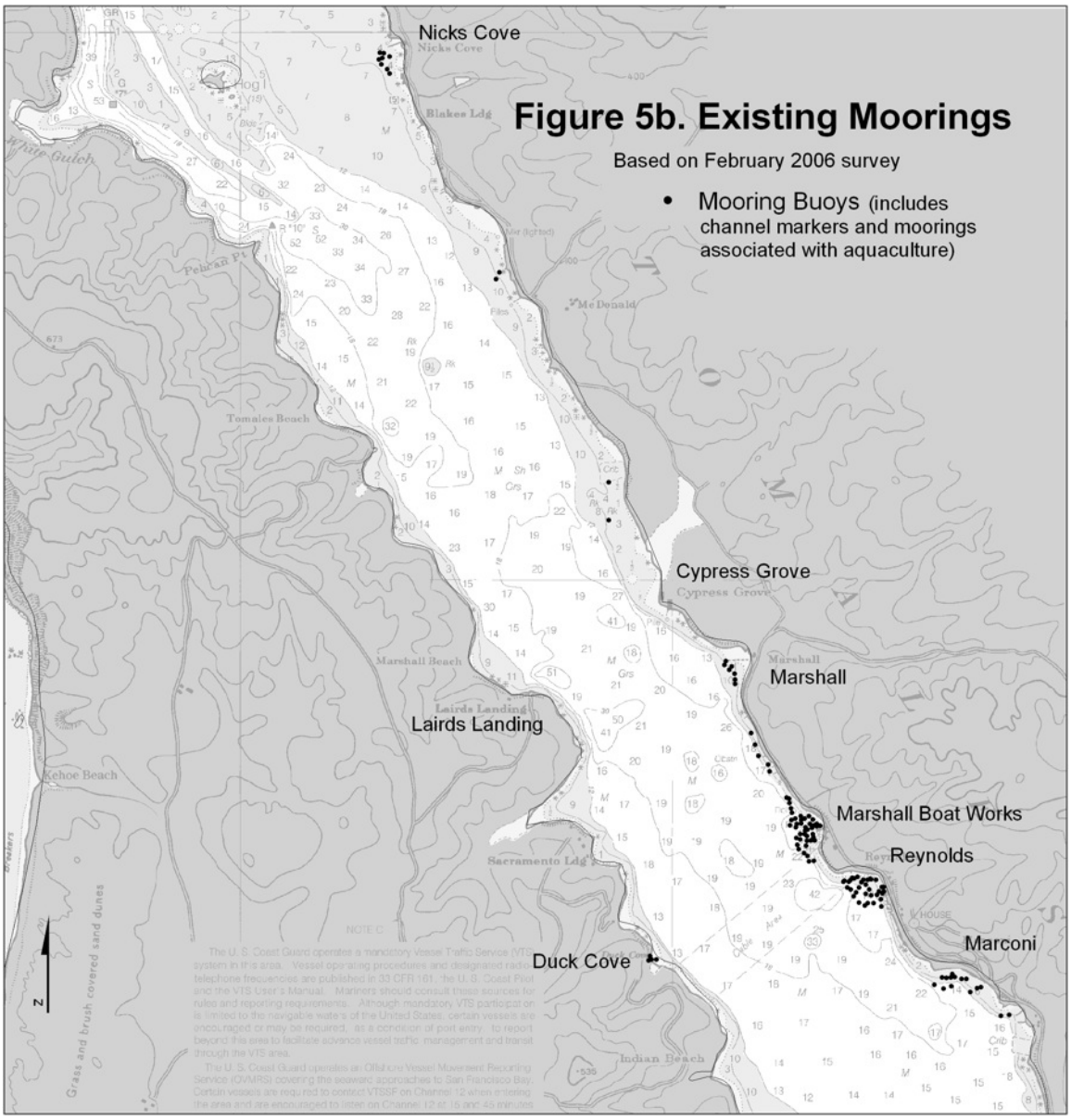


Figure 5c – Existing Moorings in Tomales Bay (from 2006 survey)

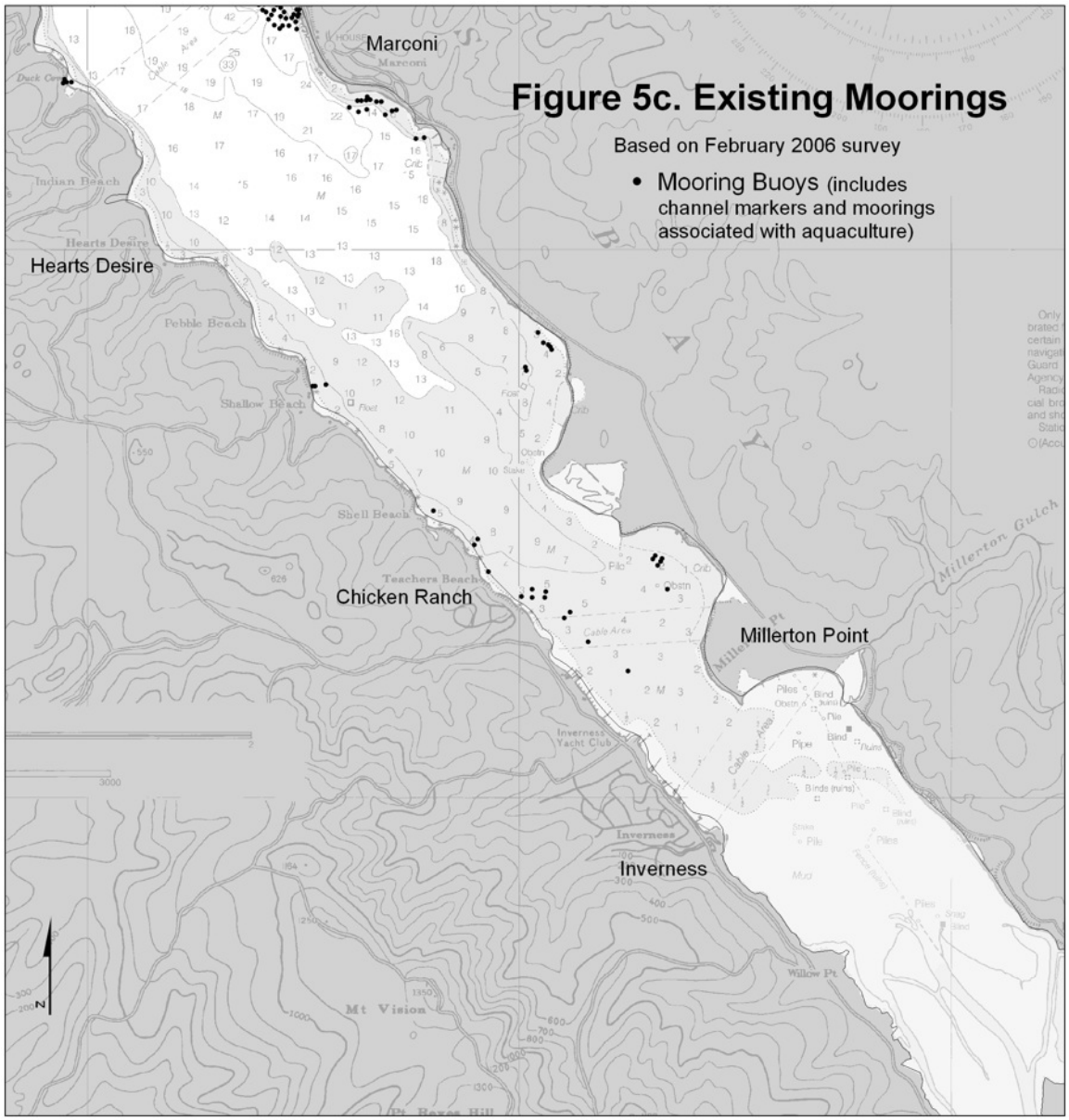


Figure 6: Map of Proposed Tomales Bay Mooring Zones with Combined Mooring Exclusion Areas and Existing Moorings (from 2006)

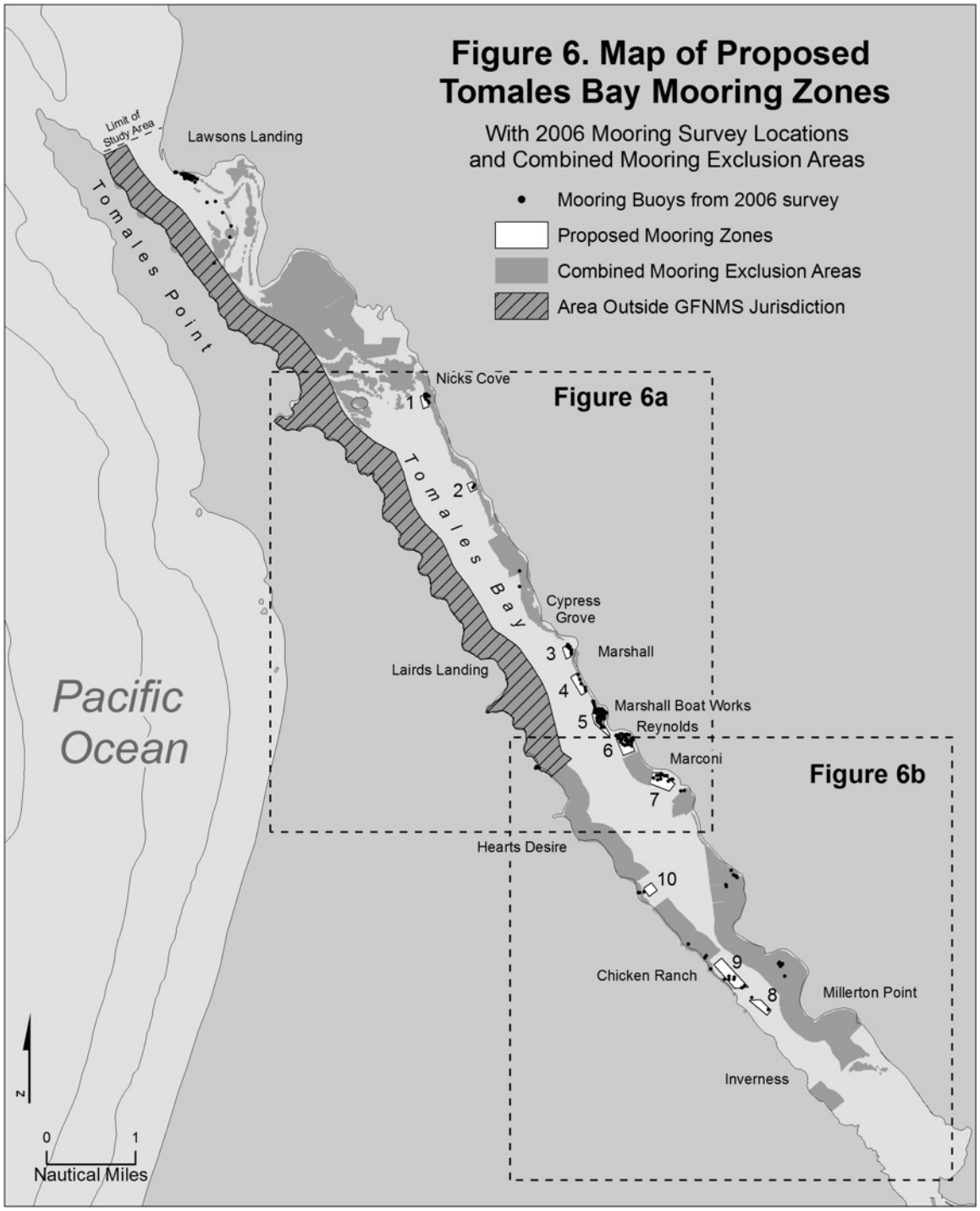


Figure 6a: Map of Proposed Tomales Bay Mooring Zones with Combined Mooring Exclusion Areas and Existing Moorings (from 2006)

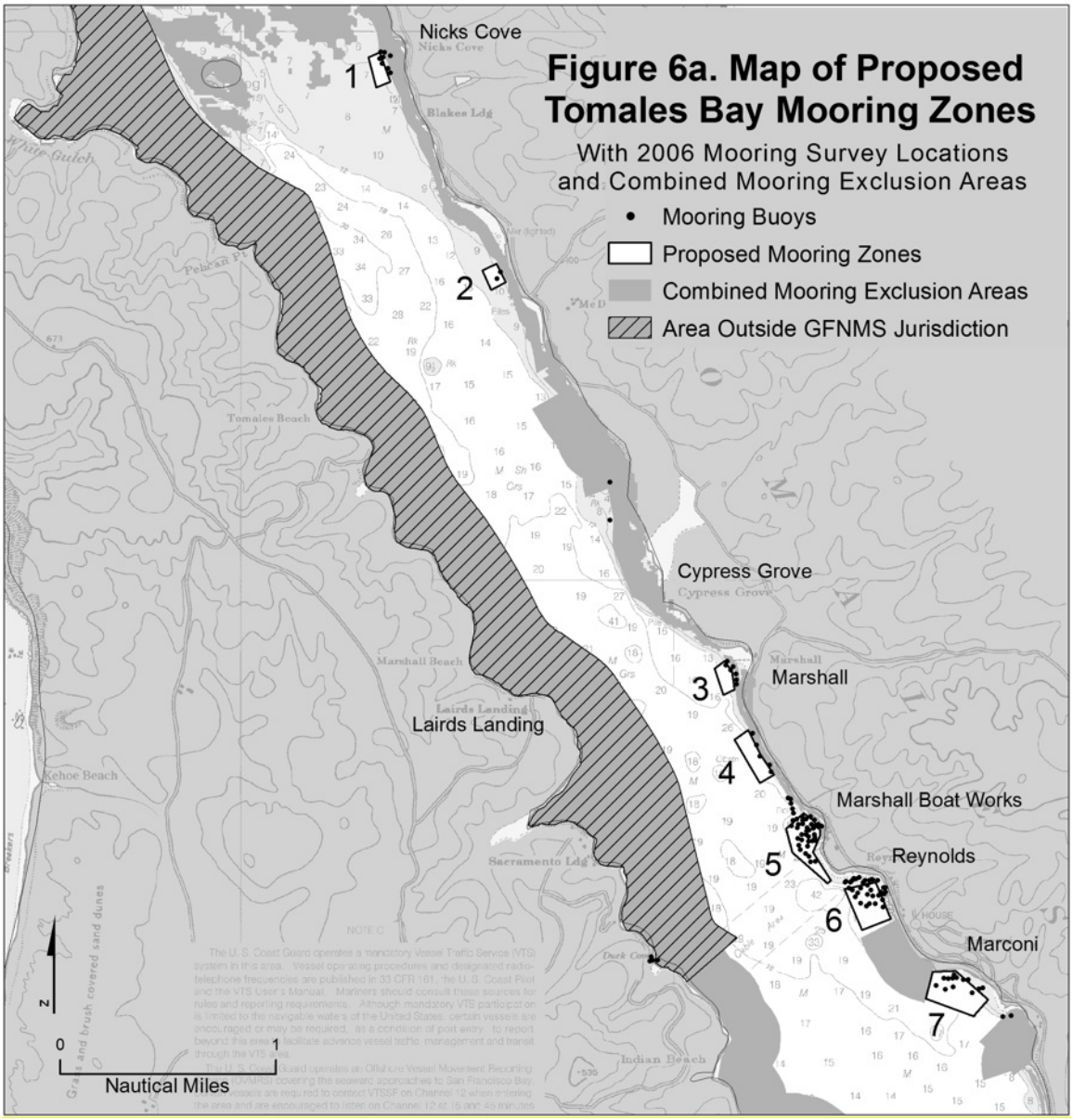
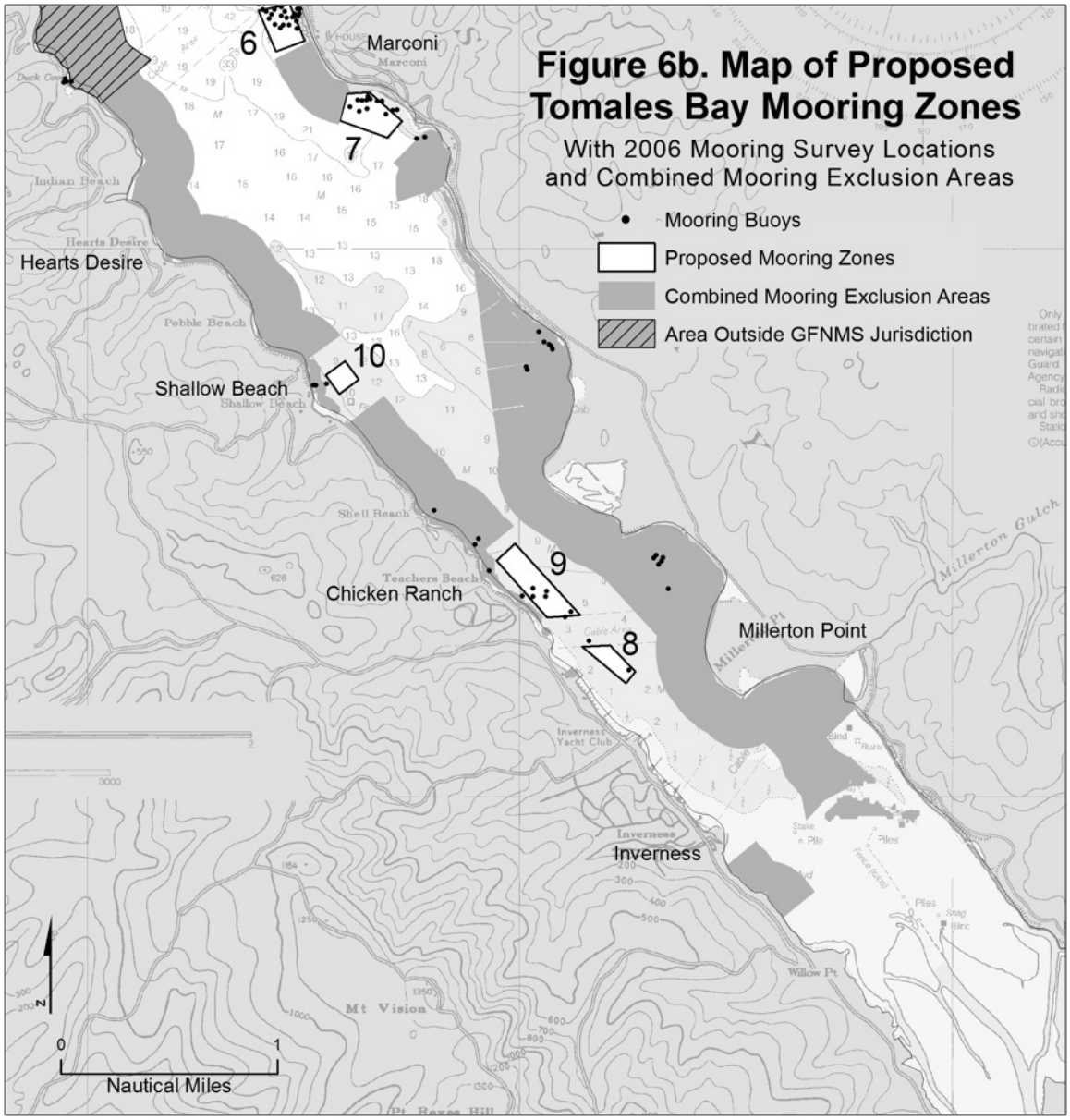


Figure 6b: Map of Tomales Bay Mooring Zones with Combined Mooring Exclusion Areas and Existing Moorings (from 2006)



Human Environment – Vessel Facilities
A 2004 study conducted by CDBW for the California SWRCB reported on the number and type of vessels and the number and types of vessel-related facilities in proximity to the bay. The survey identified the following boating facilities on or near Tomales Bay: one public boat launching facility, four marinas, two kayak rental facilities, and eleven public access areas (*Table 2*). The ownership of these sites consisted of PRNS, County of Marin, CSP and privately owned properties as shown below (CDBW, 2004).

In addition, the study relied on an aerial overflight survey (conducted on Saturday, September 6, 2003, between approximately 1:00 – 2:00 pm) to gather additional information on the number and size of vessels on and around Tomales Bay. The aerial survey documented a total vessel count of 449 vessels in the water or on the immediate shoreline of Tomales Bay (it should be noted that not all of the vessels along the shoreline were operational). Of these vessels, there were146 power craft, 165 sail vessels, 126 human powered craft (kayaks, canoes, sculling craft) and 12 unknown vessel types (CDBW, 2004).

The study used this information to make a determination on the adequacy of public restroom facilities, sewage pumpout and dump stations for Tomales Bay. Finally, it also established that there were no vessel sewage services on the bay; however there were 87 vessels requiring a dump station and 71 vessels requiring a pumpout. Based on these results, CDBW made a recommendation to SWRCB that at a minimum, one pumpout station and one dump station are needed in Tomales Bay to provide adequate sewage waste facilities.

The public park systems (local, state and federal) are the major providers of toilets around the shoreline of Tomales Bay (*Figure 7*). Most of the shoreline facilities are within a 10 to 15-minute run by motorized vessel from any place in the bay. All the parks maintain records of service times, facility type, and status of the toilets under their supervision. There have been no records of overflowing toilets or major problems. The report concluded that there are an adequate number of land-based public restroom facilities at the public access sites. The only complaint noted was that some of the facilities were of the non-permanent port-a-john or construction site type and lack the sanitary aesthetics associated with a permanent type installation (CDBW, 2004).

Figure 7 - Shoreline Restroom Facilities

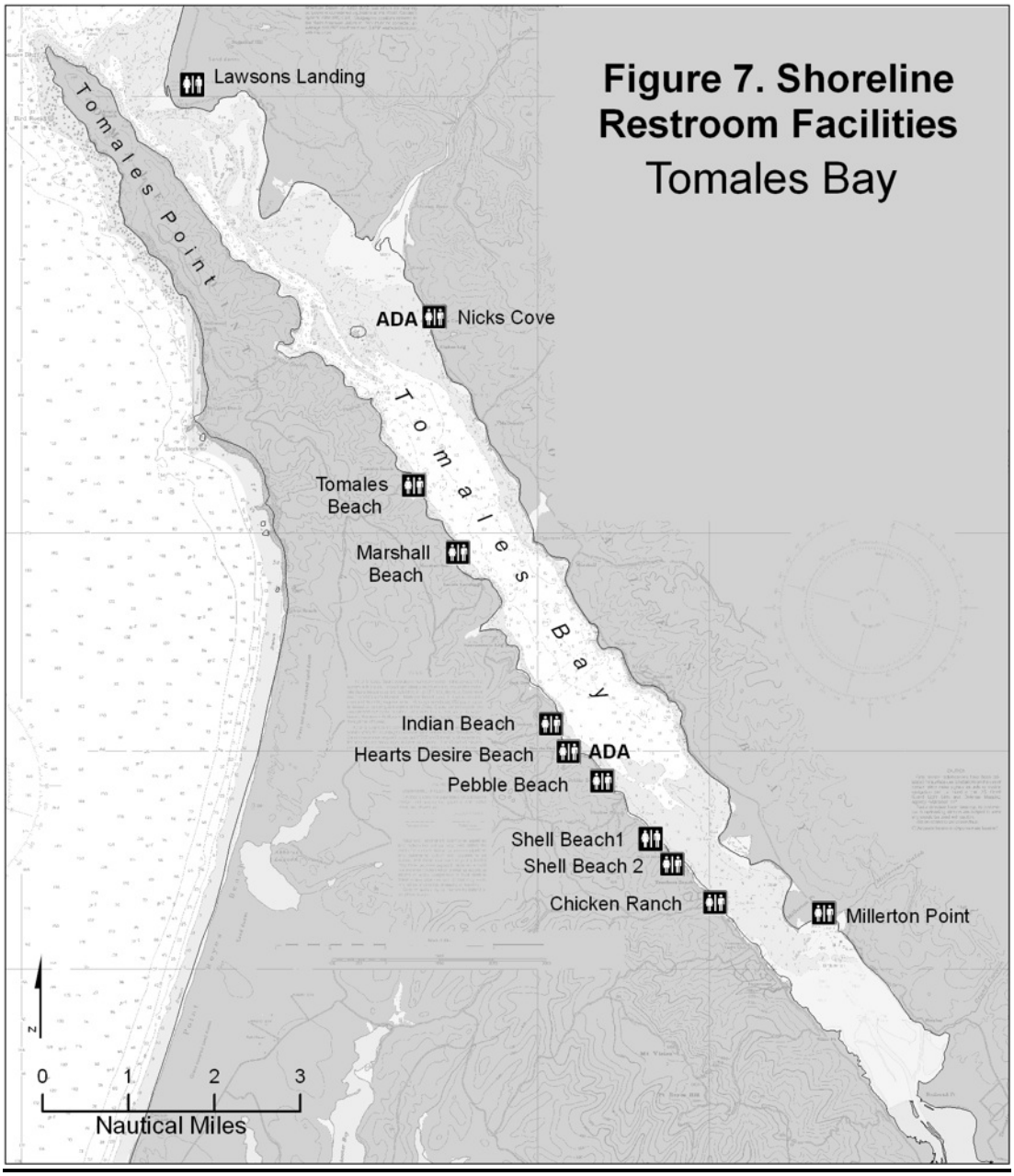


TABLE 2 — TOMALES BAY BOATING FACILITIES		
SITES IDENTIFIED	**TYPE OF FACILITY**	**OWNERSHIP**
Marshall Boat Works	Marina	Private
Lawson's Landing	Marina	Private
Tamal Saka Kayak Rentals	Kayak rental	Private
Inverness Yacht Club	Marina	Private
Blue Waters Kayaking	Kayak rental	Private
Tomales Bay Resort & Marina	Marina	Private
Point Reyes National Seashore		
1. Tomales Beach	Public access	Federal
2. Laird's Landing	Public access	Federal
3. Marshall Beach	Public access	Federal
County of Marin		
1. White House Pool (Lagunitas Creek access only)	Public access	County
2. Chicken Ranch Beach	Public access	County
3. Miller Park	Public access	County

Tomales Bay State Park		
1. Hearts Desire Beach	Public access	State
2. Indian Beach	Public access	State
3. Millerton Point	Public access	State
4. Marconi Cove (future site)	Public access	

Figure 8: Public Safety Siting Criteria Map

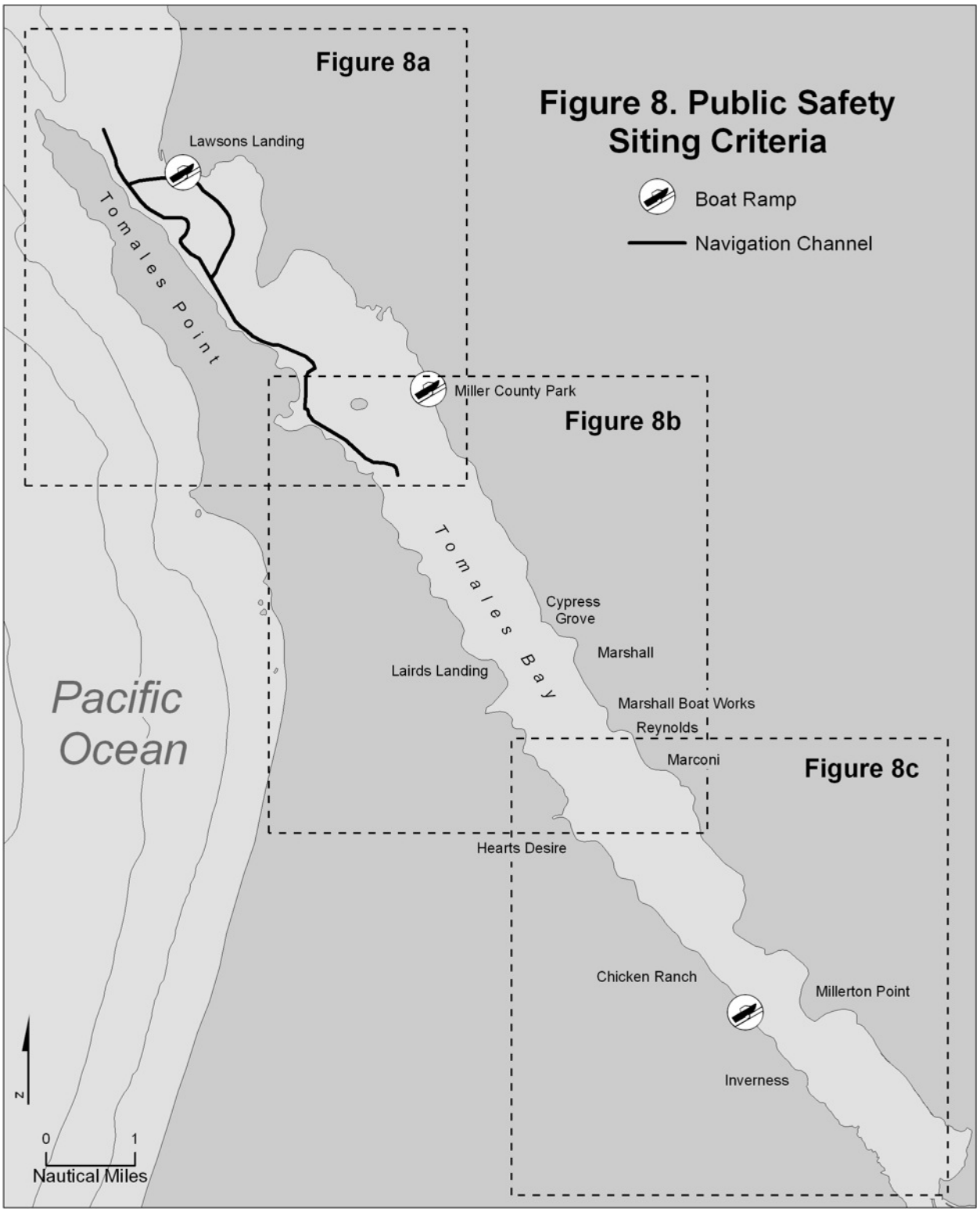


Figure 8a: Public Safety Siting Criteria Map

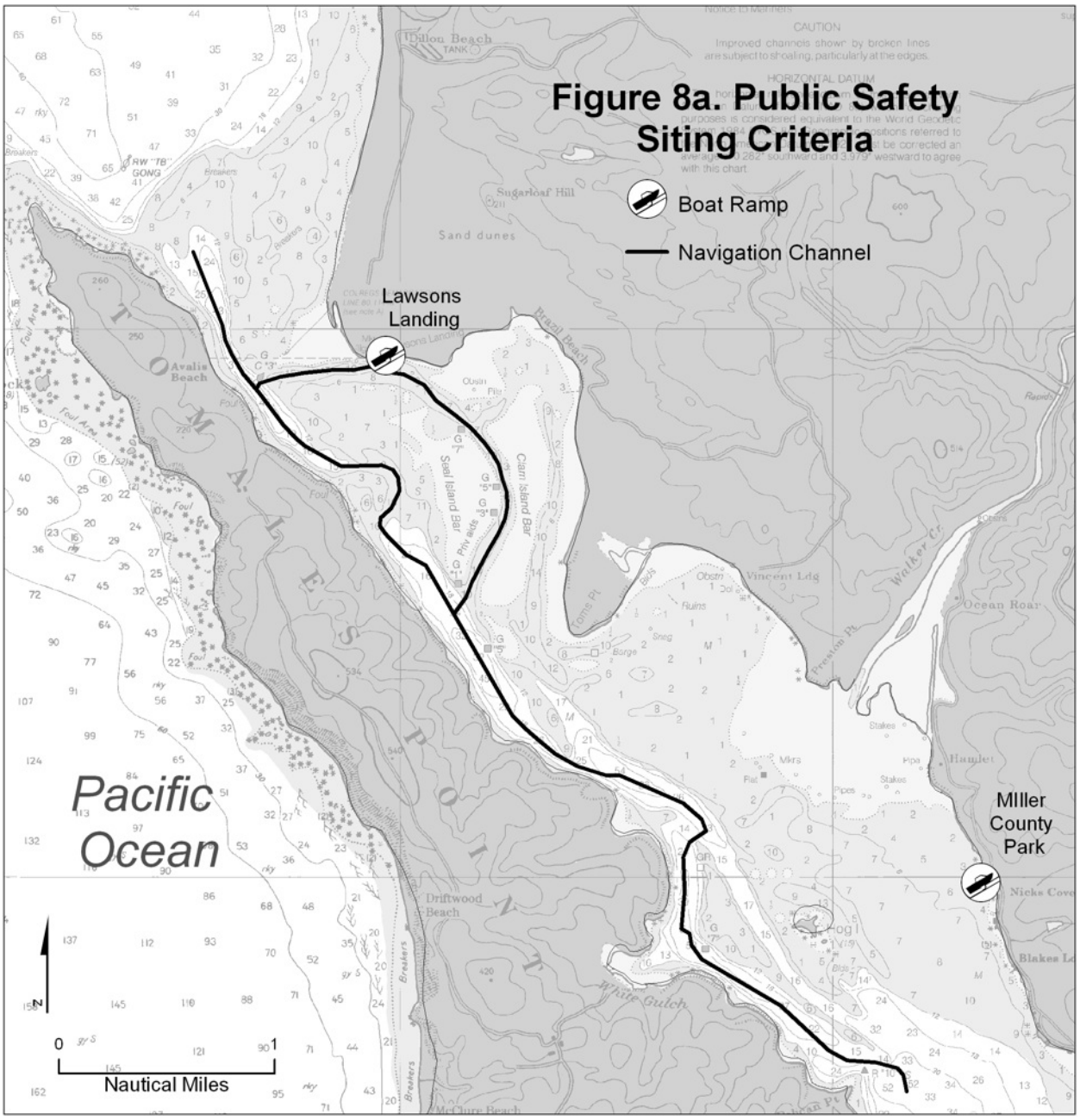


Figure 8b: Public Safety Siting Criteria Map

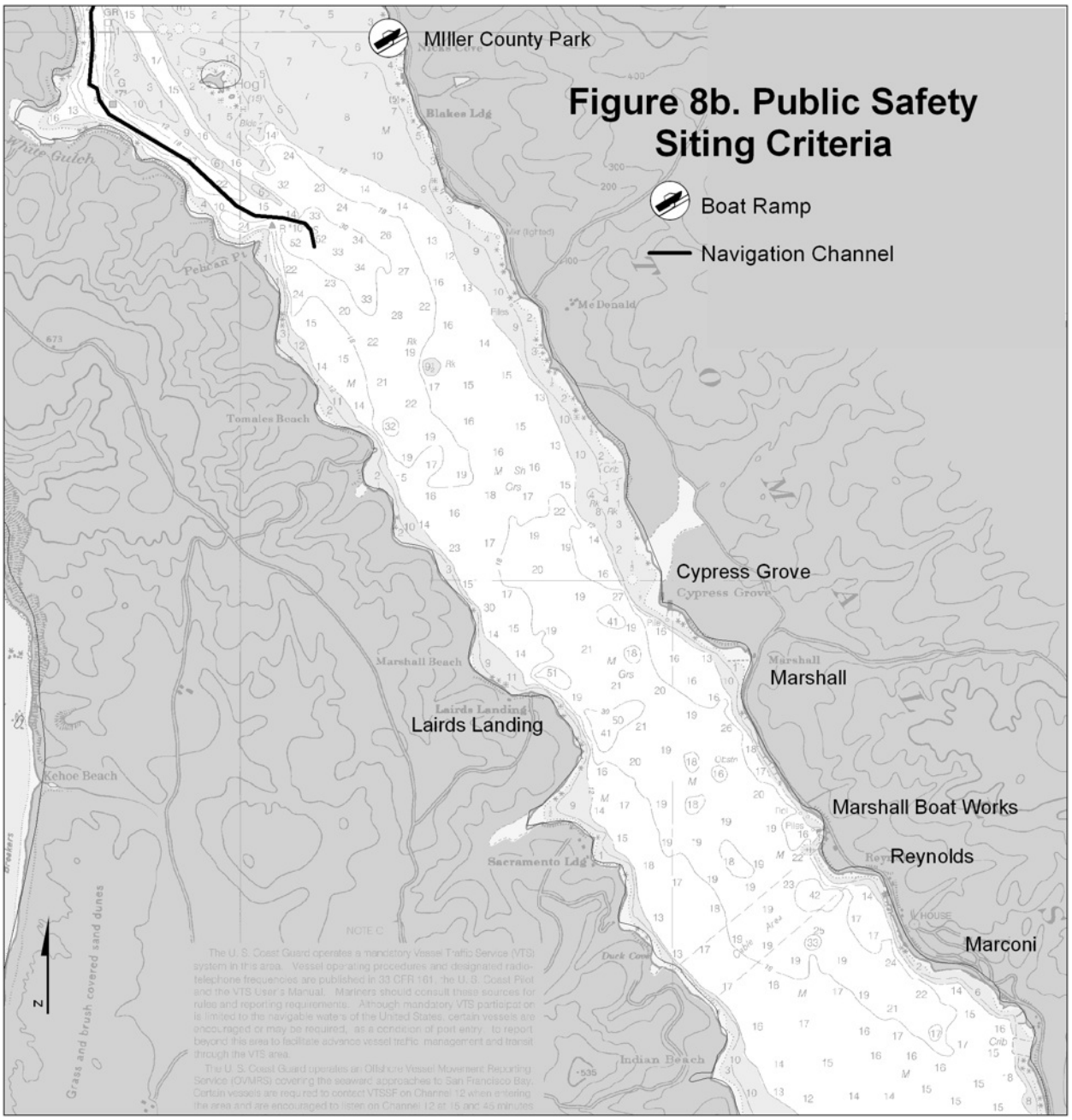
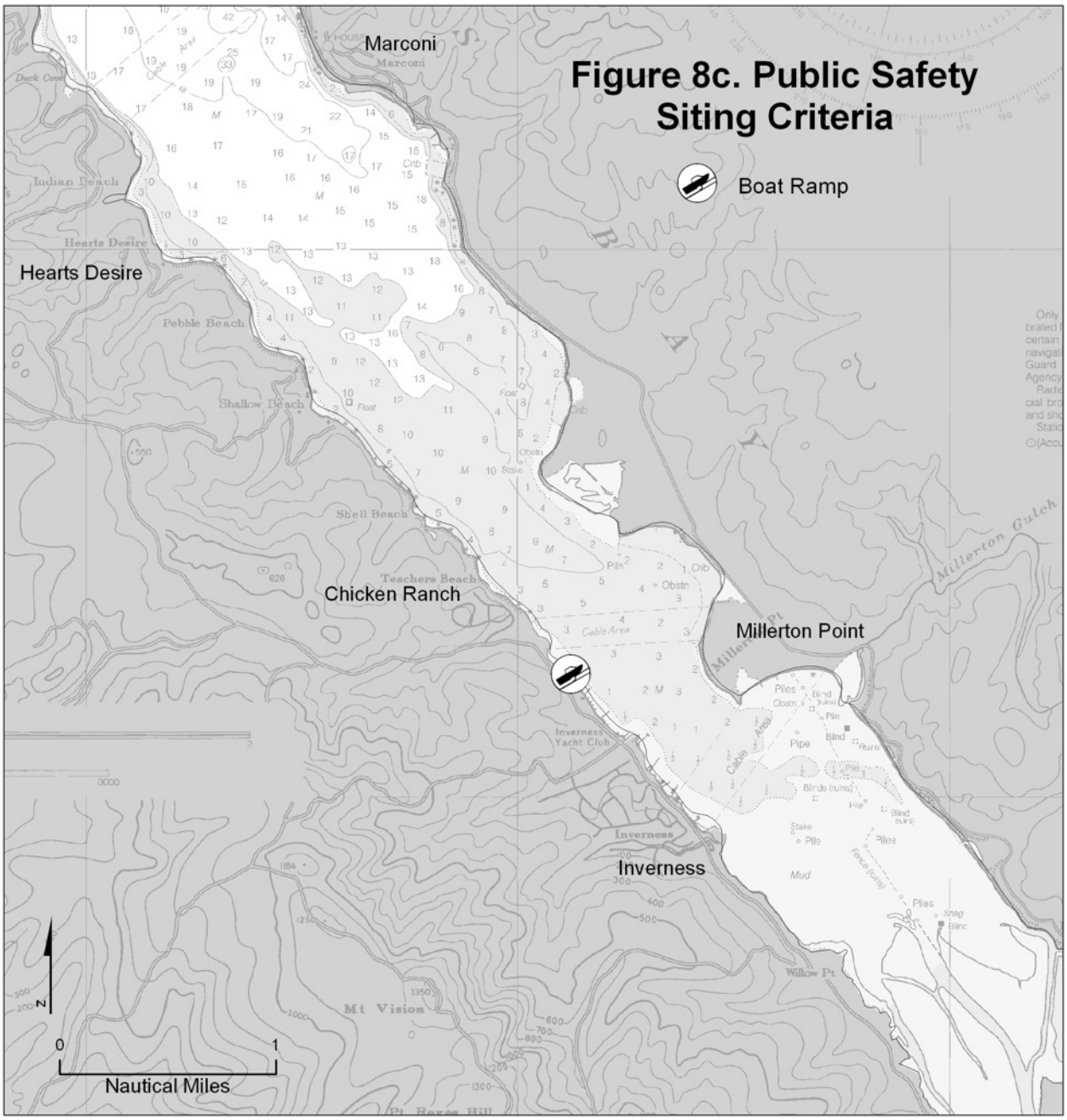


Figure 8c: Public Safety Siting Criteria Map



Human Environment – Water-based Recreation:
The term "water-based recreation" covers beach use, swimming, and launching of kayaks and other light vessels without motors or with outboard motors. A variety of pleasure and fishing vessels use the bay. A 2003 Marin County-commissioned study of water-related recreational uses in Tomales Bay showed an increase in boating activities in the years leading up to the study. It also established a trend of increasing numbers of kayakers using the bay (Prunuske-Chatham, 2003).

Regarding onshore recreation, PRNS has a limit of 7,200 vessel-in overnight camping permits per year and collects information on visitors who camp overnight on the west side of Tomales Bay in the PRNS. Two of the major factors affecting overnight campsite use by kayakers have been PRNS establishment of camping use permits and restriction of the numbers permitted to camp at any given time. Day use is more difficult to determine since there are many entry points around the bay that are accessible to kayakers.

The California Department of Parks and Recreation also tracks the number of visitors to Tomales State Park. There is an estimated total annual visitation of 124,000 visitors to all units within the park. The water-based recreational usage varies among shoreline locations at the park. These counts are based on cars at parking lots at a particular time multiplied by a factor that reflects the number of passengers. Shell Beaches 1 and 2 and Hearts Desire Beach are the most popular.

Human Environment – Aquaculture:
Tomales Bay (combined with nearby Drakes Estero) is one of four estuaries within the state of California approved by CDPH as suitable for commercial oyster aquaculture, ranking second in the state for production volume. Oyster farming in Tomales Bay dates back to the early 1900s. Currently there are twelve active leases covering an area of 513 acres (with 152 acres of actual footprint from the aquaculture operations). Aquaculture activities in Tomales Bay annually produce about 20 percent of California's commercial oyster crop (CSP, 2004). In addition to oysters, manila clams and mussels are also raised (TBWC, 2007).

The twelve active aquaculture leases in Tomales Bay are held by six companies certified to sell shellfish in California. These leaseholders include: the Brothers Bernal (1 lease, 62 acres), the Cove Mussel Company (1 lease, 10 acres), the Hog Island Oyster Company (4 leases, 163 acres), Marin Oyster Company (2 leases, 30 acres), the Pt. Reyes Oyster Company (3 leases, 92 acres), and Tomales Bay Shellfish Farms, Inc. (1 lease, 156 acres).

The primary species of shellfish cultivated in Tomales Bay include European flat (*Ostrea edulis*), eastern (*Crassostrea virginica*), Pacific (*Crassostrea gigas*), Olympia (*Ostrea lurida*) and Kumamoto (*Crassastrea sikamea*) oysters; Manila (*Venerupis philippinarum*) and littleneck clams (*Protothaca staminea*), bay mussels (*Mytilus edulis and M. galloprovincialis*), and California sea mussels (*M. californianus*). In 2009, the production yields from aquaculture in Tomales Bay were as follows:

TABLE 3 — TOMALES BAY AQUACULTURE PRODUCTION		
SPECIES	**WEIGHT (POUNDS)**	**VALUE**
Pacific Oyster	307,192	$ 1,168,435
Eastern	3,301	$ 66,404
European	0	$ 0
Kumamoto	15,617	$ 421,672
Manila Clam	31,993	$ 159,965
Mussel	17,226	$ 51,678
TOTAL	**701,572**	**$ 3,528,245**

The total weight of production in 2009 was 701,572 pounds and the total value of the shellfish was $3,528,245. Approved aquaculture methods in lease agreements include longline, rafts, rack and bag, longline on stakes, rack and tray, groundline and bag, bottom culture, floats, and modified stakes (CDFG, 2010).

Leases and permits for all aquaculture operations are administered by CDFW, while CDPH oversees the quality and safety of the harvested product. Due to concerns over microbial contamination, each lease has received conditional approval by CDPH; this mechanism allows for closures to be enforced during periods when National Shellfish Sanitation Program (NSSP) standards are not met (e.g. during significant rainfall events) (TBWC, 2007). The shellfish growing areas of Tomales Bay have been given conditional approval by CDPH due to concerns over microbial contamination. The purpose of the conditionally approved classification is to provide a mechanism for the declaration of harvest closures during periods when the growing areas do not meet NSSP standards for harvesting shellfish for direct marketing for human consumption. In Tomales Bay the periods when harvesting shellfish are suspended occur during significant rainfall events (0.4 inches to 0.5 inches) within a 24-hour period.

CDPH oversees shellfish monitoring programs to assure food quality. Two essential programs are the monitoring for indications of contamination by human sewage and for the occurrence of natural biotoxins, such as paralytic shellfish poison, produced by toxic phytoplankton. CDPH follows national ordinances and guidelines to prevent potential contaminants from human sewage including: the NSSP Model Ordinance Chapter IV@05 (2007); the NSSP Model Ordinance Public Health Explanation III.IV@05 (2007); and the U.S. Food and Drug Administration Guidelines for Evaluation of Marinas by State Shellfish Sanitation Control Officials (1989). CDPH applies these ordinances and guidelines by setting safe distances between moorings and shellfish growing operations. The safe distances between moorings and shellfish growing

operations are based on dilution ratios that analyze the number of vessels and volume of water surrounding each vessel relative to fecal coliform dilutions to safe levels (below 14 Most Probable Number) and factor in other viruses and other pathogens. These calculations will be used to determine all approved mooring locations in Tomales Bay, consistent with the vessel mooring siting criteria in *Activity VM 1.1* of this plan.

In the winter months, harvest and sales of shellfish can be restricted for prolonged periods. In 1993, the passage of the Shellfish Protection Act created the Tomales Bay Shellfish Technical Advisory Committee to assess water quality issues and develop recommendations for water quality improvements (TBWC, 2007).

Human Environment – Recreational and Commercial Fishing*:*
Tomales Bay supports both recreational and commercial fisheries. The primary commercial fishery in Tomales Bay is Pacific Herring, driven almost exclusively by the Japanese herring roe market. Smaller commercial fisheries include halibut, perch and livebait. Historically, the bay supported large commercial coho salmon and steelhead fisheries; however, these fisheries are now completely closed due to the species' listing under the Endangered Species Act (TBWC, 2003).

Fish and Game Code permits the use of herring gill nets in Tomales Bay (District 10) for the commercial fishery. The authorizing statute is the Fish and Game Code, sections 8550-8559, and regulations are set forth in Title 14 of the California Code of Regulations, section 163. The herring fishery allows a limited-entry gill net program that targets egg-bearing females as they congregate to spawn. The season runs annually from late December through the end of February, however the fishery is currently inactive due to fleet size, port access, and market conditions, and is not expected to make a comeback in the near future (Bartling, 2012). In 2009, CDFW issued 25-limited entry gillnet permits for the fishery on Tomales Bay, with a quota of 350 tons. Regulations do not exclude fishing in seagrass beds, but the practice is discouraged by CDFW for the protection of spawning habitat and rarely occurs during the commercial fishery.

The predominant recreational fishery is halibut; however, other fish, clams, and crabs are also targeted (TBWC, 2007). Peak levels of recreational halibut fishing occur during the summer months—more than 200 boats per day have been counted during the peak halibut season with many more anglers participating from the shoreline. Recreational fishing in Tomales Bay also attracts those seeking several varieties of clams, Dungeness and rock crabs, perch, jacksmelt, sole, striped bass, sturgeon, and sharks and rays. Steep declines have been documented in the populations of some species that are targeted recreationally in the bay including white sea bass, striped bass (an introduced species), starry flounder, diamond turbot, Pacific sardine, and Pacific littleneck clams. Contamination, too, has affected fishing in the bay; in 2000, Marin County issued a health advisory that recommended low consumption levels for sport-caught halibut, perch, smelt, sharks and rays due to detected mercury levels (Tomales Bay Watershed Council, 2007).

Human Environment – Land Use:
The Tomales Bay watershed is a rural area characterized by abundant open space and a low human population density. Predominant land uses consist of residential and very limited commercial development within unincorporated communities of West Marin County; agricultural uses with a trend towards preservation of agricultural lands; aquaculture and limited commercial fisheries; and parks, recreation and open space uses.

Of the 140,000 acres in the Tomales Bay watershed, about 70% of the land is privately owned with the remainder being publically owned undeveloped land (TBWC, 2007). A human population of approximately 11,000 inhabits nine towns throughout the watershed, with less than 1% of the total area developed into towns and roads (NPS, 2001). The lack of development and substantial areas of public lands and open space is attributable mainly to the rezoning that took place between 1972 and 1975 when the number of potential building sites was reduced from 1.2 million to 3,000 (TBWC, 2003). Two-thirds of the land in the watershed is currently zoned as "A-60", thereby creating a 60-acre minimum parcel size for agricultural lands identified in the Marin County Master Plan (Marin County, 2007). The preservation of open space is also attributable to the establishment of numerous protected areas in the watershed including PRNS and the GGNRA and a variety of state and county parks has contributed the area's rural character.

The communities within the Tomales Bay watershed include Inverness, Inverness Park, developments at Paradise Ranch Estates and Bear Valley, Marshall, Olema, Nicasio, Point Reyes Station, Tomales, and Dillon Beach. The total population of these communities is projected to increase by 10.3% in the next 25 years (TBWC, 2007).

Historically, logging and mercury mining also occurred in the area. Logging began as early as the 1850s and continued until 1970. Following World War II, mercury mining was practiced at seven different locations within the Tomales Bay watershed, with the majority taking place between the late sixties and early seventies (TBWC, 2007). The largest mine, at the Gambonini Ranch in the Walker Creek sub-watershed, closed in 1970. In 1982 a severe winter storm damaged the mine site and resulted in the release of large amounts of mercury-laden sediment into Walker Creek. Remediation of the mine site was completed in 2000; however mercury contamination continues to be problem in Walker Creek (Marin County Department of Public Works, 2010).

Agriculture within the Tomales Bay watershed, mainly consisting of dairy farms and grazing, has been prevalent since the 1800s and accounts for about 55% of the total watershed area. Although there has been a decrease in the number of operations over time, in 2007 there were still ten active dairies in the watershed (TBWC, 2007).

Human Environment – Water Supply and Sewage Treatment:
Four water districts supply water to residents in the Tomales Bay watershed. The supply is sourced from groundwater, springs and surface water within the region. Two of the water districts supply water to the majority of their customers located outside of the watershed. Many rural residences and farms in the Tomales Bay region rely on wells, springs, or farm ponds on the property for water (TBWC, 2007).

There are approximately 7,000 septic systems in Marin County; however, the exact number and

locations of septic systems in the Tomales Bay watershed has not yet been determined. This information exists for only about half the septic systems in the watershed, particularly for those constructed since new septic regulations were adopted in 1984. In 2003, there were 212 septic parcels within 100 feet of Tomales Bay or a creek draining to the bay on the west shore, 186 on the east shore, 808 within 100 feet of a creek or reservoir in the Lagunitas Creek sub-watershed, and 100 within the Walker Creek sub-watershed. Many of the septic systems on these parcels are immediately adjacent to water bodies while others are hundreds of yards away. In addition, there are nine sewage treatment facilities in the Tomales Bay watershed, each regulated by the RWQCB. The methods for waste treatment at these facilities vary from digesters with primary and secondary treatment to holding ponds and subsequent spreading of treatment by-products (TBWC, 2003).

C. BIOLOGICAL ENVIRONMENT

Biological Environment Introduction:
Tomales Bay is one of the most ecologically significant estuarine areas in California. The bay and its watershed support more than 900 species of plants and animals within a diversity of habitats, including eelgrass beds, intertidal sand and mud flats, and salt and freshwater marshes. Many of these species are listed as threatened and endangered under the Endangered Species Act, or are otherwise identified as *Species of Concern* by state and federal agencies (Marin County Department of Public Works, 2010). A wide diversity of land and aquatic mammals can also be found in and around Tomales Bay, including mountain lions, deer, elk, and river otters, which have been sighted in Lagunitas Creek.

In addition sand dunes and intertidal, subtidal, and benthic marine habitats, the Tomales Bay watershed also supports estuarine wetland habitat along its periphery including mud flats, salt marshes, and freshwater marshes. Small islands in the bay provide roosts for birds and haul out areas for marine mammals (Marinwatersheds.org). The marshes at the headwaters of the bay were once much more extensive than they are today, but much of the land has been converted into pasture land since the region was settled in the 1800s; however, many marshes were created along the east shore of the bay when new railroad tracks blocked the waters, allowing marsh plants to become established. The marshes of the bay support a diversity of flora and fauna, as well as enhance the bay's water quality by filtering water (Evens, 1993). Marshes serve many roles, for example, by being part of the migratory path of many species of shorebirds and waterfowl along the Pacific flyway and serving as important foraging and breeding areas for the many birds in Tomales Bay (Evens, 1998; Kelly and Tappen, 1998). The watershed's marshes also serve as valuable spawning and nursery areas for anadromous fish, such as coho salmon and steelhead trout.

Biological Resources – Seagrass:
Large seagrass beds grow in the northern half of the bay with smaller ones lining the eastern shore (Marinwatershed.org). Seagrass and red algae (*Gracilaria spp.*) cover approximately 1.5 square miles (13%) of Tomales Bay. The seagrass species found in Tomales Bay is *Zostera marina*, commonly called eelgrass. Large subtidal meadows of eelgrass grow in the northern portion of Tomales Bay between Pelican Point and Tom's Point where temperatures, salinities, and tidal exchange resemble those in the Pacific. Eelgrass is an easily recognizable aquatic plant with thin ribbon-like leaves 10-20 inches long and three veins running along their length. Living eelgrass leaves are green; however, black or grayish-white leaves are often found washed up on the shore. Unlike kelp, eelgrass is a flowering plant and not an alga, and therefore relies on the release of pollen for reproduction (Stout, 2009).

Eelgrass provides important habitat for numerous fish and other organisms in Tomales Bay, including bay pipefish, shiner perch, arrow goby, northern anchovy, California halibut, Pacific staghorn sculpin, coho salmon, steelhead, Pacific herring and other fish. One study determined that there are ten to 100 times more animals in eelgrass beds than adjacent sandy or muddy habitats (Hemminga and Duarte, 2000). High concentrations of fish are found in eelgrass habitat for several reasons: it provides abundant food sources (including algae, fish, invertebrates, and

detritus); it provides a hiding space for many species of fish, protecting them from predation by larger fish and birds; and eelgrass beds serve as an important nursery ground, providing a safer place for larvae and juvenile fish to feed and grow. Moreover, some species of fish use eelgrass beds for their spawning grounds, including the commercially important Pacific herring, which relies on abundant eelgrass beds to support its roe (Heck et al., 1989). Other commercially valuable species feed in eelgrass beds at some point in their lives as well, including Dungeness crabs, rockfish, salmon and Pacific herring (Stout, 2009).

Eelgrass beds also help to support a very large population of birds on Tomales Bay, which feed on eelgrass, fishes, and invertebrates in the beds and adjacent areas. For example, the eelgrass beds of the bay are used by black brant visiting Tomales Bay to feed and rest during their annual 3000-mile migration between their feeding grounds in the Arctic and their wintering grounds in the estuaries and lagoons of southern British Columbia, the United States and Mexico (Derksen et al., 1998).

In addition to supporting fish and birds, eelgrass sustains a myriad of invertebrate species: clams, shrimp, snails, nudibranchs, amphipods, worms, and bryozoans consume tiny algae that grow on eelgrass blades and filter detritus and phytoplankton from the water. In turn, these animals provide food for many other animals that live and/or feed in eelgrass beds.

Eelgrass provides ecosystem services beyond providing habitat and food for animals. It improves water quality along the coast by trapping sediments and nutrients; an acre of healthy seagrass habitat can absorb approximately 6 pounds of nutrients per year, or the equivalent of treated effluent from 490 people. With fewer nutrients available in the water column, phytoplankton are less likely to multiply rapidly, thereby reducing algal blooms that can degrade water quality. Eelgrass also sequesters carbon; it is estimated that one acre of eelgrass can absorb 7,401 pounds of carbon per year, or the equivalent of the CO_2 emissions from an automobile that has traveled 3,860 miles. In some cases eelgrass can help to prevent shoreline erosion by buffering the impacts of wave energy and storms (Duarte et al., 2005).

Because of their ecological importance and vulnerability to impacts from humans, eelgrass beds are protected in several different ways: they are designated as "special aquatic sites" under Section 404(b)(1) Guidelines of the CWA; designated as *Essential Fish Habitat* (EFH) under the Magnuson-Stevens Fishery Conservation Management Act; and protected under CDFW regulations. Moreover, GFNMS regulations also offer protection through prohibiting vessel anchoring within Tomales Bay Seagrass Protection Zones.

Biological Resources – Wildlife:
The watershed is especially important to a very large number of wintering shorebirds, seabirds, and waterbirds, among many other bird species that occur both seasonally and year-round (Kelly, 1998). During the winter months as many as 50,000 waterbirds may depend on the bay (Kelly & Tappen, 1998), and it is estimated that 20,000 shorebirds use the eelgrass beds and adjacent areas in Tomales Bay as a feeding ground. Some of these bird species include surf scoter, greater scaup, great blue heron, marbled godwit, western sandpiper, dunlin, and willet (Derksen et al., 1998).

Several species of marine mammals have been documented in the bay. Seals and sea lions use the bay as a feeding ground and haul-out along the shoreline. There is a large resident harbor seal population that breeds there; their population ranges between 500 and 800 seals depending on the time of year. Gray whales forage at the mouth of the bay and at times enter the bay (Marin County Department of Public Works, 2010).

Areas where species are particularly vulnerable to disturbance are Hog Island, Pelican Point and tidal sand bars north of Tom's Point. Motorboats have been observed disturbing birds at Pelican Point, Hog Island, and those resting on the bay. In the past five years, a colony of Double Crested Cormorants began nesting on Hog Island and has been disturbed on occasion by recreational visitors accessing the area by vessel.

Tomales Bay is one of several locations along the Point Reyes Peninsula where harbor seals (*Phoca vitulina richardii)* congregate onshore. The harbor seal colony in the bay is part of the larger Point Reyes population, which represents about 20% of the estimated breeding population of California (Allen, 1992). Harbor seals come to Tomales Bay to breed and molt in the spring and summer and to feed on herring and other marine fish species. They haul out to give birth and rest on tidal sand bars, and sandy pocket beaches, especially on Hog Island and near Tom's Point. Disturbance patterns for the seal haul-out areas near Tom's Point have been studied for a number of years. The studies have included observations of disturbance patterns. Seals in Tomales Bay exhibited the highest disturbance level of any haul out within Point Reyes; for example, seals were disturbed on 49% of the observation days, compared with 29% at Double Point in Point Reyes. The study determined that recreational clammers and fisherman caused 51% of the disturbances, boaters accounted for 30%, hikers 14% and dogs 5% (Allen and Huber, 1984).

In a separate study, from 1991 through 1994, seals were disturbed on 81% of the observation days (almost double the number of disturbances noted in earlier studies) (Allen and King, 1992). Overall, 1.2 disturbances to seals by humans were recorded every hour in 1991, which was the highest rate of disturbance ever reported on the West Coast (Mortenson, et al., 1999). Allen and King (1992) also noted that the seals had mostly deserted their Hog Island haul-out sites.

In 1998, PRNS, GFNMS and the Farallones Marine Sanctuary Association initiated a study to determine the types and levels of disturbances to seals within Tomales Bay, in conjunction with a docent program to help reduce disturbances. Data collected over the next six years demonstrated a shift from clamming to boating activity as the primary cause for disturbance. Finally, motorboats also cause impacts to local wildlife stemming from increased noise pollution, gas and oil discharge, and sewage discharge.

Biological Resources – Fish:

The waters of the bay are also important to many fish species, such as salmon (including endangered coho), eels, sturgeon, halibut, and Pacific herring. These species rely on the bay's many creeks and eelgrass beds to spawn. There is still a significant population of wild coho salmon in the Lagunitas creek area, a major tributary of the Tomales Bay watershed. It is estimated that up to 10% of the population for the Central California Coast Evolutionarily Significant Unit (ESU) for coho salmon is located in this area. Chinook and chum salmon have also been observed in Lagunitas Creek. Pacific lampreys spawn in Lagunitas Creek, and until the early 1980s, green sturgeon inhabited the creek (Marin County Department of Public Works, 2010).

Biological Resources – Special Status Species:
Several species that are listed as threatened, endangered, or as a species of concern by state and federal agencies can be found in or around Tomales. Species that may be affected indirectly by the proposed action include: steelhead (*Oncorhynchus mykiss*); red-legged frogs (*Rana aurora*); western snowy plover (*Charadrius alexandrinus*); tidewater goby (*Eucyclogobius newberryi*); Steller sea lions (*Eumetopias jubatus*); California black rail (*Laterallus jamaicensis coturniculus)* and clapper rail (*Rallus longirostris obsoletus*); bank swallow (*Riparia riparia);* sandhill crane (*Grus canadensis tabida*); and leatherback (*Dermochelys coriacea)* and olive ridley sea turtles *(Lepidochelys olivacea)* (Marin County Department of Public Works, 2010; NPS, 2007).

Biological Resources – Introduced Species:
Non-native species are introduced into Tomales Bay in several ways. Historically, the main sources were ballast water and aquaculture activities. Near-shore currents that carry larvae and plants north from the San Francisco Bay, the most highly invaded estuary in the United States, have caused more recent introductions.

In order to further prevent injury to natural resources and to protect the integrity of the marine ecosystem, GFNMS has promulgated a new regulation to prevent the intentional introduction of non-native species into the marine environment. The regulation prohibits introducing or otherwise releasing an introduced species from within or into the GFNMS an introduced species, with the exception of: (1) striped bass released during catch and release fishing activities, and (2) species cultivated by a aquaculture activity within the area of the sanctuary lying within the seaward boundary of the State of California and authorized by a valid lease, permit, license or other authorization issued by the State [15 CFR § 922.82 (a) (10)]. An "introduced species" is defined generally in the regulation as one that is non-native to the ecosystems protected by the GFNMS. The prohibition is designed to help reduce the risk from introduced species that may become invasive, and provides additional protection to the biodiversity of the GFNMS ecosystem. Although this regulation is not 100% effective in preventing the accidental release of introduced species, the regulation does provide a deterrent to deliberate releases and could prevent introductions associated with specific planned programs or projects.

Additionally, various state and federal regulations prohibit the introduction of non-native and invasive species into California waterways: these laws and regulations include Executive Order 13112, February 1999; the Non-Native invasive Species Act of 1996; 50 CFR 58976; SB 497 signed into California law in 2006, the California Marine Invasive Species Act of 2003, AB 703 signed into California law in 1999, and various provisions of the California Fish and Game Code and Public Resources Code.

Figure 9: Natural Resource Protection Siting Criteria Map

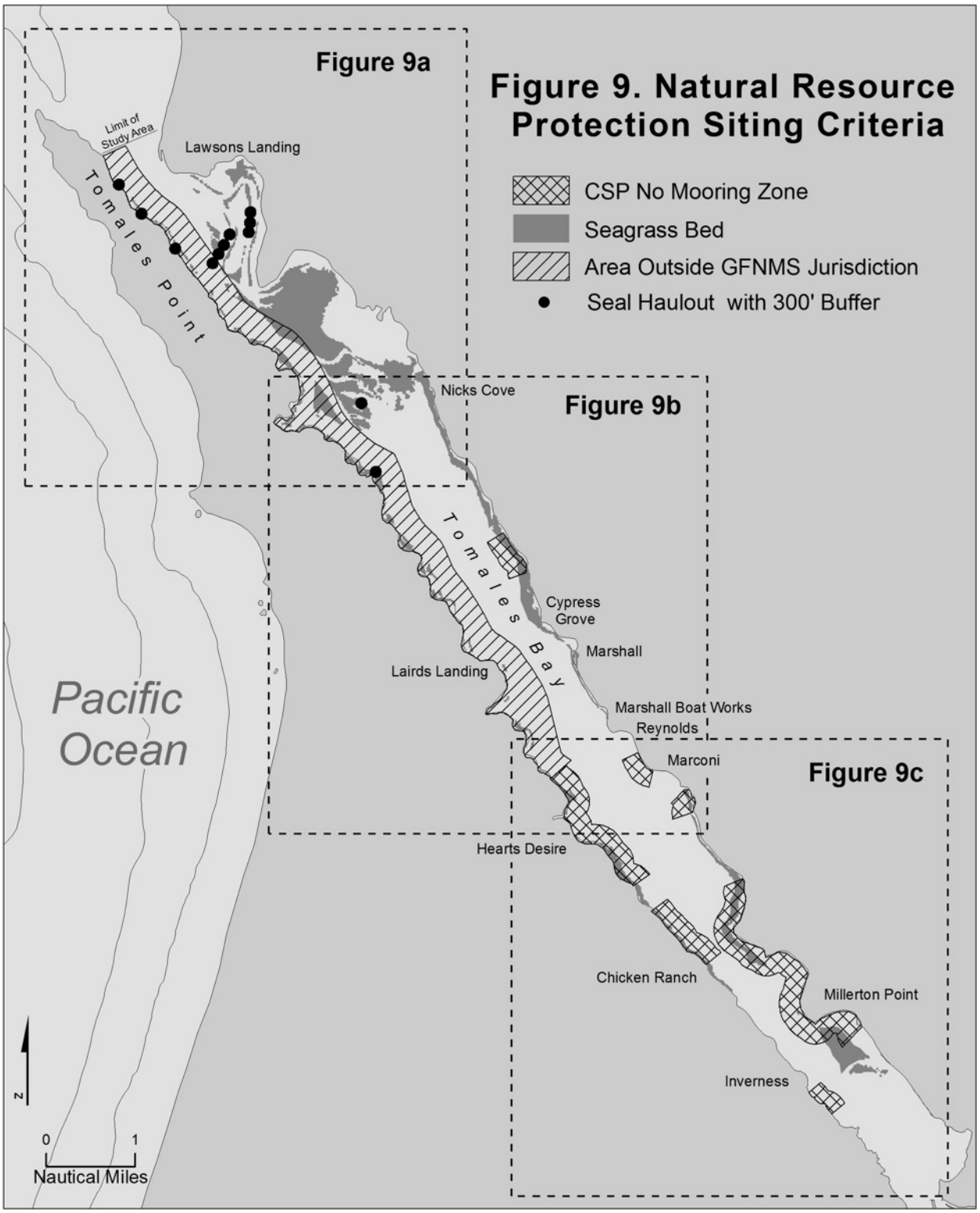


Figure 9a: Natural Resource Protection Siting Criteria Map (inset)

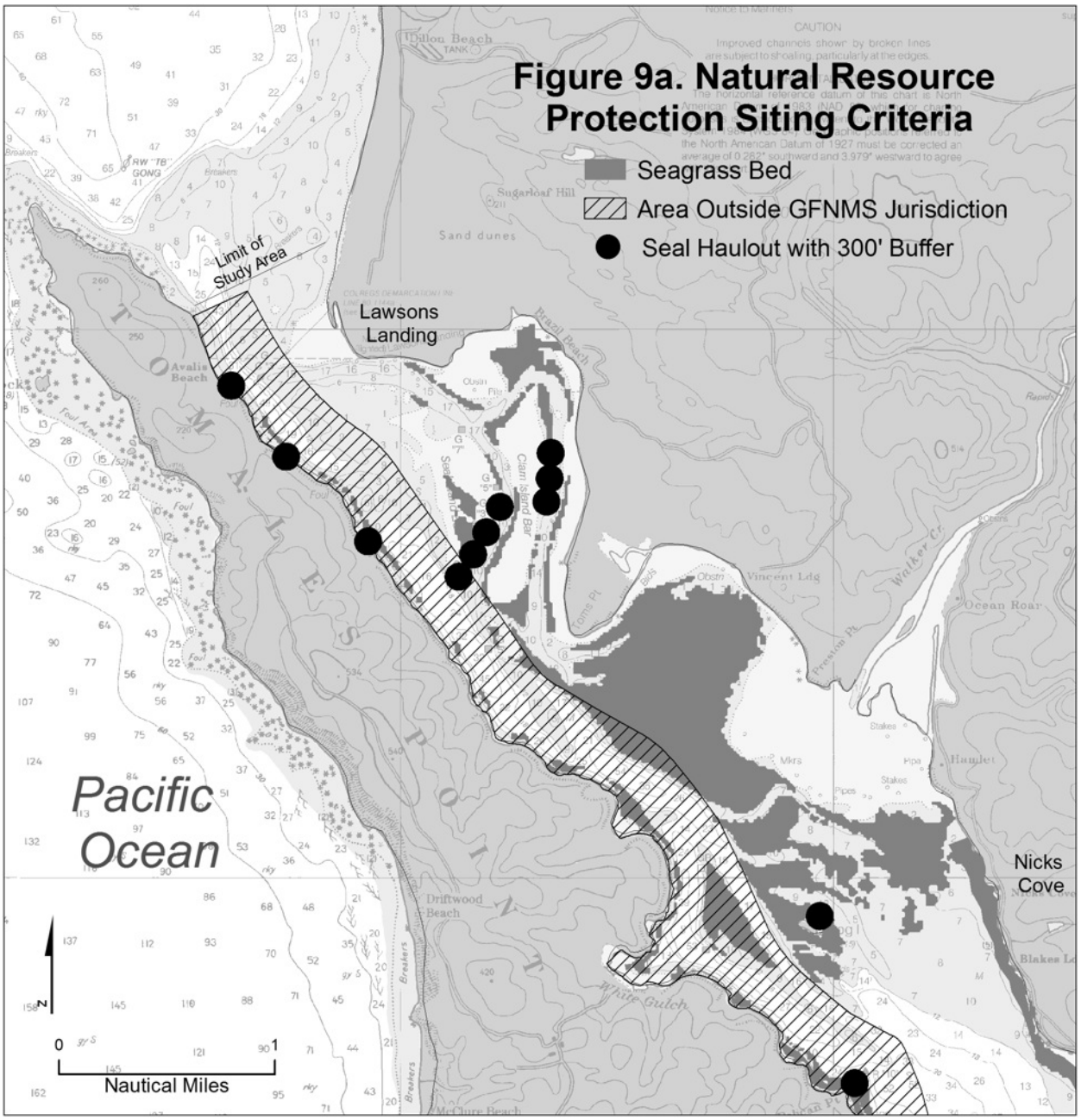


Figure 9b: Natural Resource Protection Siting Criteria Map (inset)

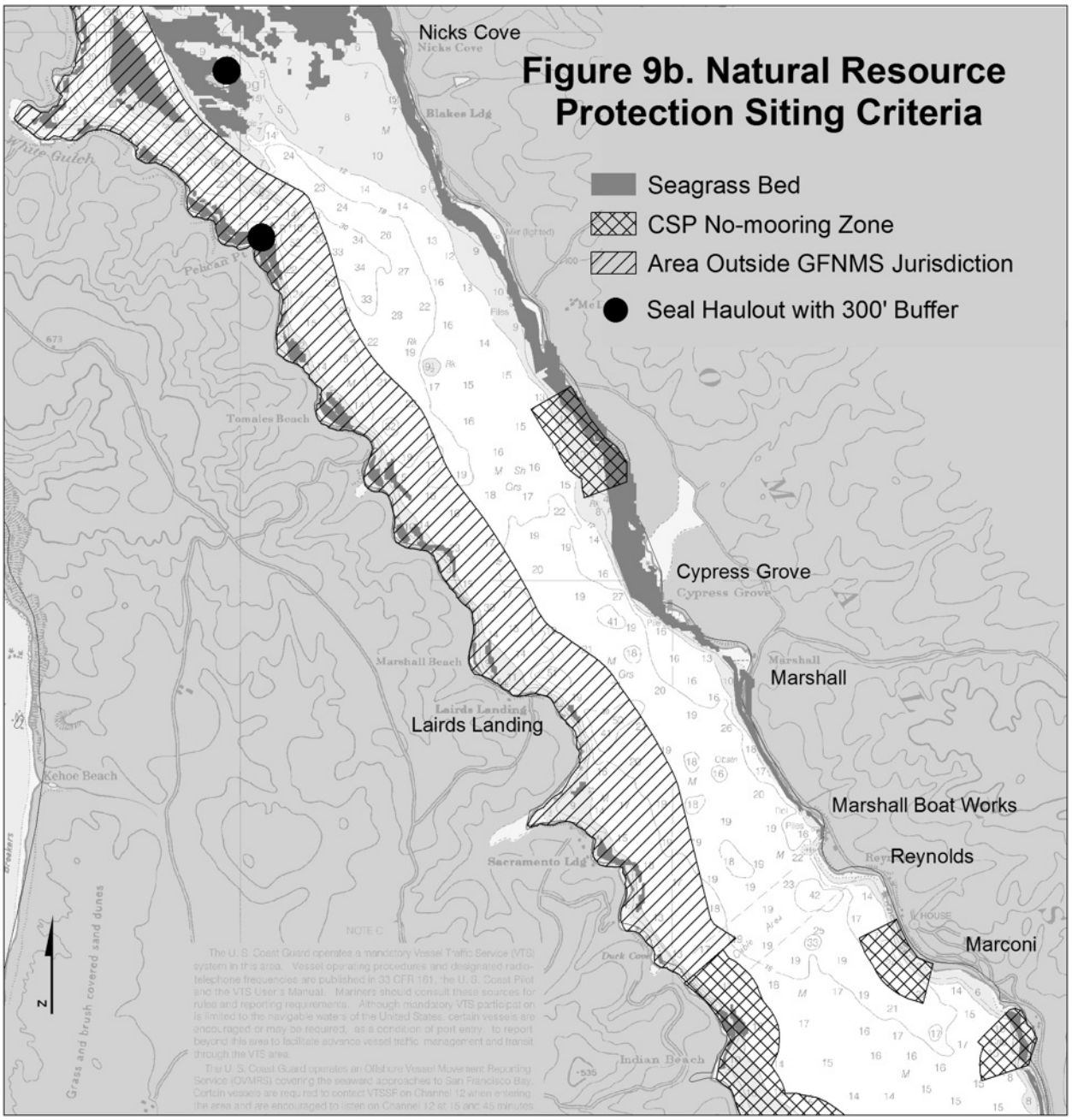
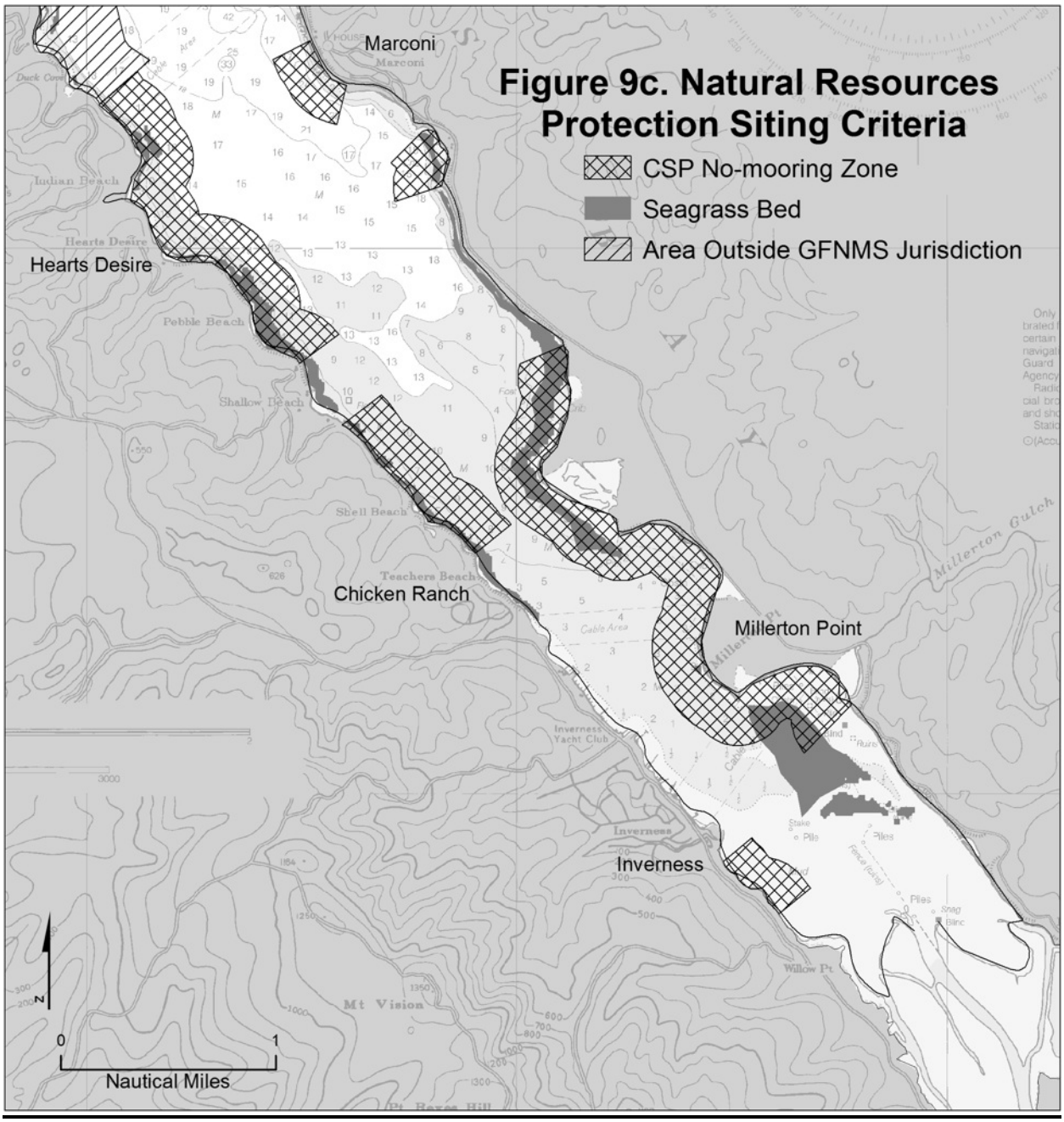


Figure 9c: Natural Resource Protection Siting Criteria Map (inset)



ADDITIONAL REFERENCES

STUDIES AND REPORTS:

GFNMS Management Plan: http://farallones.noaa.gov/manage/management_plan.html
The National Marine Sanctuaries Act: http://sanctuaries.noaa.gov/about/legislation/
Tomales Bay Marinas and Public Access Site Survey:
http://www.waterboards.ca.gov/sanfranciscobay/publications_forms/documents/Tomales%20Bay%20FINAL%20REPORT.doc
Tomales Bay TMDL and Amended Basin Plan:
http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/tomalespathogens/09-21-05finalbpa.pdf
Tomales Bay State Park General Plan: http://www.parks.ca.gov/?page_id=22224

TOMALES BAY INTERAGENCY COMMITTEE WEBSITES:

GFNMS: http://farallones.noaa.gov
CSLC: http://www.slc.ca.gov
CCC: http://www.coastal.ca.gov/
CDBW: http://www.dbw.ca.gov/
CDFW: http://www.dfg.ca.gov/
CDPH: http://www.cdph.ca.gov
CalTrans: http://www.dot.ca.gov/
CSP: http://www.parks.ca.gov/
Marin County: http://www.co.marin.ca.us/
Marin County Sheriff's Office: http://www.marinsheriff.org/
PRNS: http://www.nps.gov/pore/planyourvisit/index.htm
SWRCB: http://www.swrcb.ca.gov/
RWQCB: http://www.swrcb.ca.gov/rwqcb2/

OTHER TOMALES BAY RELATED WEBSITES:

Tomales Bay Watershed Council: http://www.tomalesbaywatershed.org
Tomales Bay State Park: http://www.parks.ca.gov/?page_id=470
http://www.marinwatersheds.org/tomales_bay.html
PRNS Association Website: http://www.tomalesbay.net/

RESPONSIBLE BOATING WEBSITES:

California Coastal Commission Links:

http://www.coastal.ca.gov/ccbn/ccbndx.html
http://www.coastal.ca.gov/ccbn/catalognew.html
Dockwalkers Program: http://www.coastal.ca.gov/ccbn/dockwalkers.html

California Boating Laws and Regulations:

Boating Laws and Regulations: http://www.dbw.ca.gov/LawsRegs/
California Boating Law: http://www.dbw.ca.gov/PDF/LawEnforc/2010CBL.pdf
ABC's of the California Boating Law: http://www.dbw.ca.gov/Pubs/Abc/ABCFull.pdf
Boat Registration information: http://www.dmv.ca.gov/boatsinfo/boat.htm

REFERENCES CITED

Allen, SG. 2006. Point Reyes National Seashore. Personal communication with author, January 10, 2006.

Allen SG and Huber. 1984. *Assessment of pinniped/human interactions in Point Reyes, California 1983-1984*. Initial Report to the Sanctuary Programs Office, National Oceanic and Atmospheric Administration.

Allen SF and King ME. 1992. *Tomales Bay Harbor Seals: A Colony at Risk*. Proceedings from the 3rd Biennial State of Tomales Bay Conference, 1992.

Bartling, Ryan. CDFW. 2012. *Personal communication by email,* December 02,2012.

Berg, D.E., Kohn, M.A., Farley, T.A. 2000. *Multi-state Outbreaks of Acute Gastroenteritis Traced to Fecal-Contaminated Oysters Harvested in Louisiana*. Journal of Infectious Diseases, 2000;181(Suppl2):S381-6.

CDBW. 2004. *Report to the State Water Resources Control Board: Recommendations for Pumpout and Dump Stations in Tomales Bay*. Final Report, July 21, 2004.

California Coastal Commission. 2004. *California Clean Marina Toolkit: A Resource for Environmentally Sound Marina Management and Operation.* http://www.coastal.ca.gov/ccbn/toolkit/marina-toolkit.pdf

California Department of Public Health. 2002. *Twelve Year Sanitary Survey Report: Shellfish Growing Classification for Tomales Bay, California*.

California Department of Public Health. 2007. *Letter transmitted by A. Marc Commandatore to Gulf of the Farallons National Marine Sanctuary* on January 22, 2007; and *personal communication* August 27, 2007.

California State Coastal Conservancy. 1984. *A Program for Restoring the Environment of Tomales Bay.* State Coastal Conservancy, Oakland, California. 1984

California State Parks. 2004. *The Tomales Bay State Park General Plan- Volumes 1and 2*.

Carlton, J.T. 1992. *Introduced Marine and Estuarine Mollusks of North America: an End-of-the-20th-Century Perspective.* Journal of Shellfish Research, 11: 489-505.

Commandatore, Marc. 2006. Department of Public Health. *Personal communication with author*, Feb 1, 2005.

Derksen, Dirk V., Karen S. Bollinger, David H. Ward, James S. Sedinger, Yoshihiko Miyabayashi. 1998. *Black Brant from Alaska Staging and Wintering in Japan*. The Condor 98:653-657.

Duarte, C. M., J. J. Middelburg, and N. Caraco. 2005. *Major role of marine vegetation on the oceanic carbon cycle.* Biogeosciences 2: 1-8.

EPA. 2001. *Using Your Head To Help Protect Our Aquatic Resources.* A brochure by the United States Environmental Protection Agency, Office of Water.

Evens, JG. 1993. The Natural History of the Point Reyes Peninsula. Revised Edition. Point Reyes National Seashore Association.

Fisher, J.S., R.R. Perdue, M.F. Overton, M.D. Sobsey, and B.L. Sill. 1987. *Comparison of Water Quality at Two Recreational Marinas During a Peak-Use Period.* University of North Carolina Sea Grant College Program, Raleigh, NC.

Francour, P. Ganteaumea, A., and Poulain, M. 1999. *Effects of boat anchoring in Posidonia oceanica seagrass beds in the Port-Cros National Park (north-western Mediterranean Sea).* Aquatic Conservation. 9: 391–400

Gaines, A.G., and A.R. Solow. 1990. *The Distribution of Fecal Coliform Bacteria in Surface Waters of the Edgartown Harbor Coastal Complex and Management Implications*. Woods Hole Oceanographic Institution, Woods Hole, MA.

Gulf of the Farallones National Marine Sanctuary (GFNMS). (2008).
Designation Document. Federal Register, 15 CFR Part 922

Grosholz, E. D., and G. M. Ruiz. 1995. *Spread and potential impact of the recently introduced European green crab, Carcinus maenas, in central California*. Marine Biology 122:239-247.

Heck, Jr., K. L., K. W. Able, M. P. Fahay, C. T. Roman. 1989. *Fishes and decapod crustaceans of Cape Cod eelgrass meadows: Species composition, seasonal abundance patterns and comparison with unvegetated substrates*. Estuaries 12(2): 59-65.

Hemminga, Marten and Carlos Duarte. 2000. *Seagrass Ecology: An introduction*. Cambridge: Cambridge University Press.

Johnson, Leigh Taylor. 1998. *Environmental Impacts of Pleasure Craft*. University of California Cooperative Extension and Sea Grant Extension Program. San Diego, CA.

Kelly, J.P., J.G. Evens, R.W. Stallcup, and D. Wimpfheimer. 1996. *Effects of aquaculture on habitat use by wintering shorebirds in Tomales Bay, California.* Calif. Fish Game 82(4):160-174.

Kelly, J.P. 2001. *Distribution and Abundance of Winter Shorebirds on Tomales Bay, California: Implications for Conservation.* Western Birds, 32 (3).

Kelly JP and Tappen SL. 1998. *Distribution, Abundance, and Implications for Conservation of Winter Waterbirds on Tomales Bay, California.* Western Birds, 29:103-120.

Kentworthy, W. J., Hammerstrom, K., Fonseca, M. 2006. *Scientific Evaluation of Sediment Fill Technique for the Restoration of Motor Vessel Injuries in Seagrass Beds of the Florida Keys National Marine Sanctuary,* NOAA/NOS/NCCOS Center for Coastal Fisheries and Habitat Research, Beaufort, North Carolina, p.229.

Leonard, D.L., M.A. Broutman, and K.E. Harkness. 1989. *The Quality of Shellfish Growing Water on the East Coast of the United States.* U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Rockville, MD.

Marco Milazzo, Renato Chemello, Fabio Badalamenti, Raffaele Camarda, Silvano Riggio. 2002. *The Impact of Human Recreational Activities in Marine Protected Areas: What Lessons Should Be Learnt in the Mediterranean Sea*? Marine Ecology 23 (s1), 280–290.

Marin County Department of Public Works. 2010. *Marin County Watershed Program Website*. http://marinwatersheds.org/tomales_bay.html

Michel et al. 2002. *Abandoned Vessels: Impacts to Coral Reefs, Seagrass, and Mangroves in the U.S. Carribean and Pacific Territories with Implications for Removal*. Marine Ecology. 23, 26-35.

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, RI.

Moore, Tom. 2006. California Department of Fish and Game. *Personal communication and information provided*.

Mortenson et al. 1999. *Seal Sanctuary Education Awareness and Long-term Stewardship. Annual Report – 1999*. Unpublished Report, National Oceanic and Atmospheric Administration, Gulf of the Farallones National Marine Sanctuary, San Francisco, CA.

National Park Service. 2001. *Tomales Bay: Guidelines for Protection and Use*. Point Reyes National Seashore. Point Reyes Station, CA.

National Park Service. 2007. *Final Environmental Impact Statement/Environmental Impact Report for the Giacomini Wetland Restoration Project.*

Niemi, T.M. and N.T. Hall. 1996. *Historical changes in the tidal marsh of Tomales Bay and Olema Creek, Marin County, California*. Journal of Coastal Research. 12: 90-102.

North Carolina Department for Environmental Management (NCDEM). (1990). *North Carolina Coastal Marinas: Water Quality Assessment.* North Carolina Division of Environmental Management, Raleigh, NC. Report No. 90-01.

North Carolina Department for Environmental Management (NCDEM). (1991). *Coastal Marinas: Field Survey of Contaminants and Literature Review*. North Carolina Division of Environmental Management, Raleigh, NC. Report No. 91-03.

Olyarnik, Suzanne. 2006. *Seagrass Beds in Tomales Bay: The Unsung Heroes of Habitat*. Presentation provided at Olema, California, for the GFNMS on December 7, 2006.

Orth, Robert J., Carruthers, Tim J.B., Dennison, William C., Duarte, Carlos M., Fourqurean, James W., Heck, Jr., Kenneth L., Hughes, A. Randall, Kendrick, Gary A., W. Judson, Kenworthy, Olyarnik, Suzanne, Short, Fred T., Waycott, Michelle, Williams, Susan L. 2006. *A Global Crisis for Seagrass Ecosystems*. BioScience 56(12): 987-996.

Port of Oakland. 2001. Clean Water Team-brochure-*What You Should Know About Derelict and Abandoned Vessels*.

Prunuske-Chatham, Inc. 2003. *Survey of Water-Based Recreational User Activities in Tomales Bay*. Prepared for Marin County Community Development Agency, Revised Draft, June 2003.

SFSU Public Research Institute. 1998. San Francisco State University. *Boating Clean and Green Survey for the California Coastal Commission*.

Rasmussen E. 1977. *The Wasting Disease of Eelgrass (Zostera marina) and its Effects on Environmental Factors and Fauna*. McRoy CP, Helfferich C, eds. Seagrass Ecosystems. New York: Marcel Dekker. Pages 1–51.

San Francisco Regional Water Quality Control Board. 2005. *Pathogens in Tomales Bay Watershed Total Maximum Daily Load (TMDL) Staff Report.* California Regional Water Quality Control Board, San Francisco Bay Region.

RWQCB, San Francisco Estuary Project. *How Vessel Sewage Discharges Effect the Environment*. From website: http://sfep.abag.ca.gov/programs/vesseled/sewage.html.

Sawyer, C.M., and A.F. Golding. 1990. *Marina Pollution Abatement.* International Marina Institute, Wickford, RI.

Seabloom, R.A., G. Plews, F. Cox, and F. Kramer. 1989. *The Effect of Sewage Discharges from Pleasure Craft on Puget Sound Waters and Shellfish Quality*. Washington State Department of Health Shellfish Section, Olympia, WA.

Stout, Prentis K. 2009. Rhode Island Sea Grant Fact Sheet *Eelgrass (Zostera marina) Flowering plants of the sea.* http://seagrant.gso.uri.edu/factsheets/eelgrass.html.

Tomales Bay Biodiversity Partnership. 2010. Website: www.tomalesbaylife.org/invasive_species.htm.

Tomales Bay Watershed Council. 2003. *The Tomales Bay Watershed Stewardship Plan: A Framework for Action*. http://www.tomalesbaywatershed.org/stewardship_framework.pdf

Tomales Bay Watershed Council. 2007. *Tomales Bay Integrated Coastal Watershed Management Plan (ICWMP)*.

Tomales Bay Watershed Council. 2010. TBWC Website: www.tomalesbaywatershed.org/watershed.

University of California Cooperative Extension. 1995. *The Marin Coastal Watershed Enhancement Project Final Report*. Novato, CA.

San Francisco Bay Regional Water Quality Control Board. 2005. *Pathogens in Tomales Bay Watershed Total Maximum Daily Load Staff Report*.

Vilicich, John. 2006. *Personal communication with Maria Brown, GFNMS Superintendent.*

Walker, D.I., Lukatelich, R.J., Bastyan, G. and McComb, A.J.. 1989. *Effect of boat Moorings on Seagrass Beds near Perth, Western Australia*. Aquatic Botany. 36, pp. 69–77.

ACKNOWLEDGEMENTS

The GFNMS and CSLC would like to acknowledge the agencies and their representatives that have consistently devoted time and resources to consider vessel usage issues in Tomales Bay and to develop the draft TBVMP. The current members of the Committee include:

Jack Gregg	California Coastal Commission
Kevin Atkinson	California Department of Boating and Waterways
Ryan Bartling	California Department of Fish and Wildlife
Vanessa Zubkousky-White	California Department of Public Health
Kit Stycket	California Department of Transportation
Roy McNamee	California State Parks
Dave Mathews	California State Parks
Maria Brown	NOAA Gulf of the Farallones National Marine Sanctuary
Karen Reyna	NOAA, Gulf of the Farallones National Marine Sanctuary
Tim Reed	NOAA, Gulf of the Farallones National Marine Sanctuary
Brad Damitz	NOAA, Gulf of the Farallones National Marine Sanctuary
Doug Pittman	Marin County Sheriff's Department
Ben Berto	Marin County Community Development Agency
David Schifsky	National Park Service, Point Reyes National Seashore
Naomi Feger	San Francisco Regional Water Quality Control Board
Eric Gillies	California State Lands Commission
Grace Kato	California State Lands Commission

Over time, IC representation has changed. GFNMS would like to thank the many people who in the past have participated in meetings, contributed to shaping the proposed actions and provided information and support including Rebecca Tuden, Miriam Gordon, Tom Moore, Lisa Sniderman, Mike Sotelo, A. Marc Commandatore, Peter Krottje, Vivian Matuk, Rose Blackburn, Scott Anderson, Dave Schirokauer, Ed Ueber, Bill Price, John West, Dale Hopkins, Rico Duazo, Michael Blasi, Dave Plummer, Nanci Smith, Susan Young, and Dwight Sanders.

ENVIRONMENTAL ASSESSMENT AND INITIAL STUDY
FOR THE
TOMALES BAY VESSEL MANAGEMENT PLAN

Prepared by:
Gulf of the Farallones National Marine Sanctuary
Office of National Marine Sanctuaries
National Ocean Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

and

California State Lands Commission
Division of Environmental Planning and Management

April 2013

I. INTRODUCTION

PURPOSE AND SCOPE OF THE ENVIRONMENTAL ASSESSMENT/INITIAL STUDY

This Environmental Assessment/Initial Study (EA/IS) has been prepared by National Oceanic and Atmospheric Administration (NOAA) Gulf of the Farallones National Marine Sanctuary (GFNMS) staff and the California State Lands Commission (CSLC) staff to assess the potential environmental and socioeconomic effects associated with the implementation of the Tomales Bay Vessel Management Plan (TBVMP) (proposed action/preferred alternative) as well as a No Action Alternative. The TBVMP reflects a multi-agency effort to streamline and coordinate management of vessel-related activities in Tomales Bay. The intended outcome of this proposed action is a coordinated, collaborative plan that recommends specific actions and provides guidance related to vessel use and related activities to the agencies and the public. The purpose and need for this action is to improve the water quality, protect and restore the natural resources and ensure public health and safety of water-related uses of the bay. The TBVMP does not establish any new legal authorities; none of the proposed actions will alter existing authorities with regard to management of resources or regulation of activities within Tomales Bay.

This joint document is intended to fulfill requirements of the National Environmental Policy Act (NEPA) for an Environmental Assessment (EA) and of the California Environmental Quality Act (CEQA) for an Initial Study/Negative Declaration (IS/MND). The EA/IS utilizes NEPA criteria required by NOAA Administrative Order (NAO) 216-6 (revised May 20, 1999) and California CEQA Guidelines and potential impacts checklist for determining the significance of the impacts of a proposed action. GFNMS is the lead federal agency for the development and future implementation of the TBVMP as well as for this NEPA analysis and CSLC is the lead state agency in the development and implementation of the plan and the CEQA analysis.

This EA/IS provides the following information:

1. A description of the proposed action and alternatives.

2. A description of the physical, biological, socioeconomic, and historical resources in the area that may be affected by the proposed action.

3. A discussion of the potential effects of the proposed action on the environmental and socioeconomic resources of the area.

LIST OF PREPARERS FOR THIS EA/IS:

Maria Brown, GFNMS
Brad Damitz, GFNMS
Karen Reyna, GFNMS
Vicki Wedell, ONMS
Theodore W. Beuttler, NOAA General Counsel

Eric Gillies, CSLC
Cy Oggins, CSLC
Grace Kato, CSLC

PARTICIPATING AGENCIES' AUTHORITIES AND RESPONSIBILITIES

The TBVMP was prepared by GFNMS and CSLC. The following is a brief description of the two lead agencies, GFNMS and CSLC. For more detailed descriptions of GFNMS, CSLC and their partner agencies involved in the development of the plan, refer to *Section I* and *Appendix III* of the TBVMP.

NOAA - Gulf of the Farallones National Marine Sanctuary (GFNMS)

GFNMS includes all submerged lands and waters of Tomales Bay to the mean high water line throughout the bay, except for the Point Reyes National Seashore owned tide and submerged lands on the western shore of Tomales Bay as depicted in *Figure 6*, and identified as *Area Outside GFNMS Jurisdiction*. Pursuant to the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1431-1445c), NOAA has the authority for comprehensive and coordinated conservation and management of the sanctuary, including Tomales Bay. The subsequent designation of the site in 1981 provided GFNMS with the authority to regulate certain activities within its boundaries, pursuant to the NMSA.

Currently, with certain exceptions, GFNMS regulations generally prohibit the following activities within the sanctuary (for full text of GFNMS prohibitions see 15 CFR Part 922.82):

- Discharges or deposits of materials or matter directly into the sanctuary;
- Discharges or deposits of materials from outside the sanctuary that enters and injures sanctuary resources;
- Constructing any structure other than a navigational aid;
- Placing or abandoning any structure;
- Dredging or otherwise altering the submerged lands of the Sanctuary;
- Using motorized personal watercraft (MPWC - defined as a vessel which uses an inboard motor powering a water jet pump as its primary source of motive power, and which is designed to be operated by a person sitting, standing, or kneeling on the vessel rather than the conventional manner of sitting or standing inside the vessel);
- Taking, harassing and disturbing seabirds, marine mammals, and sea turtles;
- Attracting white sharks;
- Deserting a vessel aground, at anchor, or adrift in the Sanctuary;
- Leaving harmful matter in a deserted vessel;
- Moving or removing historic resources (such as shipwrecks); and
- Anchoring in Tomales Bay Seagrass Protection Zones.

California State Lands Commission (CSLC)

The CSLC derives its authority from both the Public Resources Code and the California Code of Regulations. Public Resources Code section 6301 grants exclusive jurisdiction to the CSLC over all ungranted tidelands and submerged lands owned by the State, and the beds of navigable rivers, streams, lakes, and bays. The CSLC administers this authority, including the leasing of state lands for marinas, docks, and moorings, pursuant to Title 2, Division 3, Chapter 1, California Code of Regulations.

The CSLC has jurisdiction over all state-owned filled and unfilled tidelands, submerged lands, and beds of navigable waterways (sovereign lands). The state acquired ownership of all such

lands within its boundaries upon its admission to the United States in 1850. These lands include, but are not limited to, the beds of more than 120 navigable rivers and sloughs, nearly 40 navigable lakes, and the three-mile wide band of tide and submerged lands adjacent to the coast and offshore islands of the state. The state holds these lands for the benefit of all its people for the public trust purposes of water related commerce, navigation, fisheries, water oriented recreation, and open space.

Generally, Tomales Bay involves ungranted sovereign land under the jurisdiction of the CSLC and lands the state patented through various tideland surveys, including, but not limited to, Tideland Surveys 157 (Marin County), 107 (Marin County), 99 (Marin County), 145 (Marin County) and 241 (Marin County). Tomales Bay also involves lands that are subject to certain Boundary Line Agreements and Title Settlement Agreements, including certain portions of the areas of Marconi Cove and Chicken Ranch Beach.

II. SUMMARY OF PROPOSED ACTIONS AND ALTERNATIVES

This section provides an overview of all management actions proposed by CSLC and GFNMS, as well as a No Action Alternative for each of the following issue areas: sewage services, oil and bilge services, vessel mooring program, education and outreach program, and preventing introduced species.

Proposed actions for each of the six issue areas are organized as *Strategies* and *Activities*. Each strategy addresses the issue broadly while the activities that fall under them are the specific actions to be carried out as part of the TBVMP. For a detailed description of each proposed action refer to *Section II* of the TBVMP.

NO ACTION ALTERNATIVE

Under the No Action Alternative existing legal authorities would continue to apply and each agency on the TBIC would continue to regulate under its respective authority, but there would be more limited and less comprehensive interagency coordination and the administrative efficiencies, streamlining, and unified effort by the TBIC would not be realized. The following joint activities identified in the preferred alternative would not be undertaken for Tomales Bay: 1) sewage services; 2) oil and bilge services; 3) vessel mooring program; 4) boater education and outreach; and 5) preventing introduced species.

All current state and federal prohibitions would continue to apply and all moorings that are not covered by a required lease from the CSLC (and permission from GFNMS) would be subject to legal action including removal and possible civil penalties. Law enforcement action and legal response would be applied on a case-by-case basis, and would be prioritized based on the level of potential threat to sensitive resources such as seagrass. The input received during the TBIC process to establish a comprehensive solution to vessel-related problems in Tomales Bay, including extensive public review and comment, would not be applied.

PREFERRED ALTERNATIVE/PROPOSED ACTION

The preferred alternative/proposed action is to adopt the TBVMP and conduct the activities included in the each of the following issue categories as described below and in the TBVMP: 1) sewage services; 2) oil and bilge services; 3) vessel mooring program; 4) boater education and outreach; and, 5) preventing introduced species. These strategies and activities are discussed in detail in *Section 1* of the TBVMP and are summarized in *Table 1* below.

TABLE 1 — PROPOSED ACTIONS SUMMARY TABLE

Issue	Strategy	Activity
SEWAGE SERVICES (SS)	**SS-1**: ***Plan for and implement adequate vessel-based sewage services for Tomales Bay.***	**SS 1.1 -** Establish at least three portable toilet dump stations adjacent to Tomales Bay.
		SS 1.2 - Establish one sewage pumpout station adjacent to Tomales Bay.
	SS-2: ***Designate Tomales Bay as a No-Discharge Zone for Vessel Sewage.***	**SS 2.1 -** Recommend that the U.S. Environmental Protection Agency (EPA) designate Tomales Bay as a No Discharge Zone (NDZ).
	SS-3: ***Plan for and implement additional land-based sewage services for Tomales Bay.***	**SS 3.1 -** Recommend that NPS or Marin County determine the feasibility of installing and maintaining portable toilet facilities (i.e. "Port-a-John") in or near areas of known water recreation that may not have adequate facilities.
		SS 3.2 - Encourage the development of public boating facilities at Marconi Cove.
	SS-4: ***Ensure that future sewage services needs are met for Tomales Bay***	**SS 4.1 -** Recommend to TBIC agencies that no new waterfront facilities or expansion of existing waterfront facilities be permitted without documentation/assurance of adequate sewage waste management facilities.
	SS-5: ***Develop a boater outreach plan for vessel sewage practices.***	**SS 5.1 -** Ensure that a boater outreach plan for vessel sewage practices is included as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1).*

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
OIL AND BILGE SERVICES (OS)	<u>OS-1</u>: ***Implement an oil absorbent exchange program for Tomales Bay.***	**OS 1.1 -** Identify funding sources and pursue planning for absorbent exchange program.
		OS 1.2 - Implement a "pilot" bilge absorbent exchange program at two initial locations.
		OS 1.3 - Evaluate effectiveness of the two absorbent exchange program "pilot" sites and adapt as necessary.
	<u>OS-2</u>: ***Develop a boater outreach plan for vessel oil and bilge practices.***	**OS 2.1 -** Compile and distribute existing educational materials and information on Best Management Practices (BMPs) for proper management of oil fuel and other boat maintenance products.
		OS 2.2 - Compile and analyze information on all existing used vessel oil recycling locations.
		OS 2.3 - Conduct a needs assessment and develop new educational materials regarding proper management of vessel oil, fuel and other maintenance products.
		OS 2.4 - Ensure that vessel oil management is included as part of the Tomales Bay Boater Education and Outreach Program (see *Strategy EO-1).*

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
VESSEL MOORING PROGRAM (VM)	**VM-1**: ***Implement siting criteria and zones for vessel moorings in Tomales Bay based on a marine spatial planning approach.***	**VM 1.1-** Adopt the following criteria for siting of vessel moorings on Tomales Bay:
		1. *Seagrass: No vessel moorings shall be allowed in seagrass beds.* ***2.*** *Wildlife Disturbance: No moorings shall be allowed in areas within 300 feet of seal haul-out areas.* ***3.*** *Parcels Under Private Ownership outside of CSLC Jurisdiction: No vessel moorings shall be allowed on tidelands and submerged lands under private ownership, unless a mechanism can be determined for legally authorizing moorings on private parcels.* ***4.*** *NPS-owned Tide and Submerged Lands Outside of GFNMS Jurisdiction: Other than as necessary for NPS administrative use, no moorings shall be allowed on the submerged lands owned by NPS.* ***5.*** *Swimming Beach/Boat Launch Areas: No moorings shall be allowed within 100 feet of swimming beaches and boat launch ramps.* ***6.*** *State Parks Criteria: No moorings shall be allowed within 1000 feet offshore of State Parks property.* ***7.*** *Aquaculture: No moorings shall be allowed within areas that fail to meet the California Department of Public Health calculations for safe distances between moorings and aquaculture lease areas pursuant to a valid lease, permit, license or other authorization issued by the State of California. No moorings shall be located within state water bottom lease areas for aquaculture unless directly associated with aquaculture pursuant to a valid lease, permit, license or other authorization issued by the State of California.* **8.** *Navigation Channels: No moorings shall be allowed within navigation channels of Tomales Bay.*

Table 1 (Continued): Proposed Actions Summary Table

Issue	Strategy	Activity
VESSEL MOORING PROGRAM (VM)	**VM-1: (CONTINUED)** ***Implement siting criteria and zones for vessel moorings in Tomales Bay based on a marine spatial planning approach.***	**VM 1.2-** Implement mooring zones sited within historically used mooring locations of the bay that are consistent with the criteria in Activity VM 1.1, and regulatory requirements of all TBIC agencies.
	VM-2: ***Implement a Tomales Bay Vessel Mooring Permitting Process based on a marine spatial planning approach***	**VM 2.1 -** Develop CSLC lease terms and conditions that are consistent with all TBIC agencies' mandates, regulations and policies, and are in compliance with mooring criteria established in Activity VM 1.1.
		VM 2.2 - Establish policies/regulations limiting the maximum number of moorings allowed under the Tomales Bay Mooring Program to no more than 165 moorings.
		VM 2.3 - Implement mooring tackle requirements to include specifications for mooring tackle and a program for inspection and maintenance.
	VM-3: ***Introduce a process for compliance with Vessel Mooring Program that includes a clear public education and outreach component.***	**VM 3.1 -** Implement a process to introduce the Vessel Mooring Program and permitting process to the community.
		VM 3.2 - Continue to implement a process for removing derelict and deserted moorings.
		VM 3.3 - Define and implement a process for ensuring future compliance with the Vessel Mooring Program.
	VM-4: ***Strengthen existing Tomales Bay enforcement partnerships to ensure compliance with all vessel-related mandates, policies and regulations***	**VM 4.1 -** Conduct an analysis of Tomales Bay enforcement capabilities and review and determine if a formal agreement is needed among enforcement agencies.
		VM 4.2 - Ensure adequate patrol of bay from aircraft, vessels and by on-foot observation.

Table 1 (Continued): Proposed Actions Summary Table

BOATER EDUCATION AND OUTREACH PROGRAM (EO)	**EO-1**: ***Develop a Tomales Bay Boater Education and Outreach Program.***	**EO 1.1-** Ensure local businesses receive existing boater education materials.
		EO 1.2– Conduct outreach to inform Tomales Bay boaters of the TBVMP and promote boater compliance with the Vessel Mooring Program and other laws, regulations and policies.
		EO 1.3- Develop a Tomales Bay boater website and a map (interactive and hard copy).
		EO 1.4- Develop and provide new outreach materials and programs specific to Tomales Bay boating.
		EO 1.5- Develop an educational program for proper boat anchoring practices.
INTRODUCED SPECIES (IS)	**IS-1**: ***Encourage vessel operators to prevent the introduction of non-native species.***	**IS 1.1 –** Promote Best Management Practices (BMPs) by distributing recommendations on how to prevent introduced species to the Tomales Bay boating community.
	IS-2: ***Encourage on-going monitoring of introduced species***	**IS 2.1 –** Support efforts by agencies and organizations that conduct regular monitoring of introduced species, including writing letters of support for specific projects.

III. AFFECTED ENVIRONMENT

The affected environment includes aspects of the physical, human, and biological environment that are fully described in the text and maps provided in *Section III, Existing Environmental Conditions* of the TBVMP. The information provides the environmental context for the alternatives considered in this EA/IS and serves as a baseline for assessing potential impacts of the alternatives described below.

IV. ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section includes a discussion of the potential environmental consequences identified during the NEPA/CEQA analyses, conducted by GFNMS and CSLC staff, of both the proposed action/preferred alternative and the No Action Alternative. The following analysis of the environmental consequences associated with implementation of the TBVMP draws from the background information and issue characterizations in the Existing Environmental Conditions section of the TBVMP.

This analysis yielded the following findings:

1. Implementation of the TBVMP would not result in any significant adverse impacts.

2. Less than significant beneficial effects were identified in the biological resources (seagrass and wildlife), and hydrology and water quality categories.

3. Less than significant adverse effects were identified in the socioeconomics category.

Further discussion of the impacts to the three resource categories is included in this section. *Table 2* below includes a complete list of all resource categories addressed and the results of the impact assessment completed by GFNMS and CSLC staff. See the *CEQA Environmental Checklist* at the end of this EA/IS for the specific CEQA criteria, under each issue category, used for determining the significance of the impacts of the proposed action.

TABLE 2 — SUMMARY OF IMPACT ASSESSMENT COMPLETED

Note: This table provides a summary of all identified potential impacts associated with the implementation of the Tomales Bay Vessel Management Plan. Only those resource categories where impacts were identified will be discussed further in this EA/IS.			LEVEL OF IMPACT			
		No Impacts	**Less than Significant Beneficial Effects**	**Less than Significant Negative Effects**	**Less than Significant Effects with Mitigation**	**Significant Impacts**
RESOURCE CATEGORY	**Aesthetics**	√				
	Air quality	√				
	Biological resources – Seagrass		√			
	Biological resources – Wildlife		√			
	Cultural resources	√				
	Geology/Soils	√				
	Greenhouse Gas Emissions	√				
	Hazardous Materials	√				
	Hydrology/ Water Quality		√			
	Land Use Planning	√				
	Mineral Resources	√				
	Noise	√				
	Population/ Housing	√				
	Public Services	√				
	Recreation	√				
	Socioeconomics			√		
	Transportation/ Traffic	√				
	Utilities/Service Systems	√				

BIOLOGICAL RESOURCES

Impacts of the Preferred Alternative/Proposed Action

Overview:

- The proposed actions under Vessel Mooring Program would have *less than significant beneficial effects* on seagrass habitat and *less than significant beneficial indirect effects* to the ecosystem due to the improvement in seagrass from the decommissioning/removal/relocation of moorings that are currently located in eelgrass beds.
- The proposed actions under Sewage Services and Oil and Bilge Services to encourage the improved access to services may increase the probability of appropriate facilities for vessel sewage and oil being installed, and therefore would result in a *less than significant beneficial effect* on seagrass and wildlife due to improved water quality from removing sources of pathogens and other contaminants.
- The proposed action to develop a Boater Education and Outreach Program focused on eelgrass would result in a *less than significant beneficial effect* on eelgrass and *less than significant beneficial indirect effects* to the ecosystem due to reduced vessel anchoring activity within seagrass protection zones.
- The proposed actions under Boater Education and Outreach Program would have a *less than significant beneficial effect* on wildlife since implementation of the proposed actions could result in fewer disturbances to wildlife due to changes in boater behavior and adoption of BMPs among boaters and other recreational users of the bay.
- The proposed actions under Introduced Species could result in *less than significant beneficial indirect effects* on wildlife, since implementing these activities may result in preventing the introduction of or reducing the rate of expansion of non-native species, which could cause harm to certain wildlife species of Tomales Bay.

Discussion:

Potential Impacts from Implementing the Tomales Bay Mooring Program:
Based on assessments of sensitive areas, GFNMS and CSLC implemented a comprehensive coastal and marine spatial planning process to establish areas that are suitable for mooring as well as areas where existing moorings should be relocated and future moorings prevented. Removing vessel moorings from eelgrass beds and redirecting future mooring placement would reduce physical impacts to eelgrass. This approach would help ensure the protection of habitat, water quality, natural resources, public health and safety, and recreation, while allowing for mooring in the bay. The anticipated result would be reduction of conflicts among uses, increased protection of sensitive areas, a balance of compatible uses, and preservation of critical ecosystem services to meet the goals and objectives of the TBVMP.

The mooring program also includes proposed actions to address grounded and deserted or derelict vessels that would result in less than significant beneficial effects. Vessels that come aground may themselves damage sensitive ecological resources, and are recognized specifically as a significant threat to seagrass habitats (Kentworthy et al., 2006). They may also impede

navigation, block public and private uses of intertidal and subtidal habitats such as aquaculture, become sites for illegal dumping of waste oils and hazardous materials, become visual eyesores, entrap wildlife, and create public health hazards (Michel et al., 2002). When these vessels sink, they have the potential to release pollutants that damage the environment or threaten wildlife or human health. Derelict or deserted vessels may also drift into other vessels, marina docks or other structures causing damage to both public and private property and potentially causing other vessels to sink (Port of Oakland, 2001).

A typical mooring consists of a permanent weight on the seafloor attached to a chain and a buoy. Anchoring and mooring of vessels can cause adverse impacts to the bay's ecology and habitats. For example, the weighted structures used in moorings or anchors can cause physical changes on the seafloor by displacing the habitat of organisms in the vicinity of the structure. Moorings placed in seagrass beds or shallow waters can destroy habitat due to scouring of the seafloor by the chain and other mooring tackle and scarring of the seabed from boat propellers, thereby having long-term impacts on the health of the seagrass beds (Walker et al., 1989; Kentworthy et al., 2006).

Seagrass:
The seagrass species found in Tomales Bay is *Zostera marina*, commonly called eelgrass. Although healthy eelgrass meadows can provide many ecosystem services, notably habitat and foraging grounds for many bird and fish species in the bay, the meadows, and the services they provide are highly susceptible to increase pressure from human activities. Because it needs sunlight to survive, eelgrass only occurs in shallow waters along the coast; therefore, its health and survival are closely linked to water clarity. In addition to impaired water clarity, anthropogenic threats to eelgrass in the bay include: increasing sediment and nutrient runoff from residential properties and agriculture operations; sewage from vessels and septic systems; physical disturbances (dredging and damage from boating activities); and invasive species (Orth et al., 2006).

Boating activity can harm or destroy eelgrass resulting in indirect impacts to wildlife and water quality. Examples of boating and boating-related activities causing impacts to eelgrass: anchoring, mooring, loss of fishing gear, constructing docks and piers, and disturbing habitat with wakes, prop scarring and turbidity caused by motorized vessels. Motorboats of any size that enter seagrass beds can cause habitat destruction by increasing turbidity with propellers destroying the bottom and cutting plants. Frequent watercraft landings on seagrass beds can also physically damage eelgrass.

Anchoring and mooring of those vessels can also damage seagrass beds by interfering with the reproductive system (the rhizome system) of the eelgrass. As vessels swing on their anchors, drag them in strong winds, or pull up their anchors, the chain and anchor can "plow" up seagrass beds, dislodging their stems and killing the plants. The level of boating-related impacts to eelgrass is related to the size and type of vessel activity being conducted. Mooring or long term anchoring of large vessels or the construction of docks and piers can shade the seafloor and cut off light sources essential to seagrass photosynthesis.

Impacts to seagrass beds can also indirectly affect other organisms, since they provide habitat and foraging grounds for many bird and fish species in Tomales Bay, therefore disturbance of this habitat can indirectly cause reductions in populations of these species.

Removing vessels from eelgrass beds and redirecting future vessel placement would reduce physical impacts to eelgrass and allow better light penetration resulting in improved seagrass habitat and the associated ecosystem services the eelgrass provides, and benefits to the species that rely on those services.

Wildlife:
Many human activities on and around Tomales Bay can disturb wildlife and wildlife habitats. Operation of vessels can disturb marine wildlife, such as feeding gray whales and seabirds and resting or feeding harbor seals, and on-shore wildlife, such as elk, deer, raccoons and shorebirds. Vessels of all types can affect wildlife by interfering with rest and sleep cycles and disturbing nest sites and haul-out areas. People coming ashore from vessels can disturb elk, deer, raccoons, seals and other wildlife that may be near the shore.

Several studies have documented human-caused disturbance of seals and birds by kayaks in Tomales Bay. The effects of kayaks on wildlife are different than those of other types of vessels. Kayaks have the least impact on marine and estuarine ecosystems since there are no motors or discharges of pollutants from a kayak; however, resting or breeding seals and birds can be disturbed more frequently by kayaks than by motor vessels, because kayaks, able to maneuver in shallow water where motor vessels cannot, approach closer to wildlife than motor vessels. Kayakers approaching wildlife initially unaware of their presence can often startle the animals and result in flushing (fleeing into the water to escape a threat) (Allen, 2006, personal communication).

Implementation of the MP, as proposed in the TBVMP, would not result in beneficial or adverse effects on wildlife, since existing vessel mooring activities historically have not resulted in wildlife disturbance; however, proposed actions under boater education and outreach would potentially result in less than significant beneficial effect on wildlife. Because the proposed actions are designed to encourage changes in boater behavior and adoption of BMPs by boaters and other recreational users, education and outreach could lead to fewer disturbances to wildlife. Implementation of the proposed actions related to sewage services and oil and bilge services in the TBVMP could also potentially result in less than significant indirect beneficial impacts to wildlife due to improvements in water quality (see *Hydrology/Water Quality* below).

Introduced Species:
Proposed actions under Boater Education and Outreach and Introduced Species may have less than significant indirect beneficial effects on wildlife and habitats of the bay through the potential to reduce the introduction and spread of introduced species through implementation of BMPs. The introduction of non-native species in Tomales Bay can cause the loss of native species and alter habitats. Introduced species can also impact the surrounding landscape and affect shorelines and navigation. Introduced species may become a new form of predator, competitor, disturber, parasite or disease that can have devastating effects upon ecosystems. These losses can alter food webs and thereby degrade the biological diversity of the bay.

Invasive species can compete with commercially important species such as herring, steelhead and coho salmon that rely on the existing biological community structure of Tomales Bay.

Impacts of the No Action Alternative

Over the long-term there would be *less than significant beneficial effects* on seagrass beds and other habitats due to removal of moorings over time; however, benefits would not be realized as quickly as they would with the proposed action/preferred alternative including a coordinated Vessel Mooring Program, which would facilitate the process of mooring removal and relocation. Under the No Action Alternative, removal would be conducted pursuant to case-by-case review of mooring sites with priority given to those located in ecologically sensitive area. Additionally, other potential indirect beneficial effects to seagrass beds of the actions in the TBVMP, including Sewage Services, Oil and Bilge Services, Boater Education and Outreach, and Introduced Species, would not be realized.

Removal of moorings could lead to increased anchoring or boat launching in the bay as prior mooring owners switch to land-based boat storage or anchoring as a substitution for mooring their vessels. Over time, these activities could result in negative impacts to natural resources and habitat. Anchoring has the potential to damage sensitive habitat since anchors are often dragged along the seafloor and are deployed and recovered frequently rather than remaining stationary in the one location like a vessel mooring. Launching and recovery of boats also has to potential to cause impacts such as disturbance of benthic habitat or prop scarring of eelgrass beds; this activity also increases the threat of introducing non-native species and can lead to water quality impacts due to spills of oil, fuel, and other pollutants.

Existing trends in the bay demonstrate an increase in vessel-based disturbances to wildlife, including those caused by kayak activity. Based on the assumption that this trend would continue over time and that measures would not be introduced to address these issues, the No Action Alternative would result in *less than significant indirect adverse effects* to wildlife.

HYDROLOGY/WATER QUALITY

Impacts of the Preferred Alternative/Proposed Action

Overview:

- The proposed actions under Sewage Services and Oil and Bilge Services would have *less than significant beneficial effects* on water quality by increasing the likelihood of availability of services and facilities that were previously limited or nonexistent. The availability and use of these facilities and services would thus eliminate prior sources of pathogens, oil and other vessel-related contaminants potentially resulting in improvements of the water quality of the bay.

- The proposed actions under Boater Education and Outreach could result in *less than significant beneficial effects* on water quality within the bay; boater behavior changes and implementation of BMPs by the boating community and other recreational users of Tomales Bay would decrease the input of discharges into the bay.

Discussion:

With just a single dump station and no pumpouts within Tomales Bay, there are currently insufficient facilities in place to provide adequate disposal of sewage waste from existing vessels (CDBW, 2004). While there are numerous onshore restroom services around Tomales Bay, there are a few locations that experience high levels of boating and water recreation-related use that lack facilities. With few options for sewage disposal and, in certain areas, inconvenient land-based restroom options, it is likely that some boaters instead directly dump sewage waste into the bay. Given the known water quality impairments due to pathogens in Tomales Bay and the potential risks associated with sewage discharge, implementation of the actions under Sewage Services would potentially result in less than significant impacts by increasing the likelihood of installation and use of both vessel and land-based sewage services; availability of these services could, in turn, reduce human waste discharges into the bay. This reduction will protect pathogen-impaired beneficial uses such as shellfish harvesting, water contact recreation (e.g., swimming), and non-contact water recreation (e.g. boating), as well as, protect the aquatic ecosystem from other harmful constituents found in human waste.

High levels of other pollutants in the bay may also be related to a dearth of boater services. The use of motor-driven vessels has the potential to increase petroleum hydrocarbons in the bay. Vessels can contribute fuel and other hydrocarbon-based pollutants to the water through emissions of marine engines, discharges of fuel and oil from engines and bilges, spills associated with fueling, spills occurring during oil changes and used oil transfer, and spills caused by derelict, deserted and sunken vessels. The accidental or purposeful discharge of oil, contaminated bilge water, or other toxic materials generated by boating activities can have serious effects on marine organisms. Even at low concentrations, some components are toxic to marine plants and animals, can cause cancer, mutations and/or birth defects, and behavioral changes in shellfish and fish (Johnson, 1998).

Currently no oil and bilge services exist adjacent to or in the vicinity of Tomales Bay, with the exception of used oil recycling at Lawson's Landing and Greenbridge Auto and Gas in Point Reyes Station. Because of the significant threat that oil can have on Tomales Bay, promoting recycling of used boat oil and implementing an oil absorbent exchange program can prevent the discharge of oil from vessels, improving water quality. By increasing the likelihood of introducing an oil absorbent exchange program and therefore providing a mechanism to reduce the amount of oil discharged into the bay, the proposed actions under Oil and Bilge Services would also potentially result in less than significant direct beneficial impacts on water quality of the bay.

Moreover, water quality improvements could lead indirectly to beneficial impacts to wildlife and seagrass beds and other organisms of the bay. The following is a discussion on the potential impacts to water quality and their effects on organisms of the bay, due to discharge of sewage, oil, and other boat maintenance products.

Sewage:
Known sources of pathogens include runoff from confined animal facilities (dairies), grazing lands, equestrian facilities, wildlife, vessels, and faulty septic systems, however it is vessel discharges and septic systems that are thought to be the main sources of human sewage in Tomales Bay (RWQCB, 2005). Although no studies have been carried out on Tomales Bay to

establish linkages between boating activities and pollution caused by human waste, it is widely acknowledged that the number of vessels accessing Tomales Bay each year represents a potentially significant source of human pathogens and it is likely that discharges of waste from some of these boats are contributing to fecal contamination of the bay (RWQCB, 2005). Other studies clearly demonstrate a correlation between boating activity and elevated levels of fecal coliform, especially in areas of poor flushing (NCDEM, 1990; Sawyer and Golding, 1990; Milliken and Lee, 1990; Gaines and Solow, 1990; Seabloom et al., 1989; Fisher et al., 1987). Fecal coliform levels in marinas and mooring fields become elevated near vessels during periods of high vessel occupancy and usage. NOAA identified boating activities (the presence of marinas, shipping lanes, or intracoastal waterways) as a contributing source in the closure to harvesting of millions of acres of shellfish-growing waters on the east coast of the United States (Leonard et al., 1989).

Pathogens in human and animal waste can adversely affect commercial oyster harvesting, water contact recreational activities, clamming, and the general aesthetics of the bay. Although both human and animal waste are associated with a variety of bacterial and protozoa pathogens, human waste can also contain viral pathogens, which are of greatest concern to human health (RWQCB, 2005).

Disease-causing organisms found in human waste can include noroviruses, hepatitis viruses, E. coli (a fecal coliform species) and other enteric (intestinal origin) pathogens. Fecal contamination makes water unsightly and unsuitable for recreation, and these pathogens, especially if introduced to shellfish harvesting areas, can cause severe human health problems such as gastroenteritis, hepatitis, or even death (RWQCB, 2005). In addition to the impacts associated with pathogens, human waste also contains nutrients that can pose a threat to beneficial uses of the bay by introducing additional demand for oxygen that can impair the health of the aquatic environment. Sewage discharge stimulates algae blooms—the decomposition of these algae results in a reduction of available oxygen needed by fish and other organisms and can result in die-offs of marine organism. Tomales Bay, Walker Creek, and Lagunitas Creek are listed as impaired by excess nutrients. Human waste may also introduce low levels of other harmful constituents such as pharmaceuticals and personal care products (RWQCB, 2005).

Oil:
The use of motor-driven vessels has the potential to increase petroleum hydrocarbons in the bay. Vessels can contribute fuel and other hydrocarbon-based pollutants to the water through emissions of marine engines, discharges of fuel and oil from engines and bilges, spills associated with fueling, spills occurring during oil changes and used oil transfer, and spills caused by deserted and sunken vessels. Boating facilities, such as marinas, vessel repair facilities, and fueling stations, can contribute to the degradation of the Tomales Bay ecosystem. Pier construction and/or maintenance for boating may change circulation patterns in the bay and piles can release toxic substances. Discharges of toxic vessel cleaning and maintenance products, such as copper-laden bottom paints, solvents, and soaps, are common from vessel maintenance facilities in California. Spills and drips from fueling facilities can also contribute to water quality degradation.

Research conducted in 1998 by the CCC's *Boating Clean and Green Campaign* revealed that 76% of boaters whose vessels have a marine engine change the oil on their vessels themselves (SFSU Public Research Institute, 1998). Changing oil on a vessel can cause spills that release oil to the bilge and/or nearby waterways. Fuel evaporates in the air, can be broken down by sediment microorganisms, and can accumulate in sediments, marine plants and animals, particularly in estuaries and intertidal areas. The accidental or purposeful discharge of oil, contaminated bilge water, or other toxic materials generated by boating activities can have serious effects on marine organisms. Even at low concentrations, some components are toxic to marine plants and animals, can cause cancer, mutations and/or birth defects, and behavioral changes in shellfish and fish.

Impacts of the No Action Alternative

The No Action Alternative reduces the likelihood that oil and sewage services would be installed in Tomales Bay. Assuming that use of the bay for recreational boating and other activities would continue to increase over time, and therefore increase the frequency and volume of discharges of harmful materials to the bay, increased water contamination from oil and sewage would continue under the No Action Alternative. The potential benefits to water quality from the improved oil and sewage services offered by the TBVMP would not be realized under the No Action Alternative. Further, by not implementing the proposed actions under Boater Education and Outreach, the behavior changes and adoption of oil and sewage Best Management Practices resulting from education efforts would not occur. Any potential benefits to water quality of that program would not be realized under the No Action Alternative. Taken together, the No Action Alternative would result in *less than significant adverse effects* on water quality.

SOCIOECONOMICS IMPACTS

Impacts of the Preferred Alternative/Proposed Action

Overview:

- The proposed actions under the Vessel Mooring Program could result in *less than significant adverse effects* on socioeconomics to Tomales Bay boaters, due to the costs associated with the mooring tackle requirements including purchase of required mooring equipment and maintenance and inspection fees.

Discussion:

Some of the vessel owners who are currently moored in the bay may decide not to participate in the Tomales Bay mooring permitting program because of the associated cost of obtaining a mooring lease and installation, maintenance, and inspection of a mooring system, as proposed.

The cost associated with permitting of an individual mooring through a CSLC lease would be an additional expense that existing mooring owners on the bay are not accustomed to, however since mooring in the bay without a lease is an illegal activity, this expense is not addressed in this EA/IS. However, the TBVMP reflects a multi-agency effort to streamline and coordinate management of future vessel-related activities and provides a mechanism to allow for the legal use of vessel moorings on the bay.

Costs for mooring equipment vary by location and water depths, type of tackle used, installation techniques required, and other situational factors. The following cost estimates were compiled for a variety of different mooring types and situations:

- In Tomales Bay a typical 55-gallon drum concrete mooring installed at 18-22 foot depth has cost $1,400 - $1,600 including installation (Vilicich, S., 2009).
- Port San Luis provides estimated costs to mooring permittee of building and setting moorings beginning at $2,800 for a vessel up to 25-feet and up to $5,300 for a vessel up to 55 feet (Port San Luis, 2012).
- In Santa Barbara, the cost of mooring equipment purchase and initial installation averages about $3,000 - $5,000 (Kronman, 2011).

The CSLC requires a non-refundable $25 filing fee for a lease application and a *minimum expense deposit* of $1,000. All CSLC staff costs associated with processing the lease would be charged against the *minimum expense deposit*. Any monies not used will be refunded back to the applicant. If the processing costs of the lease application exceed the *minimum expense deposit*, CSLC staff will advise the applicant of the overage. Precise costs for a CSLC mooring lease on Tomales Bay are dependent on a variety of factors and cannot be forecast. Additionally, there will be an annual rent associated with the mooring lease on Tomales Bay within the CSLC's jurisdiction. Based on the October 29, 2010 benchmark for recreational uses at Tomales Bay, the annual rent for a mooring buoy with a swing area of 30 feet would be approximately $250/year.

Mooring lesees will also incur an additional cost for mooring inspection and maintenance by an approved Mooring Contractor. The following are examples of inspection and maintenance cost estimates in different mooring locations:

- In Santa Barbara inspection and maintenance for each mooring is generally around $500 per year (Kronman, 2011).
- Port San Luis conducts mooring inspections and repairs for permittees at a cost of $300/hour (Port San Luis, 2012).

Implementation of the actions under Sewage Services could increase the probability of a pumpout station being installed using California Department of Boating and Waterways grant funding. Per the requirements of the grant, a maximum user fee of $5 can be charged for each use of the pumpout facility equipment. This represents an additional cost that did not previously exist for boaters on the bay. Implementation of these actions would also reduce or eliminate discharges of human waste into the bay, which would provide a less than significant beneficial impact through potential improvements to activities such as shellfish harvesting, water contact recreation (e.g., swimming), and non-contact water recreation (e.g. boating) and by protecting the Tomales Bay ecosystem from other harmful constituents found in human waste.

Impacts of the No Action Alternative

Not implementing the Vessel Mooring Program would not result in socioeconomic impacts since mooring in Tomales Bay without a permit is an illegal activity under existing regulations (for

more information on agency jurisdictions and regulations regarding moorings in the bay refer to the description under *Vessel Mooring Program* in the *Proposed Actions* section and *Appendix III* of the TBVMP). The No Action Alternative, however, would forgo the mechanism provided by the TBVMP to allow for the use of individual vessel moorings under existing agency regulations and mandates.

Under the No Action Alternative, moorings installed prior to the designation of GFNMS in 1981 would still be required to obtain a lease from CSLC. In this case the mooring owner would be required to submit evidence demonstrating to CSLC that the mooring was installed prior to GFNMS designation and existed under their ownership continuously since then. If the mooring were not confirmed to exist prior to GFNMS designation, then removal of the mooring would be required at some point in the future at cost to the owner.

CUMULATIVE IMPACTS

CEQA and NEPA regulations require that cumulative impacts be addressed.

Section 15355 of the CEQA Guidelines states:

> *"Cumulative impacts" refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. (a) The individual effects may be changes resulting from a single project or a number of separate projects. (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.*

The Council on Environmental Quality's (CEQ) regulations (40 CFR Sections 1500 - 1508) containing the NEPA procedural provisions defines cumulative effects as:

> *The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions* (40 CFR ~ 1508.7).

The impacts analysis conducted pursuant to NEPA/CEQA by GFNMS and CSLC staff resulted in the finding that implementation of the TBVMP would result in a *less than significant cumulative impact* to the bay. Collectively, the actions of the TBVMP would incrementally benefit the environmental condition of the bay through: improved water quality from the reduction of human waste and oil contamination; improved eelgrass habitat and associated ecosystem services by removing sources of physical impacts and shading; decreased wildlife disturbances; and decreased introduction of invasive species.

V. NEGATIVE DECLARATION AND CEQA ENVIRONMENTAL CHECKLIST

PROJECT DESCRIPTION AND BACKGROUND

Project Title:	**Tomales Bay Vessel Management Plan (TBVMP)**
Lead agency name and address:	California State Lands Commission 100 Howe Ave, Suite 100 South Sacramento, CA 95825-8202
Contact person and phone number:	Eric Gillies, (916) 574-1897
Project Location:	Tomales Bay, California

Project sponsor's name and address:

California State Lands Commission
100 Howe Ave, Suite 100
South Sacramento, CA 95825-8202

NOAA Gulf of the Farallones National Marine Sanctuary
991 Marine Drive, The Presidio
San Francisco, CA 94129

General plan description:	N/A
Zoning:	N/A
Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)	See Proposed Action (Section II) of the TBVMP
Surrounding land uses and setting; briefly describe the project's surroundings:	See Existing Environmental Conditions (Section III) of the TBVMP
Other public agencies whose approval is required (e.g., permits, financial approval, or participation agreements):	NOAA's Gulf of the Farallones National Marine Sanctuary

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project. Please see the CEQA Environmental Checklist below for additional information.

	Aesthetics		Agriculture and Forestry		Air Quality
√	Biological Resources		Cultural Resources		Geology/Soils
	Greenhouse Gas Emissions		Hazardous Materials	√	Hydrology/Water Quality
	Land Use/Planning		Mineral Resources		Noise
	Population/Housing		Public Services		Recreation
	Transportation/Traffic		Utilities/Service Systems		Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial evaluation:

√	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required

Signature:	**Date:**
Printed Name:	**For:**

VI. CEQA ENVIRONMENTAL CHECKLIST

This Initial Study (IS) has been completed for the Tomales Bay Vessel Management Plan (TBVMP) in accordance with California Environmental Quality Act (CEQA) Guidelines. The IS identifies impacts and evaluates their potential significance. The information, analysis and conclusions included in this IS provide the basis for determining the appropriate document needed to comply with CEQA. For the TBVMP, based on the analysis and information contained herein, the CSLC has found that the IS shows that there is substantial evidence that the TBVMP will have a less than significant effect on the environment. As a result, the CSLC has concluded that this Negative Declaration (ND) is the appropriate CEQA document for implementation of the TBVMP.

The ND follows the environmental checklist form presented in Appendix G of the State CEQA Guidelines. The checklist form is used to describe the impacts of implementing the TBVMP. A discussion follows each environmental issue identified in the checklist.

For this checklist, the following designations are used:

Potentially Significant Impact: An impact that could be significant, and for which no mitigation has been identified. If any potentially significant impacts are identified and cannot be mitigated, an Environmental Impact Report (EIR) must be prepared.

Less Than Significant Impact With Mitigation: An impact that requires mitigation to reduce the impact to a less than significant level.

Less Than Significant Impact: Any impact that would be adverse, but not considered significant.

No Impact: The Project would not have any impact. This could also include a beneficial impact.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista				√
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway				√
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				√
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				√

Discussion

(a - d) Implementation of the TBVMP will not affect scenic vistas or views, degrade visual quality of Tomales Bay, or create a new source light or glare. Vessel moorings currently exist in Tomales Bay and designating moorings in the Mooring Zones will not affect the visual character of Tomales Bay. (No Impact)

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				√
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				√
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				√
d) Result in the loss of forest land or conversion of forest land to non-forest use?				√
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				√

Discussion

(a-e) Implementation of the TBVMP involves the permitting of leases for mooring vessels in the marine environment. This activity does not have the potential to affect agricultural resources or forestland and will not result in any long-term impacts to underlying soils for future use. Therefore, the project would have no impacts to agricultural resources, and will not result in the conversion of any farmland or conflict with existing agricultural uses. (No Impact)

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				√
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				√
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				√
d) Expose sensitive receptors to substantial pollutant concentrations?				√
e) Create objectionable odors affecting a substantial number of people?				√

Discussion

(a - e) Implementation of the TBVMP would not conflict any air quality plan or violate any air quality standards nor would it create any air pollutants or create any odors. (No Impact)

IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			√	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?			√	
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				√
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				√
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				√

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				√

Discussion

(a, b) See discussion in the EA/IS for impacts on biological resources. (Less Than Significant Impact)

(c) The TBVMP involves the permitting of leases for mooring vessels in the marine environment; there would be no impacts on wetland resources. (No Impact)

(d) Implementing the TBVMP would not interfere with the movement of any native or migratory fish or wildlife. (No Impact)

(e, f) Implementing the TBVMP is meant to preserve/protect native marine habitats in Tomales Bay. As such, the TBVMP will not conflict with any local policies, ordinances, Habitat Conservation Plan, or Natural Community Conservation Plan protecting biological resources. Designating Mooring Zones away from sensitive marine biological resources (e.g., eelgrass beds) is considered a beneficial environmental impact. The GFNMS has the authority, in accordance with the National Marine Sanctuaries Act (NMSA; 16 U.S.C 1431-1445c), to provide comprehensive and coordinated conservation and management of 967.8 square nautical miles of nearshore and offshore waters including Tomales Bay. The primary objective of the NMSA is resource protection, which is carried out in regulations codified at 15 CFR Part 922. The TBVMP is consistent with the NMSA's primary objective of natural resource protection, as it addresses numerous issues including vessel sewage discharge, impacts from moorings, derelict or deserted vessels, introduction of invasive species, disturbance of wildlife, and discharges of oil, fuel, and vessel maintenance products. GFNMS has regulatory authority over all these issues, and the applicable regulations can be found at 15 CFR Part 992 Subpart H. (No Impact)

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				√
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				√
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				√
d) Disturb any human remains, including those interred outside of formal cemeteries?				√

Discussion

(a - d) Implementation of the TBVMP in the marine environment does not include any activities with the potential to adversely affect archaeological, paleontological, or cultural resources. (No Impact)

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				√
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?				√

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
ii) Strong seismic ground shaking? (no impact)				√
iii) Seismic-related ground failure, including liquefaction?				√
iv) Landslides?				√
b) Result in substantial soil erosion or the loss of topsoil?				√
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				√
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				√
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				√

Discussion

(a.i - iv) The San Andreas Fault lies beneath Tomales Bay; however, implementing the TBVMP would not result in any new structures out on the bay. Any seismic event would not affect the mooring buoys that would be designated in the Mooring Zones. (No Impact)

(b - e) Implementing the TBVMP will occur in the marine environment and will have no impact to soils. (No Impact)

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?				√
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				√

Discussion

(a) Implementing the TBVMP would not exceed the number of mooring vessel that have historically occurred in Tomales Bay and there will be a limit on the number of mooring that could be permitted in the bay; therefore, there would be no net increase of greenhouse gas emissions from vessels on Tomales Bay. (No Impact)

(b) The TBVMP would not conflict with any applicable plan, policy or regulations on reducing greenhouse gases. (No Impact)

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				√

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				√
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				√
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				√
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				√
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				√
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				√
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				√

Discussion

(a, b) The TBVMP would not include any activity with the potential to affect the environment through the use, disposal or transport of hazardous materials nor include any activities that involve the use of hazardous chemicals. (No Impact)

(c) The TBVMP area is not located within one-quarter mile of an existing or proposed school. (No Impact)

(d) Government Code section 65962.5 requires the California Environmental Protection Agency to maintain an annually updated list, known as the Cortese List that identifies the locations of hazardous materials release sites. A review of this list did not identify any hazardous materials release sites in the TBVMP area. (No Impact)

(e - f) The TBVMP area is not located within two miles of a public or private airport. Consequently, there are no safety hazards for personnel or to the general public. (No Impact)

(g) No impacts to the implementation of public emergency response plans would occur from the TBVMP. (No Impact)

(h) Implementing the TBVMP would occur in the marine environment would not increase the likelihood of wildland fires. (No Impact)

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?				√

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? (				√
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				√
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				√
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				√
f) Otherwise substantially degrade water quality?			√	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				√
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				√
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				√
j) Inundation by seiche, tsunami, or mudflow				√

Discussion

(a) Implementing the TBVMP would include the removal and placement of mooring buoys in Tomales Bay. Such activity could cause minimal impacts to water quality caused by turbidity due to disturbance to bay sediment; however, this would not violate any water quality standards or waste discharge requirements. (No Impact)

(b) The TBVMP would not alter the course, flow, direction, or quality of groundwater in the area. Implementing the TBVMP would not include any excavation, grading, or other earth moving activity that has the potential to alter subsurface groundwater flow. (No Impact)

(c - e) Implementing the TBVMP does not involve the development of any new structures, alterations to site terrain, or other factors that could result in an alteration to the drainage pattern of the site. The TBVMP would not result in potential impacts associated with absorption rates, drainage patterns, or surface runoff and would not alter existing stormwater drainages or have the potential to increase surface runoff. (No Impact)

(f) See discussion in the EA/IS for impacts on hydrology and water quality. (Less Than Significant Impact)

(g - i) The TBVMP does not involve the construction or placement of any homes or structures within a flood hazard area and does not involve the construction or placement of any structures that would be exposed to flooding or would result in the impediment or redirection of flood flows. (No Impact)

(j) The TBVMP involves permitting moorings in Tomales Bay and would not be impacted by inundation of seiche waves, tsunamis, or mudflows. (No Impact)

X. LAND USE AND PLANNING: Would the project:

a) Physically divide an established community?	√
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	√
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	√

Discussion

(a) The TBVMP would not result in the physical division of an established community, e.g., Marshall, Point Reyes Station, or Inverness. (No Impact)

(b) The TBVMP was developed in collaboration with Marin County and eight other local, state and federal agencies with jurisdiction in Tomales Bay and therefore would not conflict with any plan, policy or regulation of any agency with jurisdiction over the project (No Impact)

(c) The TBVMP does not include any activity that will conflict with any applicable habitat conservation plan or natural community conservation plan. (No Impact)

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				√
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				√

Discussion

(a, b) Tomales Bay is not designated within any Mineral Resource Preservation Sites identified in the Marin Countywide Plan (2007). No impact related to the loss of availability of a known mineral resource of value to the region and the residents of the State or a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan would result from implementing the TBVMP. (No Impact)

XII. NOISE: Would the project result in:	
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	√
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	√
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	√

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				√
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				√
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				√

Discussion

(a - d) Implementation of the TBVMP would not expose persons to excessive noise levels and there will be no permanent or temporary increase in ambient noise levels. (No Impact)

(e, f) Tomales Bay is not located within two miles of a public use airport nor within the vicinity of a private airstrip; therefore, there would be no exposure to excessive airport noise. (No Impact)

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				√
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				√
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				√

Discussion

(a - c) Major communities at Tomales Bay include Point Reyes Station and Inverness at the southern end of the bay. Implementation of the TBVMP would not directly or indirectly induce population growth in the area or affect housing within communities adjacent to Tomales Bay. (No Impact)

XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?				√
Police protection?				√
Schools?				√
Parks?				√

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Other public facilities?				√

Discussion

(a) The TBVMP is limited to permitting vessel moorings in Tomales Bay. Implementing the TBVMP would not require construction of new structures that would increase demand or require additional public services or facilities. (No Impact)

XV. RECREATION:

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				√
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				√

Discussion

(a, b) Implementing the TBVMP would not increase the use of existing parks or recreational facilities around the bay and would not include or require the construction or expansion of recreational facilities; therefore, there would be no impact to recreational resources. The TBVMP also requires that mooring to not be allowed on the submerged lands owned by National Park Service; no moorings will be allowed within 100 feet of swimming beaches and boat launch ramps; and, no moorings will be allowed within 1000 feet offshore of State Parks property. (No Impact)

XVI. TRANSPORTATION/TRAFFIC: Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				√
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				√
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				√
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				√
e) Result in inadequate emergency access?				√
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				√

Discussion

(a - f) Highway 1 and Sir Francis Drake Boulevard provide the only regional access around Tomales Bay. The TBVMP involves permitting vessel moorings in Tomales Bay that would not result in any impacts to transportation or traffic patterns around the bay. Continuing to allow vessel moorings and not increasing the number of moorings on the bay will not have any increase in traffic demand in the area. (No Impact)

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				√
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				√
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				√
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				√
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				√
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				√
g) Comply with federal, state, and local statutes and regulations related to solid waste?				√

Discussion

(a, b) The TBVMP would not result in activities that would exceed wastewater treatment requirements of the San Francisco Regional Water Quality Control Board, nor would it result in any activities that would require expanded or new wastewater treatment facilities. However, implementation of the plan would likely increase the availability of sewage services and facilities (e.g. dump stations or pumpout station) that were previously limited or nonexistent. (No Impact)

(c, d) The TBVMP does not require or result in new stormwater drainage facilities and would not impact available water supplies. (No Impact)

(e) The TBVMP would not impact the demand for wastewater treatment. (No Impact)

(f, g) The TBVMP would not impact solid waste disposal needs or need to comply with regulations related to solid waste. (No Impact)

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				√
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				√
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				√

Discussion

(a) Implementing the TBVMP is to protect eelgrass beds and other sensitive marine habitats in Tomales Bay. Therefore, the TBVMP would not result in adverse impacts to biological resources and expected to result in a long-term beneficial impact to marine biological resources in Tomales Bay. Implementing the TBVMP would not eliminate important examples of the major periods of California history or prehistory. (No Impact)

(b) The TBVMP involves permitting vessel moorings in the marine environment. This activity will not result in any significant adverse impacts or any cumulatively considerable impacts. (No Impact)

(c) The TBVMP would not cause substantial direct or indirect adverse effects on human beings. (No Impact)

VII. REFERENCES CITED IN THIS ENVIRONMENTAL ASSESSMENT/INITIAL STUDY:

Allen, SG. 2006. Point Reyes National Seashore. Personal communication with author, January 10, 2006.

Allen SG and Huber. 1984. *Assessment of pinniped/human interactions in Point Reyes, California 1983-1984*. Initial Report to the Sanctuary Programs Office, National Oceanic and Atmospheric Administration.

CDBW. 2004. *Report to the State Water Resources Control Board: Recommendations for Pumpout and Dump Stations in Tomales Bay*. Final Report, July 21, 2004.

Fisher, J.S., R.R. Perdue, M.F. Overton, M.D. Sobsey, and B.L. Sill. 1987. *Comparison of Water Quality at Two Recreational Marinas During a Peak-Use Period.* University of North Carolina Sea Grant College Program, Raleigh, NC.

Francour, P. Ganteaumea, A., and Poulain, M. 1999. *Effects of boat anchoring in Posidonia oceanica seagrass beds in the Port-Cros National Park (north-western Mediterranean Sea)*. Aquatic Conservation. 9: 391–400

Gaines, A.G., and A.R. Solow. 1990. *The Distribution of Fecal Coliform Bacteria in Surface Waters of the Edgartown Harbor Coastal Complex and Management Implications*. Woods Hole Oceanographic Institution, Woods Hole, MA.

Gulf of the Farallones National Marine Sanctuary (GFNMS). (2008). Designation Document. Federal Register, 15 CFR Part 922

Johnson, Leigh Taylor. 1998. *Environmental Impacts of Pleasure Craft*. University of California Cooperative Extension and Sea Grant Extension Program. San Diego, CA.

Kronman, Mick. 2011. *Personal communication with Brad Damitz, GFNMS.*

Kentworthy, W. J., Hammerstrom, K., Fonseca, M. 2006. *Scientific Evaluation of Sediment Fill Technique for the Restoration of Motor Vessel Injuries in Seagrass Beds of the Florida Keys National Marine Sanctuary,* NOAA/NOS/NCCOS Center for Coastal Fisheries and Habitat Research, Beaufort, North Carolina, p.229.

Leonard, D.L., M.A. Broutman, and K.E. Harkness. 1989. *The Quality of Shellfish Growing Water on the East Coast of the United States.* U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Rockville, MD.

Michel et al. 2002. *Abandoned Vessels: Impacts to Coral Reefs, Seagrass, and Mangroves in the U.S. Carribean and Pacific Territories with Implications for Removal*. Marine Ecology. 23, 26-35.

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, RI.

National Park Service. 2007. *Final Environmental Impact Statement/Environmental Impact Report for the Giacomini Wetland Restoration Project.*

North Carolina Department for Environmental Management (NCDEM). (1990). *North Carolina Coastal Marinas: Water Quality Assessment.* North Carolina Division of Environmental Management, Raleigh, NC. Report No. 90-01.

Orth, Robert J., Carruthers, Tim J.B., Dennison, William C., Duarte, Carlos M., Fourqurean, James W., Heck, Jr., Kenneth L., Hughes, A. Randall, Kendrick, Gary A., W. Judson, Kenworthy, Olyarnik, Suzanne, Short, Fred T., Waycott, Michelle, Williams, Susan L. 2006. *A Global Crisis for Seagrass Ecosystems*. BioScience 56(12): 987-996.

Port of Oakland. 2001. Clean Water Team-brochure-*What You Should Know About Derelict and Abandoned Vessels*.

Port San Luis. 2012. *Mooring Information Pamphlet.* Available at: http://www.portsanluis.com/services/mooringinformation.pdf

Prunuske-Chatham, Inc. 2003. *Survey of Water-Based Recreational User Activities in Tomales Bay*. Prepared for Marin County Community Development Agency, Revised Draft, June 2003.

San Francisco Regional Water Quality Control Board (RWQCB). 2005. *Pathogens in Tomales Bay Watershed Total Maximum Daily Load (TMDL) Staff Report.* California Regional Water Quality Control Board, San Francisco Bay Region.

SFSU Public Research Institute. 1998. San Francisco State University. *Boating Clean and Green Survey for the California Coastal Commission*.

Rawlings, Michael. 2009. *Tomales Bay Anchor Test Final Report*. Prepared by U.S. Mooring Systems, Inc. October 23, 2009. (Report can be found in Appendix 7 of the TBVMP).

RWQCB, San Francisco Estuary Project. 2011. *How Vessel Sewage Discharges Effect the Environment*. From website: http://sfep.abag.ca.gov/programs/vesseled/sewage.html.

Sawyer, C.M., and A.F. Golding. 1990. *Marina Pollution Abatement.* International Marina Institute, Wickford, RI.

Seabloom, R.A., G. Plews, F. Cox, and F. Kramer. 1989. *The Effect of Sewage Discharges from Pleasure Craft on Puget Sound Waters and Shellfish Quality*. Washington State Department of Health Shellfish Section, Olympia, WA.

San Francisco Bay Regional Water Quality Control Board. 2005. *Pathogens in Tomales Bay Watershed Total Maximum Daily Load Staff Report*.

Vilicich, Skip. 2009. *Personal communication with Brad Damitz, GFNMS April 29, 2009.*

Walker, D.I., Lukatelich, R.J., Bastyan, G. and McComb, A.J.. 1989. *Effect of boat Moorings on Seagrass Beds near Perth, Western Australia*. Aquatic Botany. 36, pp. 69–77.

APPENDIX II: DEFINITIONS

Anchoring—The practice of temporarily securing a vessel in place at a fixed location by placing equipment (i.e. an anchor, and lines, rope, chain, or cable) on the seafloor, which is removed upon leaving the fixed location and carried onboard the vessel as regular equipment when underway.
Benthic—The region of the ocean and Tomales Bay consisting of the seabed and the organisms that live on or in it.
Essential Fish Habitat (EFH)— Those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.
Estuary—A water body that has constant exchange and interaction with ocean water.
Fishing—In this document refers to lawful shoreline and in-bay recreational and commercial fishing.
GIS—A Geographic Information System, or GIS is used to integrate electronic files (databases) containing environmental measurements taken at a specific location and maps that digitally represent geographic features.
Habitat—The place where a plant or animal species naturally lives and grows, or characteristics of the soil, water, and biologic community (other plants and animals) that make this possible.
Invasive Species—Invasive Species are aquatic and terrestrial organisms and plants that have been introduced into new ecosystems throughout the United States and the world and are both harming the natural resources in these ecosystems and threatening the human use of these resources. They are also considered to be "nuisance" species or "exotic" species and the terms are often used interchangeably.
Aquaculture—Farming of marine animals in ocean waters.
Marine Sanitation Device (MSD)—Any equipment for installation on board a vessel which is designed to receive, retain, treat, or discharge sewage, and any process to treat such sewage. *Type I MSDs* are treatment systems that reduce bacteria and discharge no visible floating solids; *Type II MSDs* are similar to type one systems, but are more powerful, and do a better job of treating waste, and; *Type III MSDs* are holding tanks designed to temporarily store waste. These are typically installed in boats over 65 feet because of the power demands, but can be used on any vessel outside of a no-discharge zone.
Coastal and Marine Spatial Planning –A comprehensive, adaptive, integrated, ecosystem-based, and transparent spatial planning process, based on sound science, for analyzing current and anticipated uses of the marine environment. It identifies areas most suitable for various types or classes of activities in order to reduce conflicts among uses, reduce environmental impacts, facilitate compatible uses, and preserve critical ecosystem services to meet economic, environmental, security, and social objectives.
Mooring—The act of securing a vessel so that it remains in a particular place by attaching it with ropes or cables to a permanent mooring anchor and rode that is not carried onboard that vessel when underway. Also used as a noun to refer to the permanently fixed object to which a vessel is secured.
Mooring Zone—Area designated by GFNMS and CSLC for mooring in Tomales Bay
Mooring Tackle –The gear used to moor a vessel, which can include an anchor, shackles, rode and buoy.
Pathogens—Any agent, most commonly a microorganism, that is capable of causing a disease.

Pinnipeds—Aquatic carnivorous mammals having a streamlined body specialized for swimming with limbs modified as flippers (e.g. seals or sea lions).
Recreational users—are considered, for the purposes of this document, fishermen, boaters (aboard all vessels including sailboats, canoes, kayaks, and motorboats), windsurfers, and related overnight boaters at anchor-outs and on-shore campgrounds.
Sensitive Species—Rare, endangered, threatened, and other federal or state designated special status species.
Submerged lands: lands that are located below the ordinary low water mark.
Tidelands: the land underneath the ebb and the flow of the tides. More precisely, tidelands are generally defined as the area of land between the ordinary low water mark and the ordinary high water mark.
Tributary—A stream that discharges into a larger stream, river, lake, or other water body.
Turbidity—The extent to which there are suspended or stirred up particles or sediments, as in the water column.
Vessel—A structure designated to be navigable upon water.
Watershed—All the land and tributaries draining to a body of water.

APPENDIX III: GOVERNMENT AGENCY JURISDICTION AND REGULATION

AGENCIES WITH JURISDICION OVER BOATING ON TOMALES BAY

The following agencies have jurisdiction in all or part of Tomales Bay. The public agencies primarily involved with vessel management, habitat, and water quality issues in Tomales Bay include: CCC, DBW, DFG, CDPH, CSLC, CSP, GGNRA, GFNMS, PRNS, RWQCB, and Tomales Bay State Park. This appendix also addresses the particular issues in the bay of vessel use, habitat disturbance, and water quality and how they are regulated by various agencies.

A. California Coastal Commission (CCC)

The CCC has the primary responsibility for implementation of the California Coastal Act and has been designated the State coastal zone planning and management agency for any and all purposes and may exercise any and all powers set forth in the Federal Coastal Zone Management Act of 1972 (16 U.S.C. §1451, et seq.) and any amendments thereto or other federal laws that relate to the planning or management of the coastal zone. The California Coastal Act mandates the protection and restoration of coastal waters. The CCC certifies local coastal programs and approves coastal development permits, energy projects, and federal projects within the Coastal Zone in accordance with water quality policies in the California Coastal Act. The CCC's federal (CZMA) authority includes review of all federal agency activities and authorizations in or affecting the coastal zone, including, but not limited to, management plans. The CCC protects water quality in its function of permit authority over development that generates runoff, creates spills, or otherwise affects water quality. The CCC also implements educational and technical assistance programs and coordinates with other agencies to address land-use and development activities that may generate polluted runoff.

The CCC's enforcement tools include cease and desist and/or restoration orders. Cease and desist orders are used by the Commission to halt ongoing violations, to order removal of unpermitted development, and to ensure developers comply with the permit process. Restoration orders are used to bring about the removal of unpermitted development and/or restoration of damage coastal resources. The Commission can also litigate resolution of violations with the assistance of the Attorney General's Office.

The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Tomales Bay is part of the Coastal Zone and falls under Marin County's certified Local Coastal Program (LCP). The primary goal of the LCP is to ensure that the local government's land use plans, zoning ordinances, zoning district maps, and implemented actions meet the requirements of, and implements the provisions and polices of the California Coastal Act at the local level. Following adoption by a city council or county board of supervisors, the CCC reviews an LCP for consistency with Coastal Act requirements. After an LCP has been approved, the CCC's coastal permitting authority over most new development is transferred to the local government, which applies the requirements of the LCP in reviewing proposed new developments. The CCC retains permanent coastal permit jurisdiction over development proposed on tidelands, submerged lands, and public trust lands, and the CCC also

acts on appeals regarding certain local government coastal permit decisions. The CCC reviews and approves any amendments to previously certified LCPs.

B. California Department of Boating and Waterways (DBW)

Navigable waterways are defined in Harbors and Navigation Code (H&NC) sections 36, 100-107 and Government Code section 170. DBW makes loans and provides grants, with the approval of the Governor and State Legislature and are subject to the advice and consent of the Boating and Waterways Commission, as set forth in H&NC chapters 1, 2, 3, and 4, to improve or enhance the public's access to waterways through the construction of vessel launching facilities and small craft harbors, recreational boating trails, coastal beach erosion control, and vessel equipment and operation (including vessel sanitation and pollution control), for hire vessel operator and yacht and ship broker licensing, as specified in H&NC Chapters 5 and 6, and the regulations adopted to administer these programs (Title 14 of the California Code of Regulations, Division 4, Chapters 1 and 3). DBW provides grants to local government for the removal of derelict vessels through the Abandoned Watercraft Abatement Grant Fund.

C. California Department of Fish and Wildlife (CDFW)

CDFW (the Department) is governed by the constitution and laws of the State of California, and the policies of the Fish and Game Commission (Commission). General policies and conduct of the Department are formulated by the Fish and Game Commission pursuant to Section 703, Fish and Game Code. The Fish and Game Commission carries out a quasi-judicial role as it considers the revocation, suspension and/or reinstatement of licenses and permits for violation of sport and commercial laws and regulations, pursuant to Section 746, Title 14, California Code of Regulations. Under the provisions of Sections 200-221, Fish and Game Code, the Commission is empowered to regulate the taking of fish and game to the extent and in the manner prescribed by law. The taking, processing, or use of fish, mollusks, crustaceans, kelp or other aquatic plants for commercial purposes is not affected by this article. However, the Commission regulates many aspects of commercial fishing including, but not limited to: fish reduction, ocean shrimp, herring and swordfish fisheries; kelp leases, oyster allotments (leases), shellfish cultivation and abalone regulations, and; aquaculture operations. Policies adopted by the Commission are printed in an appendix to the Fish and Game Code.

The business of aquaculture is governed by Division 12, Fish and Game Code and is exempt from Part 3 (commencing with Section 7600) of Division 6 and any other provision of this code relating to commercial fishing, harvesting, processing, and marketing. Except as provided in Sections 15005, 15200, 15201, and 15202, the business of aquaculture processing, distribution, and marketing is administered by the Secretary of Food and Agriculture. The stocking of aquatic organisms is allowed pursuant to Sections 15200-15202 and in adherence to Commission Policy on Introduction of Exotics.

The Department also oversees water pollution pursuant to Section 5650. Fish and Game wardens are authorized to issue citations for spills or discharges of any substance(s) considered deleterious to fish and wildlife. Violations are punishable as provided in Sections 12000-12002.

Fish and Game staff report chronic (sublethal, long-term) water pollution conditions to RWQCBs and cooperate in obtaining corrections or abatements to the condition**.**

D. California Department of Public Health (CDPH)

The CDPH is the lead agency (the State Shellfish Program), which certifies and regulates sanitary procedures followed in the harvesting, handling, processing, storage and distribution of bivalve molluscan shellfish intended for sale for human consumption. Within CDPH the Environmental Management Branch in the Division of Drinking Water and Environmental Management regulates water quality and shellfish sanitation, at the pre-harvest stage, while the Food and Drug Branch in the Division of Food, Drug, and Radiation Safety regulates shellfish after harvest.

A shellfish growing area Management Plan is prepared and is administered by the Environmental Management Branch's Environmental Health Services Section, Pre-harvest Shellfish Unit, in cooperation with the shellfish growers, wastewater treatment plant operators, public agencies, and the other involved parties discussed in this Plan. The National Shellfish Sanitation Program (NSSP) requires that the shellfish growers, the wastewater treatment plants involved, and the applicable local and State agencies agree with the Management Plan. The "failure of any one party to agree shall constitute justification to deny the application of the *Conditional Approved* classification to the growing area." The Management Plan for commercial shellfish operations in Tomales Bay is developed pursuant to the NSSP Model Ordinance, Chapter IV (2003). The Management Plan has been prepared for adoption in accordance with the procedures set forth in Division 104, Part 6, Chapter 5 of the California Health and Safety Code section 112150 et. seq. The Management Plan sets forth all aspects of the CDPH Shellfish Program standards and procedures used to regulate commercial shellfish harvesting in Tomales Bay.

CDPH also has jurisdiction pursuant to the Porter Cologne Water Quality Control Act (California Water Code, Division 7, Chapter 24, Section 14950-14958). Under this law the RWQCB is required to form a technical advisory committee that includes CDPH. The Committee is formed for any commercial shellfish growing area that is determined to be threatened. One of the criteria for a "threatened" area is the number of days the area is closed to shellfish harvesting due to pollution threats. The Shellfish Protection Act provides that a shellfish area shall be designated as threatened if it is closed to harvesting for more than thirty days in each of three consecutive calendar years. This Act has been in effect for Tomales Bay since 1994. As a member of the technical advisory committee, CDPH informs the members of changes in water quality relative to classification of shellfish growing areas. CDPH will assist in additional investigatory efforts by the committee if needed.

E. California State Lands Commission (CSLC)

The CSLC derives its authority from both the Public Resource Code and the California Code of Regulations. Public Resources Code section 6301 grants exclusive jurisdiction to the CSLC over all ungranted tidelands and submerged lands and the beds of navigable rivers, streams, lakes and bays. The CSLC administers this authority, including the leasing of sovereign lands for marinas, docks, and moorings pursuant to Title 2, Division 3, Chapter 1, of the California Code of

Regulations. The CSLC also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (PRC §6301 and §6306). All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high water mark, except where the boundary has been fixed by agreement or a court. Such boundaries may not be readily apparent from present day site inspections.

F. California State Parks (CSP)

The CSP system is established in the Public Resources Code, Sections 500-514. The Public Resources Code and the California Code of Regulations call for California State Parks to

> "...administer, protect, provide for recreational opportunity, and develop the State Park System; to interpret the values of the State Park System to the public; to operate the Off-Highway Motor Vehicle Recreation Program; to administer the California Historical Resources Protection Program; and to administer federal and state grants and bond funds to local agencies."

The mission of the California Department of Parks and Recreation is to provide for the health, inspiration, and education of the people of California by helping to preserve the state's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. CSP's core programs are the major activities that encompass the mission of the Department. They include Natural Resource Protection, Cultural Resource Protection, Facilities, Interpretation/Education, Public Safety and Recreation.

Title 14, the Public Resources Code, section 5003.05 provides CSP with jurisdiction on:

> any granted or ungranted tidelands or submerged lands abutting property of the Department and used for recreational purposes by members of the general public in conjunction with their use of the department's property between the boundary of the lands under the jurisdiction of the department and a line running parallel to and 1,000 feet waterward of the ordinary high water mark, so long as the rule or regulation being applied is not inconsistent with any rule or regulation of any other public agency which is applicable to the tide or submerged lands.

G. National Oceanic and Atmospheric Administration --Gulf of the Farallones National Marine Sanctuary (GFNMS)

GFNMS has been vested with the authority, in accordance with the NMSA (1972), to provide comprehensive and coordinated conservation and management of 967.8 square nautical miles of nearshore and offshore waters and submerged lands off California. Since its designation in 1981, GFNMS has the authority to regulate certain activities within its boundaries, pursuant to the NMSA. The primary objective of the NMSA is resource protection, which is carried out in the GFNMS by regulations codified at 15 CFR Part 922, and through the issuance of permits and coordination with other local, state, and federal agencies and by outreach, education, research, monitoring, and enforcement.

With certain exceptions, GFNMS regulations (15 CFR Part 922.82) generally prohibit the following activities within the sanctuary:

- Discharging or depositing of materials directly into the sanctuary;
- Discharging or depositing of materials from outside the sanctuary that enters an injures sanctuary resources;
- Constructing any structure other than a navigational aid;
- Placing or abandoning any structure;
- Dredging or otherwise altering the submerged lands of the Sanctuary;
- Using motorized personal watercraft (MPWC - defined as a vessel which uses an inboard motor powering a water jet pump as its primary source of motive power, and which is designed to be operated by a person sitting, standing, or kneeling on the vessel rather than the conventional manner of sitting or standing inside the vessel);
- Taking, harassing and disturbing seabirds, marine mammals, and sea turtles;
- Attracting white sharks;
- Deserting a vessel aground, at anchor, or adrift in the Sanctuary;
- Leaving harmful matter in a deserted vessel;
- Moving or removing historic resources (such as shipwrecks); and
- Anchoring in Tomales Bay seagrass protection zones.

Under section 1437 (d)(1) of the National Marine Sanctuaries Act, fines of up to $130,000 per incident per day can be assessed for violations, including sewage, oil and mooring material discharges; and construction and placement of unpermitted moorings. Under the section 312(j) of the Clean Water Act fines of up to $2000 can also be imposed for illegal discharges.

H. Marin County and the Marin County Sheriff's Office

The Marin County Sheriff's Office is the primary agency within Marin County that has law enforcement authority in Tomales Bay. While primary law enforcement jurisdiction is the purview of NOAA, GFNMS, NPS, and CSP for lands within their respective park boundaries, the Sheriff's Office has authority to enforce all state and local laws within those park boundaries.

Other agencies within Marin County that have some jurisdiction over vessel-related issues in Tomales Bay include: the Marin Community Development Agency, which would permit the expansion of vessel-related facilities, and the Marin County Parks and Open Space District, which manages the Miller vessel launch ramp.

I. National Park Service (NPS) / Point Reyes National Seashore (PRNS) / Golden Gate National Recreation Area (GGNRA)

The NPS has jurisdiction on tide and submerged lands owned by the NPS in Tomales Bay through Point Reyes National Seashore (PRNS) and the Golden Gate National Recreation Area (GGNRA). In addition, NPS owns and manages formerly private parcels including tide and submerged lands that were acquired by or donated to the NPS along the east and west shore of the bay. For PRNS, jurisdiction is established through the park's enabling legislation (Public Law 87-657), as any lands, waters, and submerged lands inside the park's boundary is subject to park jurisdiction. For GGNRA, jurisdiction is established through the park's enabling legislation (Public Law 92-589), as any lands, waters, and submerged lands inside the park's boundary is subject to park jurisdiction. This jurisdiction means that the parks will enforce all sections of Title 36 of the Code of Federal Regulations, (*Parks, Forests, and Public Property*) on land and water within the park's boundaries in addition to all other applicable federal and state laws. Title 36 includes provisions that address limits on overnight stays, activities that require permits, and vessel usage. Part III of Title 36 adopts state boating regulations and U.S. Coast Guard rules codified in Title 33 of the Code of Federal Regulations, *Navigation and Navigable Waters:*

- The Seashore has the authority to institute a permit system for vessel use within the Park and prohibit some activities. [Code of Federal Regulations Title 36, Parks, Forests, and Public Property, Part 3 Boating and Water Use Activities (cited as 36 CFR Parts 1, 2, and 3)].
- The PRNS Superintendent is also allowed to close the park to moorings, or allow them under permit, control overnight stays, and prohibit residing on federal lands or waters, except under permit. Currently, kayakers camping overnight in the Park are required to obtain a permit from the Park. [36 CFR Parts 1, 2, and 3]
- The Park also has the authority to adopt state regulations for vessel operation and registration and licensing issues; allows the NPS to enforce Coast Guard regulations on park waters and includes regulations on discharge, vessel operation, vessel requirements, and documentation. [36 CFR Part 3]
- The Park also has authority to conduct enforcement of general boating rules including types of vessels, equipment, moorings; and allows rangers to board and inspect vessels in Park waters. [36 CFR and 43 CFR Navigation and Navigable Waters]

Several federal laws designed to protect wildlife are applicable to water-based recreational uses in Tomales Bay. The Marine Mammal Protection Act of 1972 prohibits taking or harassing marine mammals. Harassment is defined as any act that has the potential to disturb an animal by causing disruption of normal behavioral patterns including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering. Brown pelicans, a federally listed endangered species, roost on islands and floats in Tomales Bay. They use Pelican Point and Hog Island as resting areas and are protected under the Endangered Species Act of 1973 and the

Migratory Bird Treaty Act. The Migratory Bird Treaty Act also protects nesting Double-crested Cormorants on Hog Island.

The GGNRA was established by Congress in 1972 as part of a movement known as "Parks to the People." The park has grown into the largest national park unit in an urban area in this country, and includes under its management two additional NPS units—Fort Point National Historical Site and Muir Wood National Monument. The park's lands are located in three counties—Marin, San Francisco, and San Mateo. Upwards of 20 million people per year visit this remarkable park, located in the midst of a highly diverse metropolitan area of 7 million people. The Northern Unit of GGNRA is administered by Point Reyes National Seashore.

J. State Water Resources Control Board (California Water Board) and Regional Water Quality Control Boards (RWQCBs)

The Porter-Cologne Water Quality Act (Cal. Water Code, Sections 13000 et seq.) was enacted in 1969 to preserve, enhance and restore the quality of California's water resources, and ensure their proper allocation and efficient use of the benefit of present and future generations. The Act established the State Water Resources Control Board (the California Water Board) and nine Regional Water Quality Control Boards as the principal State agencies with the responsibility for protecting water quality in California. Under the Act, the Water Board has the ultimate authority over State water rights and water quality policy, and the regional boards oversee water quality on a day-to-day basis at the regional level by determining the beneficial uses for all water-bodies within their jurisdiction, establishing and enforcing water quality standards for surface and groundwater, and taking actions needed to maintain the standards by controlling point and non-point sources of pollution. The Shellfish Act of 1993 established the requirement that the Regional Board form a Technical Advisory Committee to investigate sources of pollution in threatened shellfish areas of the bay.

The Porter Cologne Act and the San Francisco Bay Basin Plan prohibit the discharge of raw sewage or any waste that fails to meet waste discharge requirements into Tomales Bay. The Water Board has also adopted a Total Maximum Daily Load (TMDL) for pathogens in the Tomales Bay Watershed, which includes a prohibition of human waste being discharged into the bay. The RWQCB has the authority to investigate and regulate discharges of waste into Tomales Bay. State discharge requirements for marine areas are the same as federal requirements.

The RWQCB has the authority to investigate which discharges of waste from housevessels are inadequately regulated by local ordinance and can require a city or county to adopt an ordinance for the control of discharges of waste from an area (Porter-Cologne Act, Chapter 11, Section 13900). This process is coordinated with the CDPH and DBW. The Water Board also has the authority to develop and adopt regional standards and require installation of sewage disposal facilities at marinas (Harbors and Navigation Code Chapter 6, Division 3, sections 776 and 778). The California Code of Regulations (Title 23, Chapter 20 and 20.1) contains standards establishing criteria for the design, construction, operation, and maintenance of pumpout facilities. The RWQCB can require a public marina operator to provide a pumpout station. For private marinas, the RWQCB must petition the Water Board to require a pumpout facility.

K. United States Coast Guard (USCG)

The USCG has the authority to enforce numerous on the water regulations. USCG regulations prohibit dumping of plastic refuse and garbage mixed with plastic into any waters. Recreational vessels 40 feet or more in length and equipped with a galley and berthing are required to carry and adhere to a Waste Management Plan if the vessel operates, or is certified to operate, beyond 3 nautical miles from shore under U.S. Coast Guard jurisdiction.

All vessels with installed toilets must have a USCG-certified Marine Sanitation Device (MSD) if operating in U.S. navigational waters (33 CFR Part 159). Vessels with a Type I or Type II MSD must treat their sewage before discharge. For a Type I MSD, the fecal coliform count in the effluent must be no greater than 1000 per 100 milliliters of water and have no visible floating solids. For a Type II MSD, the fecal coliform count must be no greater than 200 per 100 milliliters, and suspended solids no greater than 150 milligrams per liter (33 CFR Part 159). Installed toilets that are not equipped with an MSD and that discharge raw sewage directly over the side, are illegal. Portable toilets, or "porta-potties," are not considered installed toilets and are not subject to the MSD regulations. They are, however, subject to disposal regulations of the USCG that prohibit the disposal of raw sewage within territorial waters (3 mile limit).

The USCG performs a variety of inspection, enforcement, search and rescue, environmental, and public safety roles, on and within Tomales Bay. The USCG plays an integral role in NOAA's charting program. Nine USCG districts throughout the country publish chart corrections weekly in "Local Notice to Mariners". The Local Notice to Mariners and the Notice to Mariners (published by the National Geospatial-Intelligence Agency are the primary sources used by mariners to keep their charts updated.

L. United States Environmental Protection Agency (U.S. EPA)

Regulations issued under the Federal Water Pollution Control Act of 1972 (amended 1977) require all vessels with propulsion machinery to have the capacity to retain oily mixtures on board. A bucket or bailer is suitable as a portable means for collecting oily waste on recreational vessels for proper disposal. No person may intentionally drain oil or oily waste from any source into the bilge of any vessel.

No Discharge Zones (NDZ) are established by the U.S. EPA. In these areas, Type I or II Marine Sanitation Devices—types of treated waste—must be sealed, and no discharge to marine waters is allowed. The state requires any vessel operating in a lake, reservoir, or fresh water impoundment that is equipped with a toilet to seal or otherwise render the unit inoperable; no discharge is permitted. U.S. Coast Guard is responsible for enforcement of NDZ regulations.

One provision of the Clean Water Act (Section 312), entitled "Marine Sanitation Devices," gives U.S. EPA the authority to designate No Discharge Zones (NDZs). A NDZ is all or a portion of a waterbody into which the discharge of sewage (whether treated or untreated) from vessels is completely prohibited (40 CFR Part 140.4). There are 11 U.S. EPA-designated No Discharge

Zones in California. Tomales Bay is not one of them. The area closest to Tomales Bay that is a NDZ is Richardson Bay.

Discharges of oil or other hazardous substances are prohibited within 12 miles of the coast and within fisheries and marine preserves up to 200 miles from the coast under the Clean Water Act (40 CFR Part 110.6).

M. Local Jurisdictions

Local jurisdictions may have additional boating laws, rules, or ordinances. These local rules may include speed limits, no wake zones, vessel type and size restrictions as related to sanitation and pollution control, and zoning restrictions for areas closed to boaters and designated traffic patterns.

PERMITTING AND LEASING AUTHORITY

There are extensive overlapping jurisdictions and authorities within Tomales Bay. The CCC has permitting authority over the entire bay and those portions of the upland areas that are in the coastal zone. The CSLC has leasing authority over the state-owned tidelands and submerged lands. The GFNMS has permitting authority over certain activities in the water column up to the mean high water line, including activities that alter the submerged lands. NPS has permitting authority on NPS-owned parcels on the east and west shore that include tide and submerged lands within and outside the GFNMS boundary.. The County of Marin has permitting authority over private tidelands within Tomales Bay.

The CDFW has authority over the management of aquaculture lease areas. State Parks has an administrative agreement with CSLC and authority 1000 feet out from State Parks Lands. The RWQCB has permitting authority for all discharges into Tomales Bay. GFNMS has permitting authority over any discharges that do not come from a Type I or Type II MSD.

ENFORCEMENT AUTHORITY

The primary agencies that are involved in the enforcement of county, state and/or federal regulations with respect to boating operation in Tomales Bay include the County of Marin Sheriff's Office, CSP, NPS, CCC, CSLC, GFNMS and the U.S. Coast Guard.

The Marin County Sheriff's Office has authority to enforce county and state regulations. If a vessel is tied to a marina, the County has provisions for long-term anchored or moored vessels upon which a person or persons live and moorings. If an illegal discharge is witnessed or there is a probable cause or suspicion, the officer can inspect a vessel.

The NPS has patrol vessels and operators working on Tomales Bay. CSP conducts ranger patrols on the West side of the bay and on CSP property, and GFNMS has a NOAA law

enforcement agent assigned to Tomales Bay. These agencies are currently working together to coordinate enforcement in Tomales Bay. The USCG also has the authority to enforce regulations in Tomales Bay.

The biggest challenge for boarding or inspecting vessels for all agencies is that many of the boating laws require that a person be on board a vessel in order for it to be boarded by an enforcement officer. Complaints are usually responded to by the agency to which the complaint was made. The agencies are working to attempt joint patrol operations on the bay for both "routine" and specific enforcement.

In terms of the discharge or release of pollutants or species that can have adverse effects on water quality or the overall health of the bay, several agencies have jurisdiction and enforcement authority to stop or prevent such activities. The RWQCBs, the DFG, the U.S. Coast Guard, GFNMS, and the Marin County Sheriff's Department have various authorities related to such activities in Tomales Bay.

The CCC's enforcement tools include cease and desist and/or restoration orders and filing complaint(s) for civil penalties. Cease and desist orders are used by the Commission to halt ongoing violations, to order removal of unpermitted development, and to force developers to comply with the permit process; restoration orders are used to bring about the removal of unpermitted development and/or restoration of damaged coastal resources.

The CSLC has authority to enforce the terms of any mooring lease issued under the TBVMP as provided by law, including but not limited to, the enforcement of delinquent accounts receivables for lease payments, expired insurance, or other violations of lease terms and conditions, or unauthorized use of State-owned property.

APPENDIX IV: GFNMS ADVISORY COUNCIL RECOMMENDATIONS

In January 2001 the GFNMS Advisory Council was assembled to provide guidance and advice to the sanctuary superintendent on ecosystem management issues. The advisory council provides a platform for public input into the management of the GFNMS. This partnership has allowed GFNMS to make use of and build on the knowledge, roles, and resources that the public, the private sector and other agencies have to offer. The sanctuary advisory council has been a vehicle for making progress through cooperation, including the community in the decision-making process, and drawing in public support. The GFNMS Advisory Council has the ability to form working groups to address specific issues related to sanctuary management. The working groups do not directly advise sanctuary staff or the superintendent, but instead work products or recommendations are given to the GFNMS Advisory Council for deliberation at an open meeting.

In 2008, the GFNMS Advisory Council initiated a Working Group for Tomales Bay Vessel Management. The working group consisted of representatives of boating associations, shellfish growers, commercial fishermen, boat services operations, conservation organizations, shore-side property owners, and state and federal agencies with jurisdiction in Tomales Bay. The working group met from March 2008 until December 2009, and sent all of its recommendations to the GFNMS Advisory Council.

The GFNMS Advisory Council reviewed working group recommendations and made final recommendations to the GFNMS Superintendent at four public meetings between July 2008 and December 2009. The following is a compilation of recommendations made by the GFNMS Advisory Council to the Superintendent regarding Tomales Bay vessel management. The recommendations are grouped into the following issue-based categories: Sewage Services (SS); Oil and Bilge Services (OB); Education and Outreach (EO); Mooring Criteria (MC); Mooring Zones (MZ); Mooring Tackle (MT); and Permitting Program (PP).

Highlighted text indicates where GFNMS Advisory Council recommendations are different than actions being proposed by GFNMS and CSLC in the Tomales Bay Vessel Management Plan.

SEWAGE SERVICES (SS)

1-SS The Advisory Council requests that the Sanctuary Superintendent send a letter to the Marin County Environmental Health Department asking them to look into the following:

- Is there capacity for a Marshall Boat Works pumpout station for an East Shore wastewater treatment site under the existing system as structured under existing agreements, permits and capacity?
- What effect would holding tank chemicals from vessels have on the treatment system?
- What will be the cost and feasibility of connecting to the ES system during phase 2 of the project?

  (7-25-08 SAC Meeting)

2-SS The Advisory Council recommends that sanctuary staff follow up with Marin County Parks and Open Space District (MCPOSD) regarding putting a dump station at Miller Park. *(7-25-08 SAC Meeting)*

3-SS The Advisory Council recommends that the Sanctuary Superintendent write a letter to the Boating and Waterways Commission and Marin County Board of Supervisors requesting a dump station at Miller Park and to encouraging approval of phase 2 of the work. *(7-25-08 SAC Meeting)*

4-SS The Advisory Council recommends that staff, with continued input from community stakeholders, pursue the investigation and planning for sewage services at the following locations: Lawson's Landing, Marshall Boat Works, Marconi Cove, and Miller Park. *(12-11-08 SAC Meeting)*

5-SS The Advisory Council recommends that staff support in pursuit of environmental services grants at those sites deemed appropriate in the investigation from #4 above. *(12-11-08 SAC Meeting)*

6-SS The Advisory Council recommends that the Sanctuary encourage Marin County Parks and Recreation, State Parks and/or GGNRA to purchase the private Marconi Cove parcel up for sale that is currently being used as a boat ramp. *(12-11-08 SAC Meeting)*

7-SS The Advisory Council recommends that the Sanctuary write a letter to National Park Service requesting that they install and maintain a "Port-a-John" bathroom facility at Grassy Point on GGNRA 17-111 (Marin County Assessors Parcel No. 104-230-23). *(12-11-08 SAC Meeting)*

NOTE*: GFNMS will write a letter to National Park Service and Marin County requesting that they determine the feasibility of installing and maintaining portable toilet facilities (i.e. "Port-a-John") in or near areas of known water recreation that may not have adequate facilities. This activity would involve a review of existing facilities, new mooring areas and public use. If the need for new facilities is determined, then GFNMS would make a recommendation to the adjacent public land owner, including Marin County, CSP or NPS to designate and maintain portable toilet facilities at appropriate locations to address increased public use. This may or may not include Grassy Point.*

OIL AND BILGE (OB)

1-OB The Advisory Council recommends the issue of oil and bilge services be included as part of the Vessel Management Plan for reducing impacts to water quality, and impacts to wildlife, habitats, and human health. Specifically, the Advisory Council recommends:

A. Oil absorbent exchange program for the following locations: Marshall Boatworks, Miller Park, and Lawson's Landing.
B. Identification of existing vessel oil recycling facilities for Tomales Bay (including Lawson's Landing, Greenbridge Auto and Gas and others) and investigation of the potential for a new facility at Marshall Boat Works.

(12-11-08 SAC Meeting)

2-OB The Advisory Council recommends to not include a recommendation for pursuing a bilge pump-out station for Tomales Bay, in the *Tomales Bay Vessel Management Plan*. *(12-11-08 SAC Meeting)*

EDUCATION AND OUTREACH (EO)

1-EO The Advisory Council recommends an educational approach focused on not anchoring in eelgrass beds, rather than using buoys as markers of eelgrass beds or anchoring/no-anchoring zones. *(12-11-08 SAC Meeting)*

2-EO The Advisory Council recommends that a boater education and outreach program be developed that encompasses the following:

A. Education and Outreach Messages:
   - Take out your trash
   - Dispose of human waste properly (locations of disposal sites)
   - Dispose of oil, fuel and maintenance products properly (disposal site locations)
   - Do not disturb wildlife;
   - Do not introduce non-native species;
   - Register your Vessel/ do not abandon boats
   - Protect eelgrass: don't anchor in eelgrass.

B. Education and Outreach Materials/Strategies and potential locations as identified in WG notes from 11/12/08. The highest/short-term priority was identified as creating a webpage with maps, locations for products and services, and integrated messages, and outreach at specific venues and events.
   (12-11-08 SAC Meeting)

MOORING CRITERIA (MC)

Seagrass Criteria

1-MC The Advisory Council recommends that sanctuary staff ask the following questions to seagrass experts:
- Do moorings have a measurable impact to seagrass, and if so what type of impact do moorings have?
- Is there guidance that can be given on an adequate buffer for a moored boat?
- Do helical moorings have an impact on seagrass? If so, what is the extent of that impact?
- Is there a precedent that shows zero impact from installing moorings on seagrass beds?
- What is everything known about shading from boats and it's impacts to seagrass considering new technology of mooring tackle?
- What is the possibility for local research on impacts to seagrass (and possibility benthic habitat) from moorings?

(7-25-08 SAC Meeting)

2-MC The Advisory Council recommends a pilot test for the effectiveness of mooring and chain / rode management systems installed and their environmental impacts using scientific protocol (including new and existing mooring systems). Costs should be part of the study, but not a determinant of the study. The Advisory Council also recommends that the eelgrass expert panel should be consulted on the content of the tackle test study and

that eelgrass research funding sources be discussed and considered by the eelgrass expert panel. *(7-25-08 SAC Meeting)*

NOTE*: GFNMS conducted a mooring anchor pilot test, and convened a panel of eelgrass experts. However, when GFNMS investigated the need of determining the environmental impact of mooring and chain / rode management systems as part of the pilot test, staff determined two things: 1) Studies of similar habitats and species have been conducted and many of the conclusions are transferrable to Tomales Bay (refer to EA/IS in Appendix 2 for more information); and 2) the cost and time associated with conducting an environmental impacts study of this magnitude far exceeded available funding.*

3-MC The Advisory Council supported the following concept presented in the working group recommendation as quoted below, and the importance of having more restrictive criteria for an exception to the seagrass mooring criteria, but advised the Superintendent that more specific language needs to be developed on the types of exceptions**.**
"Seagrass extents from 1992 were merged with updates from 2000, 2001, and 2002 to designate current seagrass beds. No mooring in designated seagrass beds will be permitted and, if mooring tackle touches submerged lands, a buffer equal to the radius of the mooring tackle would be applied. Seagrass criteria can be amended to allow the Sanctuary in its sole discretion to allow a mooring in a designated seagrass bed if its installation, maintenance, and use results in negligible impacts individually or cumulatively, or is beneficial to the environment in comparison to the alternatives. Based on adaptive management, designated seagrass beds will be periodically updated using surveys." (12-11-08 SAC Meeting)

NOTE: *1)The preferred alternative includes the recommendation language above for mooring in designated seagrass beds and for taking an adaptive management approach. However, upon consultation with seagrass experts, it has been determined that moorings in seagrass can have a detrimental effect on Sanctuary habitat. Therefore, the Sanctuary will not amend this criterion for vessel moorings and the following language was not adopted, "Seagrass criteria can be amended to allow the Sanctuary in its sole discretion to allow a mooring in a designated seagrass bed if its installation, maintenance, and use results in negligible impacts individually or cumulatively, or is beneficial to the environment in comparison to the alternatives." 2) The language in the Draft TBVMP regarding seagrass mooring criteria was further clarified by GFNMS staff to be consistent with the intent of this original recommendation.*

4-MC The Advisory Council supported the following concept presented in the working group recommendation as quoted below for addressing migrating seagrass beds and the citing of future seagrass beds and the importance of having more restrictive criteria for an exception, but advised the Superintendant that more specific language needs to be developed on the types of exceptions**.**
"Recommendation for addressing migrating seagrass beds:

A. *Designated seagrass beds will be established at the time that the permitting process is approved, subject to amendment in accordance with periodic review;*
B. *Prior to permit/lease renewal, evaluate location and extent of designated seagrass beds based on the most recent reviewed data. If moorings are within designated*

seagrass beds, consider repealing the mooring license or permit, relocating the mooring or mandating alternative mooring technology in that location.

C. *Seagrass criteria can be amended to allow the Sanctuary, in its sole discretion, to allow a mooring in a designated seagrass bed if its installation, maintenance, and use results in negligible impact or is beneficial to the environment in comparison to the alternatives."*
(12-11-08 SAC Meeting)

NOTE*: For information on the specific language adopted, see 3-MC above, and see Strategy VM-1, Activity VM 1.1, Seagrass Criteria.*

State Parks Criteria

5-MC The Advisory Council recommends that the Sanctuary investigate the possibility of State Parks revising their recommendations for mooring. Specifically, to change the recommendation from "No mooring in areas 1000 feet offshore of State Park lands" to "individual mooring permits be reviewed subject to the approval of State Parks, if required." *(12-11-08 SAC Meeting)*

Shoreside Properties Criteria

6-MC The Advisory Council recommends that the Sanctuary bring for consideration to the Interagency Committee the creation of a no-mooring buffer in front of residential shoreside properties without the consent of the property owner. *(12-11-08 SAC Meeting)*

Aquaculture Criteria

7-MC The Advisory Council proposed adding a sentence to the aquaculture criteria paragraph proposed by the working group. The sentence is noted below in italics.

Areas that fail to meet the DPH calculations for safe distances between moorings and shellfish growing operations.
Locations and extents of active aquaculture lease areas were provided by the California Department of Fish and Wildlife. The safe distances between moorings and shellfish growing operations are based on dilution ratios that analyze the number of vessels and volume of water surrounding each vessel relative to fecal coliform dilutions to safe levels (below 14 Most Probable Number) and factor in other viruses and other pathogens. The dilution ratios for moored boats near shellfish beds will be applied on a case-by-case basis. *Additional consideration may be given to boat type, location, usage, and other factors.*
(7-25-08 SAC Meeting)

NOTE*: GFNMS does not have the authority to make this change. GFNMS forwarded this recommendation to CDPH, which has management authority over shellfish growing operations. Upon consultation, it was determined that this change cannot be made. For more information see Strategy VM-1, Activity VM 1.1, Aquaculture Criteria.*

MOORING ZONES (MZ)

The Advisory Council recommends that GFNMS include in an environmental document the following Tomales Bay Working Group recommendations, which the Advisory Council forwarded verbatium to the Sanctuary Superintendent:
(8-13-09 SAC Meeting)

Mooring Zones

3-MZ Recommends that all existing moorings on the bay there should be a process to permit them in one group.

4-MZ Recommends that public mooring zones be large enough to accommodate the existing moorings in the historical mooring areas, and that those existing moorings that fall outside the zones or those that do not meet mooring criteria should be relocated within these zones on a priority basis as a part of an initial batch application.

5-MZ Recommends that the boundaries for mooring zones should be lines extending approximately perpendicular from the shoreline.

7-MZ Recommends that at mooring zone #6 the public mooring zone should end at the northern boundary of the Vilicich family property and the area northwest of that is recognized as a historically used private mooring zone.

8-MZ Recommends that the rights of littoral property owners should be considered in establishing public mooring zones.
NOTE*: GFNMS does not have the authority to allow this, but this recommendation was forwarded to CSLC, and this concept is incorporated into the TBVMP.*

9-MZ The southern boundary for mooring zone #8 as depicted in the PDF map (a private mooring area) should be adjusted further east to accommodate existing commercial fishing boat moorings.

10-MZ Mooring zone #9 should be expanded since it is a potentially valuable public mooring area. The northern boundary should be the new line between zones 8 and 9 located to the south of Fisherman's Town. The southern boundary should be extended to the aquaculture lease area.

11-MZ Merge mooring zones #10 and 11. The southern boundary should be at the yacht club, the northern boundary at Teacher's Beach. Investigate whether or not the cable area shown on the PDF Map should be an excluded area.

The Advisory Council recommends the sanctuary forwards the following working group Recommendations to the to the Tomales Bay Interagency Committee for further consideration:
(8-13-09 SAC Meeting)

Mooring Zones

6-MZ Recommend that Mooring zones 3, 4, 5, 8, 12 and 13 as depicted in the PDF Map from the 4/29/09 working group meeting be recognized as historically used private mooring areas, and should not be recognized as public mooring zones.

NOTE: *All proposed mooring zones are located on State of California sovereign lands and therefore are not recognized as private mooring areas. However, land-based access to some of the proposed zones will be restricted. All applicants who are not able to provide evidence of their littoral ownership will be required to provide evidence of authorized access to their*

mooring as a condition of their lease; if the proposed point of access includes entry onto a private parcel, then a letter of permission from the owner of that parcel will be required.

Maximum Number of Moorings for Tomales Bay

1-MZ Historically it has been established that the average number of moorings on the bay has been between 130 and 150. The working group recommends to the SAC that the maximum number not exceed the historic number by more than 100 percent, appropriately balanced between public moorings and littoral property moorings.

NOTE*: Exceeding the historic number by more than 100 percent is not consistent with permitting policies. For more information see Strategy VM-2, Activity VM 2.2*

Recommended language regarding Littoral Properties

2-MZ Recommends the following language: "*A mooring is allowed offshore of developed littoral properties for the use of the owner or the lessee of the property, unless commercial needs or legitimate private needs justify a greater number."*

Defining Historical Mooring Areas

12-MZ The following language is recommended regarding historical mooring areas: "*Areas that have historically had moorings based on a composite of the best available aerial photos and agency boat-based surveys as referenced in Tomales Bay Vessel Management Plan."*

MOORING TACKLE (MT)

(12-10-09 SAC Meeting)

1-MT The Advisory Council recommends that a Standard be established within a predetermined timeframe for the mooring technology to be used in Tomales bay. This standard should review the engineering specifications of accepted mooring technologies and outline the key elements of mandatory inspection programs that these technologies entail.

2-MT The Advisory Council recommends permitting the current moorings that meet or that upgrade to the standard established in recommendation 1-MT.

3-MT The Advisory Council recommends that new technologies only be implemented for new and replacement mooring within a predetermined timeframe.

4-MT The Advisory Council recommends that the sanctuary pursues adaptive management of various mooring technologies (anchor and tackle) in Tomales Bay to select those that are (a) the least damaging to the environment, (b) appropriate for Tomales Bay hydrodynamic conditions and (c) affordable

PERMITTING PROGRAM (PP)

The Sanctuary Advisory Council Recommends that the Sanctuary Superintendent forward the following to the State Lands Commission regarding permitting:

(12-10-09 SAC Meeting)

1-PP The Advisory Council recommends introducing permitting over a set time frame (e.g. from May to October) to assure adequate time for adjustment.

2-PP The Advisory Council recommends to establish priority in the initial permitting batches by

first processing existing mooring used by local residents, then processing all other existing mooring and finally opening the permitting process to new moorings.

3-PP The Advisory Council recommends introducing the permitting process to the community through public presentations or workshops, focusing on the criteria restricting mooring, the designation of historical mooring areas, and the standards for mooring.

4-PP The Advisory Council recommends consolidating information about the mooring permit process on a single web site that can be linked to all interested agencies. This web site should, at minimum, include:

a. The decision tree that control the process;
b. The interactive map showing historical mooring area, restricted area and existing mooring;
c. Recommendations on mooring options and associated maintenance requirements;
d. A list of Frequently Asked Questions; and
e. Links to appropriate forms required for permit application.

5-PP The Advisory Council recommends that the permit application be available both through mailing and interactively.

APPENDIX V: TOMALES BAY MOORING PROGRAM

Introduction:
The following proposed *Tomales Bay Mooring Program* (MP) was developed as part of the *Tomales Bay Vessel Management Plan* by NOAA's Gulf of the Farallones National Marine Sanctuary (GFNMS) staff in partnership with California State Lands Commission (CSLC) staff. The program includes specific criteria for where moorings are allowed on the bay, introduces mandatory specifications for mooring tackle, and requirements for the inspection and maintenance of moorings.

The primary goals for establishing a program for siting and permitting of moorings on the bay are to: protect habitat; decrease threats to and disturbance of wildlife; and ensure safe and enjoyable water-related recreation by allowing moorings and removing and preventing illegally and improperly placed moorings and mooring materials. The MP utilizes an adaptive management approach for decisions regarding various mooring technologies (anchor and all other equipment) in Tomales Bay to select those that are the least damaging to the environment and appropriate for Tomales Bay hydrodynamic conditions. As new information is acquired and analyzed, requirements and specifications may be amended by GFNMS and CSLC.

Tomales Bay Mooring Program Applicability and Exemptions:

- The MP allows for up to 165 moorings on Tomales Bay within CSLC and GFNMS jurisdiction. This includes 130 leases for the use of State sovereign lands for privately owned vessel moorings and up to 35 moorings at Lawson's Landing. Use of State sovereign land for moorings at Lawson's Landing are subject to the terms and conditions of a 25-year commercial lease issued by CSLC in 1998 and are not subject to the requirements of the MP.

- Moorings directly associated with aquaculture operations and located within state water bottom lease areas for aquaculture pursuant to a valid lease, permit, license or other authorization are regulated by California Department of Fish and Wildlife and Department of Public Health and not subject to the requirements of the MP.

CSLC Tomales Bay Mooring Program Lease Requirements:

- CSLC administers the MP to issue leases for the use of sovereign land for individual moorings within Tomales Bay. Without exceptions, all owners of private vessel moorings located within Tomales Bay are required to obtain a lease from the CSLC.

- With the exception of moorings currently holding a valid CSLC individual or commercial mooring lease (e.g. Lawson's Landing) and moorings within state water bottom lease areas for aquaculture pursuant to a valid CDFW lease, permit, license or other authorization, no current or past Tomales Bay mooring owner is granted an automatic right to moor and no moorings will be automatically grandfathered in as exempt from the requirements of the MP.

- Moorings on Tomales Bay must have a valid CSLC lease. All other moorings are considered unpermitted.

- Moorings that do not hold a valid lease or are not in the process of obtaining a lease will be tagged and given notice to apply for a lease or remove the mooring within a 45-days of notification. The cost of removal of an unauthorized mooring is the responsibility of the mooring owner. If the owner does not apply for a lease or remove the mooring within 45-days of notification, then it will be removed and impounded at the owner's expense pursuant to the National Marine Sanctuaries Act.

- The lessee purchases and owns all mooring tackle and incurs all installation, inspection and maintenance costs.

- CSLC *General Lease- Recreational Use* has a term of 10 years assuming the lessee remains in compliance with the terms of the lease.

Special Conditions for Tomales Bay Mooring Leases:

- Only one vessel is allowed on a mooring at one time. The vessel on the mooring must be registered to that mooring and to the lessee or be registered to a guest of the lessee. Guest boats are allowed, with permission from the lessee, for no longer than 30 consecutive days and only if they are the same size and weight or smaller than the vessel for which that mooring was designed.

- The mooring cannot be rented or used for commercial purposes.

- All moored vessels must maintain liability insurance coverage and must be registered and must display a current registration sticker or other visible proof of registration consistent with the requirements of applicable state and/or federal law.

- Each lessee is responsible for ensuring that mooring tackle is maintained in safe condition. Failure to maintain a safe mooring shall be considered grounds for termination of the mooring Lease.

- The moored vessel is required to be secured firmly and the anchor shall be of a size and design sufficient to prevent the vessel or mooring anchor from drifting, dragging or otherwise moving off the assigned mooring site.

- All vessels that are authorized to moor within Tomales Bay must remain in operable condition while attached to the mooring.

- If during a routine mooring inspection or enforcement patrol, the vessel is determined to potentially be inoperable or in a condition that presents a threat to public health, safety or the environment, then the lessee will be contacted and issued a 45-day written notice. The notice will require the lessee to, within 45-days, either: 1) provide proof that repairs have been made or that the vessel passed an inspection by a qualified inspector such as the U.S. Coast Guard Auxiliary or a mooring services contractor, or 2) remove the vessel from Tomales Bay. If no action is taken within the 45-day grace period, then the vessel will be removed and impounded at the owner's expense.

Tomales Bay Mooring Program Mooring Criteria:
All CSLC mooring Leases subject to the MP shall only be issued in locations meeting all of the following eight criteria:

1. Seagrass*:* No vessel moorings shall be allowed in seagrass beds.
2. Wildlife Disturbance: No moorings shall be allowed in areas within 300 feet of seal haul-out areas.
3. Parcels Under Private Ownership Outside of CSLC Jurisdiction: No vessel moorings shall be allowed on tidelands and submerged lands under private ownership.
4. NPS-owned Tide and Submerged Lands Outside of GFNMS Jurisdiction: Other than as necessary for NPS administrative use, no moorings shall be allowed on the submerged lands owned by NPS outside of GFNMS jurisdiction.
5. Swimming Beach/Boat Launch Areas: No moorings shall be allowed within 100 feet of swimming beaches and boat launch ramps.
6. State Parks: No moorings shall be allowed within 1000 feet offshore of State Parks property.
7. Aquaculture: No moorings shall be allowed within areas that fail to meet the California Department of Public Health calculations for safe distances between moorings and shellfish growing operations. No moorings shall be located within state water bottom lease areas for aquaculture unless authorized by the State of California.
8. Navigation Channels: No moorings shall be allowed within navigation channels of Tomales Bay.

- Existing moorings within designated seagrass beds are required to be relocated to an area meeting all of the mooring criteria. Mooring anchors submerged in sediment within seagrass beds may be required to be abandoned in-place instead of being removed, as removal in some cases can cause significant impacts to seagrass habitat.

Requirements for Location of Moorings:
All mooring leases shall be located on ungranted sovereign lands under the jurisdiction of the State Lands Commission, subject to the MP. No mechanism currently exists for authorizing moorings on private parcels.

- Moorings and associated ground tackle shall be located within the boundaries of the MP *Mooring Zones* depicted on *Figure 2* of the TBVMP with the following exceptions:

  1. *Aquaculture:* State of California authorized aquaculture moorings used for aquaculture operations within state water bottom lease areas;

  2. *Adjacent to Developed Littoral Properties:* Owners of developed littoral properties shall be allowed under an approved lease, the use of submerged lands for the placement, use and maintenance of one mooring directly adjacent to and offshore of that developed littoral parcel. The mooring and attached vessel must meet all of the requirements of the MP including criteria for siting, installation, inspection, and maintenance.

- More than one mooring to a developed littoral property owner may be considered by CSLC, if the property owner can demonstrate need justifies a greater number.

3. *Preexisting Vessel Moorings:* Leases may be issued for moorings on public submerged land, if the location meets all MP mooring criteria, whereby the owner can provide acceptable evidence their mooring existed in the same location prior to the adoption of the TBVMP. If the proposed mooring location requires access through a littoral property, then permission from the property owner for the access is required before consideration of a lease application. This permission must remain in effect for the duration of lease term.

- CSLC does not guarantee that a Lease will be issued for the same location as the desired mooring location proposed by the applicant, even if that site meets all MP mooring criteria and is within an approved mooring zone. Space and capacity for moorings may be limited in some mooring zones based on proximity to aquaculture operations or other sensitive sites, or restricted land access to the mooring sites. If the proposed site is not accepted, then CSLC will provide the applicant with an alternate location within a designated mooring zone, as near in proximity to the proposed location as feasible.

Mooring Tackle Requirements:
In order to prevent vessels from separating from their moorings during extreme weather and sea conditions on Tomales Bay, and to minimize environment impacts and public safety hazards, all vessel moorings authorized under the MP shall be subject to the following requirements for the design and construction, and inspection and maintenance of the mooring system:

- Mooring lessees shall own and be responsible for maintaining all mooring tackle.

- When the MP first becomes effective, owners of existing moorings on Tomales Bay may request continued use of their existing mooring equipment, when applying for a lease, however this would only be allowed if the following conditions are met:

  - ✓ Proof of ownership is provided (see *MP Lease Application Submittal Requirements* section for more information on acceptable evidence);
  - ✓ Documentation is provided (*Mooring Inspection Form)* demonstrating that the existing mooring system is safe and effective and passes an inspection by an approved Mooring Contractor in accordance with the MP, and that the proposed mooring tackle will not result in significant environmental impacts;
  - ✓ Mooring location is consistent with the requirements detailed in the MP *Mooring Criteria* section above.

  Existing moorings that qualify under the above conditions shall be required to obtain a CSLC lease and comply with all mooring criteria and maintenance and inspection requirements of the MP.

- All mooring equipment must be installed and inspected in accordance with the MP tackle and inspection requirements and by a GFNMS approved Mooring Contractor, at the lessee's sole cost and expense.

- GFNMS staff in collaboration with the TBIC shall have final approval over all mooring tackle used for private vessel moorings on Tomales Bay. Mooring tackle that has been installed but not reviewed by a qualified Mooring Contractor and/or is not compliant with MP Mooring Tackle Requirements is illegal and considered grounds for mooring lease termination.

- Vessels over 55-feet require the owner to submit mooring plans from a credentialed marine engineer.

- The mooring tackle and anchor shall be appropriate for Tomales Bay benthic habitat and geologic and hydrodynamic conditions, and capable of withstanding extreme weather and sea conditions. Extreme conditions within Tomales Bay can include: maximum sustained winds of over 30 knots, with gusts over 75 knots; wave heights of up to six feet (3-6 second intervals); maximum current speed of 2-3 knots, and; a maximum tidal variation of 9.1 feet.

- If a pendant is used, then chafing gear is required between the pendant and vessel.

- Mooring buoys shall be standard white, hard shell, with foam interior and with blue horizontal stripe.

- The associated CSLC lease number must be prominently displayed on two opposite sides of the mooring buoy in block letters (minimum of 4") using black oil-based paint or permanent marine-quality stickers appropriate for use on mooring buoys.

- The cleat, post or deck hardware, which attaches to the pendant, shall be visibly free of rot, corrosion or disrepair and capable withstanding loads, to the satisfaction of the approved Mooring Contractor.

Mooring Anchors:

- Mooring anchors must be appropriate for the specific conditions at each mooring lease location and must be approved by a qualified Mooring Contractor. Engine blocks, Manta Ray and helical type anchors are not authorized. Examples of acceptable mooring anchors include pyramid (e.g., Dor Mor) or mushroom type anchors, properly designed and constructed one or two concrete filled 55-gallon drums, and clean railroad wheels.

- Anchor weight shall be proportional to the size of the vessel being moored and must be sufficient to hold the vessel in extreme weather conditions.

- Helix anchors are not permitted without further evidence of their effectiveness, including long-term testing in Tomales Bay.

- Manta Ray anchors are not allowed.

Rode:

- Chain, if used, and all metal components such as shackles, swivels, and eyes, shall be appropriately sized and of a high manufacturing quality (e.g. hot-dipped galvanized), to the satisfaction of the Mooring Contractor.

- Stainless steel safety wire or other binding material shall be required on all shackles to prevent unscrewing.

- If two individual lengths of chain (top and bottom chain) are required, they shall be shackled together, with swivel, to form one continuous length.

- Where the mooring chain is a single piece the shackle and swivel shall be placed between the anchor and chain.

- A shackle and swivel shall be used between buoy and top of mooring chain.

- All chain ½" and smaller shall be new upon initial installation.

- Seaflex or other elastic rodes shall not be permitted without further evidence of their effectiveness including long-term testing in Tomales Bay.

List of GFNMS Approved Mooring Contractors:

- GFNMS staff, in collaboration with the TBIC, will develop and maintain a list of mooring services contractors approved for installing, inspecting and repairing/maintaining all moorings subject to the MP. It is required that a qualified contractor conducts all mooring installations and annual inspections, and submit completed forms for installation and annual inspection to CSLC.

Inspection and Maintenance Requirements:

- Inspections by an approved Mooring Contractor shall be required for all moorings leased under the MP, at the mooring lessee's sole cost and expense. Inspection is required upon installation at the Mooring Site and annually thereafter at a specified date. It is the mooring lessee's responsibility to schedule and ensure that the required inspections occur.

- The mooring inspector must complete a *Mooring Inspection Form*, which includes the current GPS location of the mooring anchor and a statement certifying the condition of the mooring tackle and whether or not it passes inspection. It is required that this form be submitted by the mooring lessee or Mooring Contractor to CSLC within 14-days of the inspection, along with the payment of annual lease fees and current vessel registration.

- If the mooring does not pass inspection then the lessee shall be given 45-days to take corrective actions, and submit a revised *Mooring Inspection Form* signed by an approved Mooring Contractor. If no corrective actions are taken within 45-days then the CSLC mooring Lease shall be terminated and the vessel and all mooring tackle removed at the owner's expense pursuant to the authority of the National Marine Sanctuaries Act.

- Moorings/vessels that are determined during an inspection to present a high potential as a hazard to public safety or the environment shall be reported immediately by the Mooring Contractor to CSLC and GFNMS staff, and shall require immediate action including potential removal at the lessee's expense.

- Mooring pendants, if used, shall be inspected annually and kept in good condition at all times. The mooring lessee shall routinely check pendant for chafing and wear, and replace as necessary to prevent pendant failure.

Mooring Installation and Positioning:

- If the lease is approved by CSLC, the mooring anchor location will be provided and the mooring must be installed by a qualified Mooring Contractor within 90-days.

- The Mooring Contractor shall record the actual installed location of the mooring anchor and the coordinates shall be submitted to CSLC, initially by the contractor as part of the *Mooring Installation Form*, and again each year in the *Mooring Inspection Forms*.

- The Mooring Contractor who is responsible for installation of a mooring, is required to fill out a *Mooring Installation Form* which shall be submitted by the lessee to CSLC within 14-days of installation. Required submittal information on this form includes: GPS location of the mooring anchor; an initial mooring tackle inspection report demonstrating that all mooring tackle meets MP requirements; current vessel registration and lessee's contact information, and; a color photograph of the installed mooring system and attached vessel.

Mooring Lease Application Process and Information Submittal Requirements:

- The following information shall be submitted by the applicant along with a completed *MP Mooring Lease Application* for review prior to consideration of approval of a mooring lease by the CSLC at a public meeting:

  - ✓ The name and address of the vessel owner/mooring lease applicant;
  - ✓ Precise latitude/longitude coordinates of the desired mooring anchor location;
  - ✓ Recent color photograph(s) of and general description of the size and type of vessel(s) to be attached to the mooring;
  - ✓ Documentation of vessel ownership in the lease applicants name, consisting of applicable valid Department of Motor Vehicle registration or U.S. Coast Guard Certificate of Documentation;
  - ✓ Proof of valid liability insurance on the vessel(s) proposed to be moored;
  - ✓ Detailed description of proposed mooring tackle;
  - ✓ Letter authorizing or permitting access through a privately owned parcel if applicable;
  - ✓ Request for a proposed mooring location, including latitude/longitude coordinates for the anchor placement location or the name of Mooring Zone requested.

- If the mooring lease application is for a littoral property owner requesting a CSLC lease, then the following information, in addition to the above requirements, shall be required to be submitted:

- ✓ The address and *Assessor's Parcel Number* of the developed littoral parcel.
- ✓ Proposed latitude/longitude coordinates of the desired mooring anchor location.
- ✓ Statement of need if more than one mooring is being requested.

- If the mooring lease application is for an existing mooring owner requesting a CSLC lease for that mooring location, then the following additional information shall be required to be submitted:
  - ✓ Precise latitude/longitude coordinates of the existing mooring anchor location;
  - ✓ Recent color photographs of the mooring's visible tackle showing its relative location;
  - ✓ Acceptable evidence of continued ownership of the mooring at that location

- If the mooring Lease Applicant is requesting continued use of their existing mooring equipment then the following additional information is required to be submitted:
  - ✓ Acceptable evidence of ownership of that mooring;
  - ✓ Detailed description and schematic diagram of all mooring tackle currently being used;
  - ✓ Recent color photographs of the all visible mooring tackle;
  - ✓ A completed *Mooring Inspection Form* completed by a GFNMS-approved Mooring Contractor.

- When proof of mooring ownership on Tomales Bay is required the following may be considered to be acceptable by CSLC:
  - ✓ Tax assessor's records;
  - ✓ Point-of-sale records;
  - ✓ Datable photographs with clear reference features;
  - ✓ Affidavits or testimonials from persons with knowledge of these buoys (this method is not acceptable as the only evidence submitted and should be a complement to other evidence submitted).

- Lessees shall be responsible for promptly notifying CSLC staff of any changes to the original information provided on the application.

- If a lease is authorized, the lessee shall be required to have the mooring installed by an approved Mooring Contractor within 90 days. The mooring shall be installed in as close proximity to the authorized location as is feasible. It shall be required that an *Initial Inspection and Installation* form be submitted by the contractor to CSLC within 7 days of the completed mooring installation.

- Littoral property owners and users of existing moorings on Tomales Bay will be given priority processing under the Mooring Program. To qualify for priority processing, applications need to be submitted within 90 days of the CSLC and GFNMS official release of the approved MP. In addition to the Mooring Lease Application, applicants will be required to submit evidence of ownership of the existing mooring. After the initial 90-day period reserved for existing mooring owners, priority processing will be concluded and CSLC will

accept mooring lease applications from any party interested in applying for a mooring lease within the sovereign lands of Tomales Bay.

Mooring Permitting List:

- CSLC will maintain a MP list that includes locations, vessel information, and other relevant data as provided by lessees. This information will be updated and distributed to GFNMS and other TBIC regulatory agency staff for enforcement and monitoring purposes upon request.

Transfer/Rental of Moorings:

- No sale, rental or sub-leasing of mooring leases shall be allowed. Any sale, rental or sub-leasing of the mooring will result in immediate termination of the mooring Lease.

- Transfer of mooring leases shall only be allowed for littoral property owner moorings, transferable with the adjacent property to a new owner or lessee. Transfer of moorings will require an assignment authorized by the CSLC. Transfers are not automatic with the sale of the littoral property.

Mooring Lease Fees:

- An application fee and filing fee will be required by CSLC upon receipt of a mooring lease application.

- Mooring lease rent shall be payable annually and must be submitted with a *Mooring Inspection Form*.

- Lease Application Fees do not include the costs of the mooring equipment or its installation, inspection, maintenance or removal.

Mooring Lease Termination:

A Lease will include provisions that the lease may be terminated by CSLC upon a breach of the lease, which includes, but is not limited to the following occurrences upon described notification as outlined in the lease:

- Failure to pay mooring lease rent on time;
- Failure to provide evidence of liability insurance;
- Failure to submit an annual *Mooring Inspection Report* when due (with 45 day grace period);
- Failure to comply with MP mooring tackle requirements or mooring inspection requirements;
- Failure to perform required repairs and maintenance within 45 days of failing an annual mooring inspection;
- Failure to maintain the moored vessel in seaworthy and operable condition;
- Selling, renting, or subleasing a mooring lease; and
- Transferring ownership of a non-littoral property mooring lease, or transfer of a littoral property lease without written approval by CSLC.

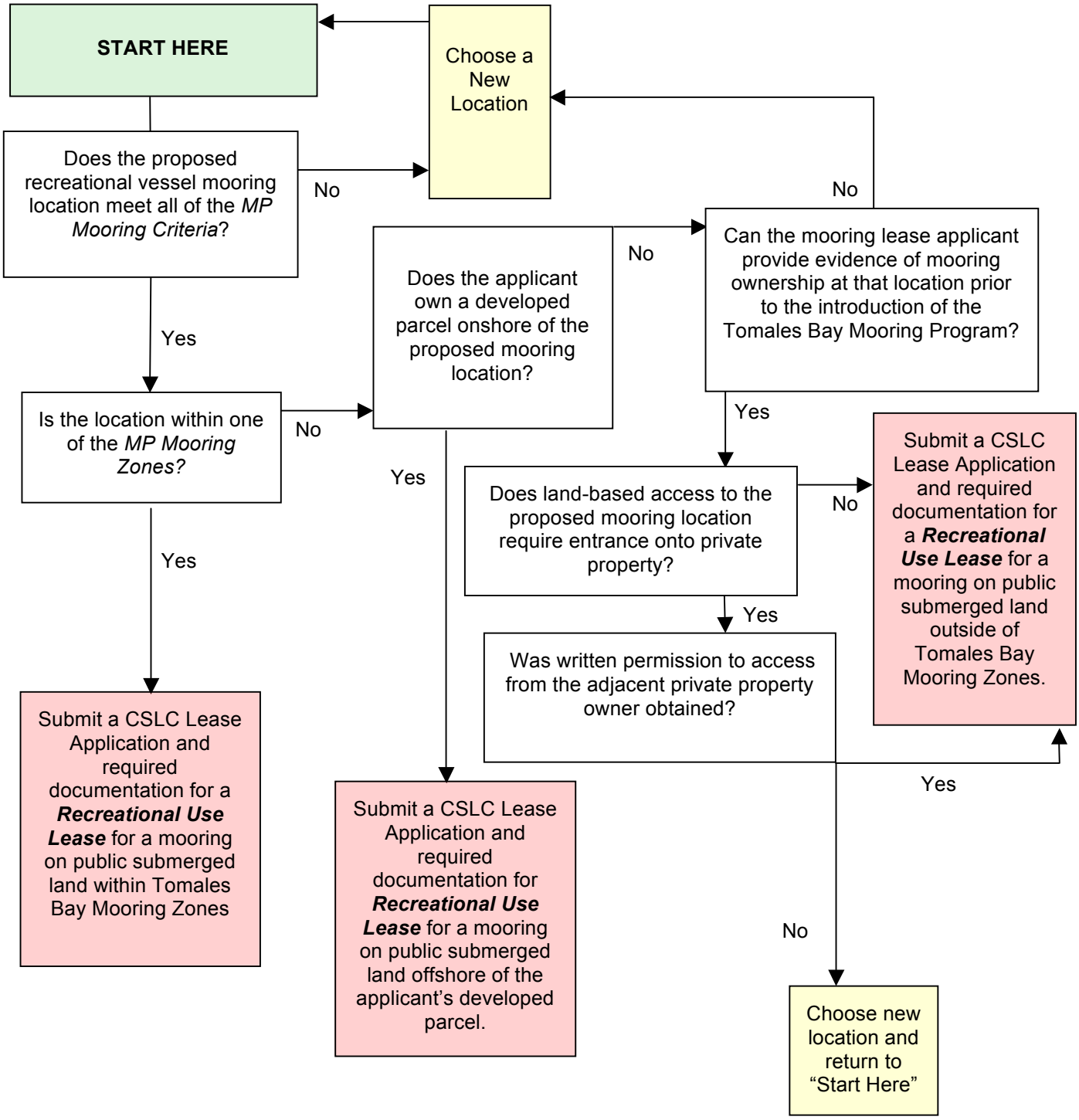
If a mooring system and associated vessel are not removed by the lessee within 45 days of lease termination, then the mooring system and associated vessel shall be removed and impounded at the lessee's expense.

Compliance Monitoring and Enforcement:

- All unauthorized moorings shall be considered unpermitted. Owners of unauthorized moorings will be given notice to remove and will be removed and impounded at the owner's expense if an owner does not apply for a mooring lease or remove all mooring tackle within 45 days of notification.

- Current laws and regulations shall be enforced. No unauthorized moorings are allowed to exist within Tomales Bay. GFNMS staff, in coordination with other TBIC agencies shall conduct regular ongoing compliance monitoring and maintain a database of permitted moorings on the bay.

DECISION TREE FOR OBTAINING AN APPLICATION FOR A TOMALES BAY MOORING LEASE



APPENDIX VI: TOMALES BAY GIS PROJECT LAYER DESCRIPTIONS

Public Health and Water Quality Criteria:

- *Aquaculture lease areas*
  Locations and extents of active aquaculture lease areas were provided by the CDFW.

- *Swimming beaches with 100-foot buffers*
  The National Park Service provided point locations of swimming beaches. 100-foot radius buffer zones were added.

Natural Resource Protection Criteria:

- *NPS-owned tide and submerged lands outside of GFNMS jurisdiction*
  The PRNS no-mooring zone was clipped from the PRNS administrative boundary file to the area defined by the National Park Service. This area is identified on the maps as *Area Outside GFNMS Jurisdiction.*

- *California State Parks no-mooring zones*
  A 1000-foot buffer zone was added to lands owned by CSP where they are adjacent to the shoreline. The buffer zone was clipped approximately perpendicular to the shoreline trend.

- *Seagrass beds*
  Seagrass bed extents from 1992 were merged with updates from 2000, 2001, and 2002 to represent current seagrass beds. (More recent data were not available at this time.) Data were provided by CDFW.

- *Seal haulouts with 300-foot buffers*
  The National Park Service provided point locations of seal haulouts. 300-foot radius buffer zones were added.

Public Safety Criteria:

- *Boat ramps with 100-foot buffers*
  The National Park Service provided point locations of boat launching ramps. 100-foot radius buffer zones were added.

- *Navigation Channel*
  The National Park Service provided the navigation channel digital line file. It was converted to a polygon (for inclusion in the combined areas polygon) by adding a 1-foot buffer zone.

Combined Mooring Exclusion Areas

The above polygon coverages were merged and internal boundaries were dissolved using ArcGIS 9.3 to create a single polygon representing Combined Mooring Exclusion Areas. GIS analysis and cartography was performed by Tim Reed, Marine GIS Analyst for Gulf of the Farallones National Marine Sanctuary, tim.reed@noaa.gov.

Lic. #872999

U.S. MOORING SYSTEMS, INC.

5842 McFadden Unit M. Huntington Beach, Ca. 92649
Office (714) 894-3300
Fax (714) 894-3377
www.usmooringsystems.com

Tomales Bay Anchor Test Final Report 10/23/2009

Scope of Work

On the 23rd of June, 2009 by the direction of and under contract with Gulf of the Farallones National Marine Sanctuary (GFNMS), U.S. Mooring Systems, Inc. installed 6 embedment anchors in Tomales Bay, California. Two anchors were installed off Teachers Beach near an existing mooring field. One Helix SS5 anchor with a 10' shaft and a single 14" disc was installed to a depth of 10' below the mud line. In the same location a single Manta Ray with a MR2 head was installed to a depth of 7' below the mud line.

This same pattern of installation was repeated both in Marconi Cove and at Marshall Boat Works.
After numerous schedule changes, the anchor pull test was scheduled and occurred on the 24th of August, 2009. See the results below.

On Friday the 16th of October a second pull test was conducted on a Helix anchor. This anchor was installed into the soil within the mooring field located at Marshall Boat Works in Tomales Bay, California. This anchor was installed at no charge to GFNMS.

Anchor Pull Test Results

On the Morning of the 24th of August, 2009 a U.S. Mooring Systems dive crew arrived on scene at Tomales Bay, Ca. After locating the preinstalled marker floats indicating the location of the 6 previously installed embedment anchors the crew met up with Brad Damitz of the GFNMS and a group of observers from the Tomales Bay Vessel Management Working Group on a Point Reyes National Seashore boat. At that point the crew also met up with the R/V Mussel Point, the vessel used to conduct the pull test. This 42-foot research vessel is powered by twin turbo diesel engines and jet drives for a total of 1000 horsepower.

The decision was made to begin the pull at Teachers Beach and work our way north. A diver entered the water and made the connection to the first anchor to be tested. The pull hawser used was a 60' piece of one and one half inch Polypropylene three strand yellow line. A load meter was installed between the pull hawser and the tow bit. When a strain was placed on the tow hawser by advancing the throttle of the pull boat, the amount of load being placed on the anchor would be able to be read by visually watching the strain gauge. A video of this entire process was taken and will be made available to Brad Damitz with the GFNMS.

Teachers Beach:

The first anchor pulled was a 7' Manta Ray anchor with a MR2 head. The next anchor pulled was a 10' Helix anchor with a single 14" disc. Unfortunately both of these anchors did not register a load on the meter, as the meter was not working properly. The problem was corrected however, but only after both anchors was pulled to failure. Although the meter failed to work properly during these pulls, the pull vessel was running at more than 1,500 rpm. At this rpm, the amount of pull on the anchors would have been significant.

Marconi Cove:
The next pair of anchors pulled was in Marconi Cove. The anchors were of the same type and configuration as the two previously pulled. The Manta Ray anchor failed at 2,500 lbs of pull. The Helix anchor failed at approximately 5,000 lbs of pull. The soils in this location were of a different texture and makeup in comparison to the other three sites. The Teachers Beach site and the Marshall Boat Works site were significantly softer with only soft bay mud present. The Marconi Cove site was a dense clay and sand mix. This denser soil added significant resistance when we attempted to pull the anchor to failure. We then completed a test pull on what was reportedly 100 gallon drum filled with Concrete with its existing tackle. This anchor failed at 2,500 lbs of pull.

Marshall Boat Works August 24th:
The next pair of anchors was located in Marshall Boat Works. Both anchors were once again pulled to failure. The Manta Ray anchor failing with very little strain, and the Helix holding to 3,000 lbs.

Once again a dead weight reportedly being a 55-gallon drum with 1/2" chain was pulled. It failed at approximately 2,000 lbs.

Marshall Boat Works October 16, 2009:
The anchor was installed by a diver working off a small work boat. The water depth at the time of installation was 30'. The diver installed the triple 14" disc anchor to a depth of 37'. This is exceptionally long and deep, but given the soft soil we thought it best to install an anchor that we were certain would hold. The anchor was pulled on by the same work boat that was provided during our last visit. The vessel pulled on the tow line until a maximum of 2800 RPM was reached on the engines. This equates to a significant load, an estimated 900 horse power was being applied at this rpm.

Engineering Load Estimate:
BlueWater Design Group engineers calculated Mooring Load Estimates for various vessel sizes based on worst-case scenario conditions provided by GFNMS. These load estimates are included as an attachment to this report.

Conclusion
In conclusion, due to the soft soils, all 6 embedment anchors pulled loose from the soil during the first day of testing (8/24/09). In the Marconi Cove location, the helix anchor held to 5,000 lbs of pull. This result is encouraging. It is clear that the soft bottom soil will require a much larger anchor in both diameter and length to reach the desired holding power of a minimum of 4,000

lbs. This minimum far exceeds the holding limits that are currently installed in the bay using dead weights.

On the second day of testing (10/16/09), the larger anchor that was installed did not pull loose from the soil. Based on the original pull test, comparing RPM's reached during the original test, and the RPM's reached during this test; we could speculate that the load exerted onto this anchor was in excess of 15,000 lbs. This load far and exceeds the estimated holding strength required by the engineers load requirements.

If we were to install a complete mooring for any given vessel that has a holding requirement of this magnitude (15,000+ lbs.), here would be the breakdown of costs:

30" Mooring Ball		$325.00
Helix Anchor		450.00
Mid Water Float		45.00
Hardware		100.00
Line		150.00
SeaFlex		1,200.00
Installation		400.00
	Total	2,670.00

If we were to install a complete mooring with a lower holding requirement, like the ones installed/tested during the first pull test (8/24), here would be a breakdown of the costs:

30" Mooring Ball		$325.00
Helix Anchor		350.00
Mid Water Float		45.00
Hardware		100.00
Line		150.00
SeaFlex		995.00
Installation		400.00
	Total	2,365.00

These prices are firm for the next few months, any longer than that and I would have to re-quote. The only price that could change over the next few months is the Seaflex. The Seaflex comes from Sweden and there are shipping charges associated with it. The more Seaflex ordered, the greater the discount off shipping. This Seaflex price could fluctuate a couple of hundred dollars each way. The quote for the installation is also contingent upon multiple moorings being installed on one trip. Minimum installations for this price should be 5.

Suggestions/Recommendations

With the knowledge that was gained from completing the pull test, I believe it is safe to say that the Manta Ray anchors would not be the best choice for a Tomales Bay mooring. However, I am confident that with the right length and diameter, a Helix anchor will meet your needs. For the second installation and pull test which occurred on the 16th of October a USMS crew installed

one Helix anchor in a soft bottom location, at Marshall Boat Works. The crew installed an anchor with enough length to build up a minimum of 1,500 lbs of back pressure on the hydraulic installation tool. Although the strain gage failed during this pull test, the anchor held under a significant amount of force exerted on it by the R/V Mussel Point. In the past, in soft soils similar to what we are working with now, this amount of back pressure would normally yield an anchor with more than 20,000 lbs of holding power.

When discussing the results of the pull test on the dead weights, please keep in mind that when these were pulled to failure, it dislodged them from the soils. It takes a great deal of time in calm weather for these types of anchors to bury themselves into the soils. The initial pull and subsequent holding resistance that we reached is only indicative of what they are capable of before they become dislodged from the soils. Once released from this suction of the mud, they were much easier to drag around. This has to be kept in mind when comparing dead weights against embedment anchors. Unlike dead weights, embedment anchors don't become dislodged once the correct anchor is matched to the soils you are installing it into.

The best argument for dead weights when used in conjunction with chain is that they are relatively inexpensive. Most anybody can set them, and they require little to no maintenance. Unfortunately, they do require replacement over time. The chain connection wears thin, and the chain wears down due to the abrasion of the soils it drags upon. With the ever increasing cost of steel, chain as an option will only become more and more expensive. A dynamic system such as Seaflex, requires very little to no maintenance, will outlast chain 10 to 1and nothing rides across the ocean floor causing damage to both the seafloor and the mooring rodes.

I understand the concerns with a dynamic system. The constant beating of the boat in the short wave, or wind chop that is generated in Tomales Bay gives me concerns as well. Not so much for the Seaflex unit, but the line that connects the Seaflex to the mooring ball, and then the connection to the boat. Chafing of the line may be the biggest issue we will have to deal with. The staff and consultants at USMS have been working on this issue, and have many viable solutions to the problem.

If you need further information, please call me.

Sincerely;

Michael Rawlings
President
U.S. Mooring Systems, Inc.
International Mooring Solutions, Inc.