

An aerial photograph of a river delta system, likely the Columbia River Delta, showing a complex network of channels and sandbars. The surrounding landscape is a mix of green fields and forested areas. In the top right corner, a large, bold black number '5' is overlaid on the image.

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CONSULTATION AND COORDINATION

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CONSULTATION AND COORDINATION

INTRODUCTION

This “Consultation and Coordination” chapter describes the public involvement and agency consultation used during the preparation of the EIS. A combination of activities, including public scoping, formal public meetings, internal workshops, and agency briefings, has helped to guide the NPS in developing this EIS. This chapter provides a detailed list of the various consultations initiated during the development of the EIS, as well as a list of preparers and the list of recipients for this document.

THE SCOPING PROCESS

The NPS divides the scoping process into two parts: internal scoping and external (public) scoping. Internal scoping involved discussions among NPS personnel regarding the purpose of and need for action, issues, available references and guidance, and other related topics. Public scoping is the early involvement of the interested and affected public in the environmental analysis process. The public scoping process helps ensure that the public has been given an opportunity to comment and contribute early in the decision-making process. For this EIS, project information was distributed to individuals, agencies, and organizations early in the scoping process, and people were given opportunities to express their views and identify important issues and alternatives or alternative elements. Internal and public scoping are essential elements of the NEPA planning process. The following sections provide information regarding the scoping activities that were conducted for this project.

INTERNAL SCOPING

An internal scoping meeting was held in September 2010 to initiate the EIS process. Attendees included staff members from the Seashore, DOI Solicitor’s Office, NPS Pacific West Region, NPS EQD, and contractor personnel. During the meeting, the group developed the draft purpose of and need for action, issues, and potential impact topics. This group met again in January 2011 and considered all public comments in the refinement of purpose, need, objectives, issues, and impact topics. Alternatives also were developed, taking comments received during public scoping into account.

PUBLIC SCOPING AND OUTREACH

The NPS issued a press release on September 22, 2010, to announce the public process for the project. A second press release was issued on October 5, 2010, to announce the dates, times, and places of the public scoping meetings. This initiated the project and the beginning of the public scoping and outreach process. On October 8, 2010, the NPS sent out letters to interested parties to inform them of the upcoming public scoping opportunities and activated the project on the PEPC web-site (<http://parkplanning.nps.gov/pore>). On October 22, 2010, the NOI to prepare the EIS was published in the Federal Register (NPS 2010d).

The NPS conducted three public open-house meetings. These meetings were held in the following locations on the following dates:

- October 26, 2010: Dance Palace Community Center, Point Reyes Station, California
- October 27, 2010: Bay Model Visitor Center, Sausalito, California
- October 28, 2010: REI Berkeley, Berkeley, California

A total of 343 people attended the three meetings (206 people attended the meeting at Point Reyes Station, 73 attended the meeting in Sausalito, and 64 attended the meeting in Berkley). Some people attended more than one meeting. At each of these meetings, the NPS provided handouts containing additional information about the NEPA process and commonly asked questions, and identified additional opportunities for the public to comment on the project, including by submitting comments on the NPS PEPC web-site. This information was further displayed on boards around each meeting venue. Seashore staff were available to answer questions and provide additional information to open-house participants. At least one Spanish language interpreter was present at each meeting. Public scoping meeting handouts and posters were made available on the PEPC and park web-sites.

Attendees were encouraged to provide comments both verbally and in writing. Flip charts were set up at each venue along with the informational boards. Verbal comments were captured in writing on these flip charts. Writing stations were also provided at each meeting where attendees could sit, write down their comments on official comment forms, and submit the forms into a box provided. Attendees also were welcome to submit any written comments they had brought with them to the meeting.

The public comment period for initial scoping extended for a total of 50 days (October 8, 2010, through November 26, 2010). The original scoping period was scheduled to end on November 22, 2010; however, due to an unexpected 1-day power outage affecting the NPS PEPC system, the comment period deadline was extended to November 26, 2010, to ensure that the public was provided with ample opportunity to submit their comments. Upon the conclusion of the public comment period, all comments received at or following the meeting were entered into PEPC, including the comments recorded on the flip charts during the meetings. These comments have been included in a public comment analysis report (NPS 2011c), which was used to inform the alternatives development process. The public comment analysis report, along with all comments received, was posted for public review on the park web-site at http://www.nps.gov/pore/parkmgmt/planning_dboc_sup_scoping_comments.htm. Over 4,000 pieces of correspondence were received during the public scoping period for the EIS, and over 8,000 comments were derived from the correspondence received.

COOPERATING AGENCIES

In accordance with NEPA (42 U.S.C. 4321-4370h) and the CEQ regulations sections 1501.5 and 1501.6, NPS invited CCC, CDFG, EPA, NMFS, San Francisco Bay Regional Water Quality Control Board, USACE, MMC, and USFWS to be cooperating agencies for the EIS process. These agencies were requested to provide information in its areas of technical expertise and had the opportunity to comment on the internal review draft EIS provided in June 2011 (see appendix D for relevant correspondence, which is summarized below).

Four agencies replied that they would participate as cooperating agencies with the NPS in the development of the EIS. A cooperating agency agreement was executed between the NPS and CDFG, NMFS, USACE, and EPA to define the roles and responsibilities of the agencies. The San Francisco Bay Regional Water Quality Control Board, MMC, and the CCC declined the invitation to participate as cooperating agencies, and the USFWS did not respond. Details on establishment of these relationships are provided below.

In a letter dated October 14, 2010, NPS invited CDFG to become a cooperating agency during the preparation of the EIS. CDFG replied via email on November 1, 2010, expressing interest in reviewing the EIS as a cooperating agency.

The NPS invited USACE, San Francisco District, to become a cooperating agency during the preparation of the EIS in a letter dated October 14, 2010. USACE accepted this offer in a letter dated November 16, 2010 and stated that DBOC has no current USACE permits or applications. Further, the letter summarized USACE jurisdiction within the project area, including what permits may be applicable.

In a letter dated October 14, 2010, NPS invited EPA to serve as a cooperating agency during the preparation of the EIS. EPA responded in a letter dated November 23, 2010, accepting the invitation. EPA also stated that it plans to review the EIS pursuant to its review authority under section 309 of the Clean Air Act.

The NPS invited NMFS to serve as a cooperating agency during the preparation of the EIS in a letter dated October 14, 2010. A NMFS representative from the regional office contacted the NPS and asked about the cooperating agency letter. The letter was re-sent on November 17, 2010, via email, for review. The NMFS representative indicated to the NPS by phone on November 18, 2010, that it would participate as a cooperating agency.

In a letter dated October 14, 2010, NPS invited the San Francisco Bay Regional Water Quality Control Board to become a cooperating agency during the preparation of the EIS. The agency replied in an email dated November 10, 2010, that it did not plan on participating as a cooperating agency due to limited available staff resources.

The NPS invited CCC to become a cooperating agency during the preparation of the EIS in a letter dated October 14, 2010. CCC declined the invitation to participate as a cooperating agency in the development of the EIS in a letter dated November 9, 2010, but offered to make themselves available to answer specific questions and clarify relevant matters as needed.

In a letter dated October 14, 2011, NPS invited the USFWS to become a cooperating agency during the preparation of the EIS. No response was received from USFWS regarding cooperating agency status.

The NPS invited MMC to become a cooperating agency during the preparation of the EIS in a letter dated June 2, 2011. In an email dated August 24, 2011, MMC declined the invitation to participate as a cooperating agency given its ongoing role in reviewing the potential effects of oyster operations on harbor seals in Drakes Estero.

Each of the cooperating agencies was provided a copy of the Draft EIS. Copies were also sent to all agencies identified in the agency consultation section below. Agency consultation completed to date is included in appendix D.

AGENCY CONSULTATION

In addition to establishing which agencies would serve as cooperating agencies, as described above, other agencies were consulted to aid in identification of potential issues to be addressed in the EIS. Agency consultation is ongoing. Agency consultations are summarized below, and copies of relevant correspondence (including comments on the Draft EIS) are included in appendix D.

ESA SECTION 7 CONSULTATION

NPS initiated informal consultation (via the USFWS web-site) on November 17, 2010 with the USFWS about the presence of federally listed rare, threatened, or endangered species in the vicinity of the Seashore. USFWS replied in a letter dated November 17, 2010, providing a list of sensitive species that have been found in the USGS 7.5 minute quadrangle in which Drakes Estero lies. This list includes all listed species managed by USFWS and NMFS.

NMFS shares jurisdiction over marine threatened and endangered species with the USFWS. NPS requested scoping comments from NMFS in a letter dated October 8, 2010. The NMFS Southwest Regional Office provided formal comments in a letter dated November 22, 2010. This letter did not identify any federally threatened or endangered marine species protected under the ESA; however, NMFS comments on other applicable statutes are summarized in the following sections.

MAGNUSON-STEVENS ACT CONSULTATION

In addition to managing federally threatened and endangered species, NMFS is responsible for managing essential fish habitat under the Magnuson-Stevens Act. As mentioned above, NPS requested scoping comments from NMFS in a letter dated October 8, 2010. The NMFS Southwest Regional Office provided formal comments on the project in a letter dated November 22, 2010, including a list of the relevant fishery management plans located in Drakes Estero. Identified fishery management plans include the Pacific Groundfish, the Pacific salmon, and the coastal pelagic. These plans identify relevant essential fish habitat. Consultation with NMFS related to essential fish habitat is ongoing.

MARINE MAMMAL PROTECTION ACT CONSULTATION

NMFS exerts jurisdiction over marine mammal species protected by the MMPA. As mentioned above, NPS requested scoping comments from NMFS in a letter dated October 8, 2010. The NMFS Southwest Regional Office provided formal comments on the project in a letter dated November 22, 2010, including the suggestion that the EIS consider the potential impacts of issuing a SUP to DBOC on marine mammals, including harbor seals, which are protected under the MMPA. Formal consultation with NMFS related to marine mammals is ongoing.

COASTAL ZONE MANAGEMENT ACT CONSISTENCY

CCC, an independent state agency, is responsible for the planning and review of activities within the coastal zone that may affect water quality, shorelines, terrestrial and marine habitats, etc., through specific policies outlined in the California Coastal Act. As such, CCC requested the approval of NOAA's Office of Ocean and Coastal Resource Management (OCRM) to review DBOC's proposal under section 307 of the CZMA and NOAA's implementing regulations at 15 CFR 903.54. On November 10, 2010, CCC requested permission from OCRM to review the proposal as an "unlisted activity" because a SUP for aquaculture operations is not listed as a federal license or permit activity requiring consistency review in the California Coastal Management Program. In its request, CCC illustrated that issuance of a SUP by NPS would have reasonably foreseeable effects on both coastal resources and uses of the California coastal zone.

In a letter dated March 30, 2011, OCRM granted approval to CCC to review the SUP for federal consistency with the federally approved California Coastal Management Program. The approval was based on an assessment that if the activity was permitted, it "would have a reasonably foreseeable effect on coastal uses or resources of the California coastal zone" (NOAA-OCRM 2011). Thus, prior to any NPS issuance of a SUP, DBOC must prepare and submit data and documentation that certifies all of its activities will be consistent with the enforceable policies of the California Coastal Management Program. Furthermore, CCC must either concur with the consistency certification or the certification must be presumed based on 15 CFR 930.54(e) before NPS may issue the SUP. CZMA consultation is ongoing between the NPS and CCC.

NHPA SECTION 106 CONSULTATION

Concurrent with this NEPA process, a section 106 review is being conducted to determine whether the actions proposed in this EIS would result in an adverse impact on historic properties. For the purposes of section 106, NPS has determined that the area of potential effect is the same as the EIS project area. Resources identified within the project area include a known archaeological site and a portion of the Point Reyes Ranches Historic District. The shellfish operation was found not eligible for the National Register.

The assessment of effect for all alternatives would be either no historic resources affected, or in the case of cultural landscapes, no adverse effect. The California SHPO has been consulted regarding the eligibility of DBOC facilities for listing on the National Register. On April 1, 2011, the NPS notified the SHPO that it intends to use this EIS process to meet section 106 consultation requirements. On

April 18, 2011, a letter was received from the Advisory Council on Historic Preservation acknowledging the NPS intent to use the EIS process to comply with section 106.

SHPO Consultation

On April 5, 2011, NPS provided SHPO with a copy of the DOE (Caywood and Hagen 2011) conducted for the DBOC site, with a letter requesting concurrence with the finding that the property is ineligible for listing on the National Register. Based on verbal comments from SHPO, the DOE was revised and resubmitted with a request for concurrence on July 8, 2011. SHPO responded in a letter dated August 4, 2011, noting its concurrence with the finding of ineligibility for listing on the National Register (SHPO 2011, see appendix D). Additionally, in a letter dated October 29, 2012, SHPO concurred with a finding of no adverse effects for all of the alternatives, although it was noted that unanticipated discovery or change in project description may require additional consultation under 36 CFR part 800 (SHPO 2012, see appendix D).

Advisory Council Consultation

On October 18, 2012, the Advisory Council confirmed that they had reviewed the documentation provided and that their involvement in the section 106 review was no longer necessary (ACHP 2012, see appendix D).

Tribal Consultation

The Seashore maintains a government-to-government relationship with The Federated Indians of Graton Rancheria. The NPS invited the Tribe to provide information on any features in the Seashore that may hold cultural or religious significance and, if such features exist, to initiate consultation on the EIS under NEPA and section 106 of the NHPA. During a meeting with a representative from The Federated Indians of Graton Rancheria on July 14, 2011, the NPS notified the Tribe that it planned to use this EIS process to meet section 106 consultation requirements. This was followed up by letter on August 10, 2011 (NPS 2011g). The Tribe responded in a letter dated August 29, 2011, noting their concurrence with the “request to use the EIS process to meet Section 106 ‘government to government’ consultation requirements” (FIGR 2011). Subsequently, on January 9, 2012, the NPS submitted a letter to The Federated Indians of Graton Rancheria to coordinate ongoing consultation and arrange a meeting to discuss the next steps for the proposed action, as related to section 106 consultation. Consultation with the Tribe was concluded on August 13, 2012, when The Federated Indians of Graton Rancheria submitted a letter of concurrence to NPS stating, “each of the four alternatives presented in the DEIS will have ‘no adverse effect’ on cultural resources under the standards set forth in 36 CFR 800.8(c)(1).” See appendix D for copies of this letter.

In addition to the section 106 consultation, The Federated Indians of Graton Rancheria/Coast Miwok were provided with a copy of the Draft EIS, but did not submit comments to the NPS. However, the Native American Heritage Commission (NAHC) commented on the Draft EIS on October 18, 2011.

CLEAN WATER ACT AND RIVERS AND HARBORS ACT

On November 16, 2010, USACE stated that, “aquaculture activities are within our jurisdiction and a permit is required” (USACE 2010, see relevant correspondence in appendix D). In addition to their participation in the project as a cooperating agency, USACE submitted formal comments on the Draft EIS related to compliance with section 404 and 401 of the Clean Water Act and section 10 of the Rivers and Harbors Act. In a letter dated December 8, 2011, USACE clarified the applicability of section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act and recommended additional information related to these acts be included in relevant sections of the “Laws and Policies” discussions in chapter 4 of the EIS (see appendix D). In this letter, USACE also reiterated the need for DBOC to obtain a permit for impacts on waters of the U.S., including wetlands, vegetated shallows, and open waters of the U.S. pursuant to section 10 of the Rivers and Harbors Act and/or section 404 of the Clean Water Act (USACE 2011a, see relevant correspondence in appendix D). The Rivers and Harbors Act also requires section 401 certification from the state (as issued by the San Francisco Bay Regional Water Quality Control Board). It would be the responsibility of DBOC to obtain all relevant permits and certifications.

U.S. ENVIRONMENTAL PROTECTION AGENCY

In accordance with the National Environmental Policy Act and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency reviewed the Draft EIS. In its response letter dated December 7, 2011, the agency rated the Draft EIS as Lack of Objections (LO).

STATE CLEARINGHOUSE

The NPS provided a copy of the NOI for the EIS to the state clearinghouse on October 26, 2010. The Seashore was copied on the clearinghouse review reminder to state agencies on November 17, 2010 (SCH #2010104004). The state clearinghouse comment period closed November 24, 2010. No comments were received through this announcement. In addition, the NPS provided a copy of the Draft EIS to the state clearinghouse on September 29, 2011. The state clearinghouse comment period for the Draft EIS closed on November 29, 2011. One piece of correspondence was received through the state clearinghouse (from the National American Heritage Commission). This correspondence was entered into PEPC and coded and considered with all other Draft EIS comments.

DOCUMENT REVIEW

The original public comment period was initiated on September 23, 2011 through a press release; announcements on the NPS PEPC web-site (www.parkplanning.gov/PORE) and the Seashore’s website (www.nps.gov/pore); and through a letter sent to interested parties, elected officials, and appropriate local and state agencies. Subsequently, the NPS notice of availability of the Draft EIS was published in the Federal Register on September 26, 2011. Following the announcement of the document’s availability and the distribution of the Draft EIS to agencies and the public, the Draft EIS was available for a review period from September 23, 2011 through November 29, 2011. The document was made available for review electronically on the NPS PEPC web-site (www.parkplanning.gov/PORE) and in hard copy at public

meetings and in local libraries. Hard copies or CDs also could be obtained by contacting the Seashore Superintendent. The public comment period was subsequently extended to December 9, 2011 in anticipation of the November 22, 2011 release of the final Marine Mammal Commission report on the impact of mariculture activities on harbor seals in Drakes Estero. The extension of the comment period was announced in a press release on November 17, 2011 and published by the EPA in the Federal Register on November 25, 2011. Three public meetings for the Draft EIS were held October 18-20, 2011 to continue the public involvement process and facilitate community feedback on the Draft EIS. Meeting times and locations for the three public meetings were as follows:

- Tuesday, October 18, 6:00-8:00 pm – Dance Palace Community Center, 503 B Street, Point Reyes Station, CA 94956
- Wednesday, October 19, 6:00-8:00 pm – Fort Mason Center, Building D, San Francisco, CA 94123
- Thursday, October 20, 6:00-8:00 pm – Tamalpais High School Student Center, 700 Miller Avenue, Mill Valley, CA 94941

During the 2011 open houses, several informational posters were displayed to supply information relevant to the project including the purpose, need, and objectives; existing conditions; alternatives evaluated in the Draft EIS; alternatives considered but dismissed; impact topics considered in the Draft EIS; and how to provide comments on the document. Attendees also were provided with a fact sheet (available in both English and Spanish), which provided additional background on the project, the current status of the project, the EIS schedule, and information on how to participate in the EIS process, including how to get a copy of the Draft EIS and how to submit comments. NPS included Spanish-language interpreters at all public meetings to accommodate parties of limited English. A total of 247 meeting attendees signed in during the open houses. Some individuals attended more than one open house and are counted more than once in this total. Attendees were able to provide oral statements to planning team members stationed at flip charts throughout the room. Team members wrote each comment on flip charts, which were posted on the wall for attendees to see and entered into PEPC upon completion of the open houses. All flip charts from each night were added as a single correspondence into PEPC. Written comments were also accepted at the open houses and entered into PEPC.

During the comment period, a total of 52,473 pieces of correspondence were received. Correspondence was received by one of the following methods: hard copy letter via mail, public comment sheet submitted at the public meetings, recorded on flipcharts during the public meetings, received in person at the Seashore headquarters, or entered directly into the PEPC system. As stated in the Draft EIS notice of availability posted in the Federal Register, bulk comments submitted on behalf of others were not accepted. Letters received by postal mail or in person, as well as the comments received from the public meetings, were entered into the PEPC system for analysis. Each of these letters or submissions is referred to as correspondence. It should be noted that the correspondence received included several form letters. In total, 24 distinct form letters were received. The number of copies of each ranged from only a few to 15,870. Overall, 50,040 of the pieces of correspondence received during the Draft EIS comment period were form letters. It should be noted that some pieces of correspondence included form letter text as well as additional language/comments that required further review and consideration. These letters were counted as unique correspondence, even though the letters included the form letter text.

Once all the correspondence was entered into PEPC, each was read, and specific comments within each correspondence were identified. When identifying comments, every attempt was made to capture the full breadth of the comments submitted. All comments received were carefully considered and incorporated into this Final EIS. Changes made in the Final EIS as a result of public comments did not result in substantial changes to the alternatives or the outcome of the impact analysis. All public comments received, and associated NPS responses, are included in the *DEIS Public Comment Analysis Report* in appendix F.

LIST OF RECIPIENTS

Copies of the Draft EIS (either hard copy or CD version) were made available to the following government officials and agencies, and nongovernmental organizations and agencies. Copies were also provided to individuals upon request. The names of individuals are not included below.

California Congressional Delegation

Senator Dianne Feinstein
Senator Barbara Boxer
Congresswoman Lynn Woolsey

Federal Agencies

Advisory Council on Historic Preservation
Marine Mammal Commission
National Oceanic and Atmospheric Administration – National Marine Fisheries Service
National Trust for Historic Preservation
U.S. Army Corps of Engineers, San Francisco District
U.S. Coast Guard
U.S. Coast Guard, Maintenance & Logistics (SE)
U.S. Department of Agriculture, Natural Resources Conservation Service
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office
U.S. Geological Survey, Water Resources Division

Tribal Nations

The Federated Indians of Graton Rancheria/Coast Miwok

State Legislative Delegation

Senator Mark Leno
Assembly member Jared Huffman

State Agencies

California Coastal Commission
California Department Health Services
California Department of Fish and Game
California Department of Transportation
California State Coastal Conservancy
California State Parks and Recreation
California State Parks, Marin District
California State Historic Preservation Officer
California State Water Resources Control Board (San Francisco Bay Region)
State Clearinghouse – Office of Planning & Research
State Lands Commission

Local Governments

Bay Area Air Quality Management District
Bollinas Community Public Utility District
Inverness Public Utilities District
Marin County Agricultural Commissioner
Marin County Board of Supervisors
Marin County Community Development Agency
Marin County Farm Bureau
Marin County Fire Department
Marin County Library
Marin County Open Space District
Marin County Planning and Acquisition
Marin County Resource Conservation Service
Marin County Sheriff's Department
Marin Municipal Water District
North Marin Water District
San Francisco Main Library
Sonoma County Agricultural Preservation and Open Space District
Stinson Beach Library
West Marin Chamber of Commerce

Businesses, Nonprofits/Organizations, and Universities

4Cs Breeding Technologies, Inc.
Alliance for Local Sustainable Agriculture
Alta Planning & Design
Animal Protection Institute
Arizona Wilderness Coalition
Audubon California

Audubon Canyon Ranch
“B” Ranch
Bay Area Ridge Trail Council
The Bay Institute
Bicycle Trails Council
Bilington Sea Kayak
Bluewater Network
Bodega Marine Lab
Bollinas Community Land Trust
Bollinas Library
California Farm Bureau Federation
Californians for Western Wilderness (CalUWild)
Center for Biological Diversity
Coalition of National Park Service Retirees
The Committee for the Preservation of Tule Elk
Committee to Save the Future of Aqua/Agriculture in Rural Marin
Cypress Grove Preserve
The Dangermond Group
Defenders of Wildlife
Discovery Bay Shellfish
Drakes Bay Oyster Company
Earthjustice
East Shore Planning Group
Ebbin, Moser, & Skaggs LLP
Environmental Action Committee of West Marin
Environmental Defense Center
Ferrando’s Hideaway Cottages
Friends of the Estero
Full Belly Farm
Gardener’s Guild, Inc.
Great Old Broads for Wilderness
Humboldt Baykeepers
In Defense of Animals
International Mountain Bicycling Association
Inverness Association
Inverness Library
Inverness Ridge Association
K & B Seafood, Inc.
La Tercera Farm
Latham & Watkins LLP
LSA Associates, Inc.
Marin Agricultural Land Trust
Marin Audubon Society
Marin Bicycle Coalition
Marin Conservation League
Marin County Farm Bureau

Marin Horse Council
The Marine Mammal Center
Montana State University
Mow & Sow
National Fisheries Institute
National Parks Conservation Association
National Wildlife Foundation
Natural Resource Defense Council
Nature Conservancy
Nick's Cove & Cottages
North American Trail Ride Conference
Northwestern University
Ocean Conservancy
Ocean Conservation Research
Pacific Coast Shellfish Growers Association
People for a Golden Gate National Recreation Area
Point Reyes Bird Observatory
Point Reyes Library
Point Reyes Light
Public Employees for Environmental Responsibility
Resource Renewal Institute
Roots of Change
San Francisco Bay Bird Observatory
Sierra Club
Slow Food USA
Sonoma County Conservation Action
Sonoma County Farm Bureau
Sonoma County Horse Council
Spaletta Dairy
Star Route Farms
Station House Café
Sustainable Conservation
Sustainable Mill Valley
The Wilderness Society
Tomales Bay Association
Tomales Bay Watershed Council
Trout Unlimited
The Trust for Public Lands
Turtle Island Restoration Network
University of California, Berkeley
University of California, Cooperative Extension, Marin County
University of California, Davis
University of South Alabama
Vedanta Society
West Marin Chamber of Commerce
West Marin Citizen

West Marin Community Radio
 Wild Wilderness
 WildEarth Guardians

EIS PREPARERS

The NPS prepared this EIS with assistance from a contractor in accordance with CEQ regulations (1506.5). The NPS provided constant guidance and direction to the contractor regarding the scope and content of the EIS. The NPS has independently reviewed all sections of the EIS prior to publication and is responsible for the content of the EIS.

TABLE 5-1. LIST OF PREPARERS

Name	Title	Education/Responsibility	Experience
Contractor Team			
Vanasse Hangen Brustlin, Inc. (VHB)			
Nancy Barker	Federal Program Manager	MS Botany (Ecology); BS Botany (Taxonomy) Responsible for project oversight, development of chapter 1, and review of shellfish operations	28 years
Tricia Wingard	NPS Program Manager	BS Biology (Honors) Responsible for project management, document review, and document production	12 years
Tracy Hamm	Environmental Planner	MEM Ecosystem Science and Management; BS Biology Responsible for development of chapter 2, wilderness, soundscapes, and document production	3 years
Doug DeBerry	Senior Environmental Scientist	PhD Marine Science; MA Biology; BA Environmental Sciences Responsible for review of shellfish operations, eelgrass, and wildlife	18 years
Chris Senfield	Wetland Scientist	BS Biology Responsible for review of shellfish operations, wildlife, and special-status species	8 years
Kim Threlfall	Senior Environmental Planner	BA Geology Responsible for visitor experience and recreation, socioeconomic resources, NPS operations, and document production	10 years
Rita Walsh	Senior Preservation Planner	MS Historic Preservation; BA Historic Preservation Responsible for cultural landscapes and historic structures	29 years

TABLE 5-1. LIST OF PREPARERS (CONTINUED)

Name	Title	Education/Responsibility	Experience
Contractor Team			
Vanasse Hangen Brustlin, Inc. (VHB)			
Carol Weed	Senior Archaeologist	MA Anthropology (Archeology); BA Anthropology Responsible for archeological resources	39 years
Tim Davis	Senior Environmental Scientist, Certified Wildlife Biologist	MS Forestry; BS Forest Management Responsible for coastal flood zones, wetlands, and water quality	26 years
Tom Wholley	Director of Air Quality and Noise Services	BS Civil Engineering Responsible for soundscapes	40 years
Quan Tat	Senior Transportation Engineer	BS Civil Engineering Responsible for air quality	13 years
Margaret Beavers	Environmental Scientist	MS Geology; BS Geology Responsible for GIS analysis, graphic preparation, and document production	16 years
Michelle Tugman	Environmental Planner	MS Landscape Architecture; BS Biology Responsible for document production, public comment analysis, maintenance of the decision file	13 years
Diane Ditzel	Environmental Planner/Scientist	BA Geography Responsible for public comment analysis	2 years
Cultural Resources Consulting Services (CRCS)			
Janene Caywood	Principal Investigator	MA Anthropology; BS Anthropology (high honors) Responsible for preparation of the DOE	30 years
Delia Hagen	Field Assistant/Editor	PhD History; MA American History; BA History Responsible for preparation of the DOE	15 years
Terra Firma Surveys, Inc.			
Chris Cole	President/Licensed Land Surveyor	Post-graduate School of Surveying and Photogrammetry; BS Natural Resource Management Responsible for topographic survey	31 years
NPS Interdisciplinary Team			
Melissa Stedeford	EQD, Environmental Protection Specialist	MS Environmental Science; BS Environmental Science EIS Project Manager	7 years with NPS
Cicely Muldoon	Point Reyes National Seashore, Superintendent	BS Zoology	26 years with NPS
Brannon Ketcham	Point Reyes National Seashore, Hydrologist	MEM Water Resource Management; BA Geology Park Coordinator for EIS; cooperating agency point of contact	13 years with NPS

TABLE 5-1. LIST OF PREPARERS (CONTINUED)

Name	Title	Education/Responsibility	Experience
NPS Interdisciplinary Team			
Melanie Gunn	Point Reyes National Seashore, Outreach Coordinator	MS Natural Resources and Environment; BS Biology Park outreach coordinator	3 years with NPS
Kevin McKay	Point Reyes National Seashore, Special Park Uses Coordinator	JD; BA Economics DBOC point of contact	12 years with NPS
Gordon White	Point Reyes National Seashore, Chief of Cultural Resources	MS Psychology; MA Architecture; BA Environmental Design	17 years with NPS
Other Reviewers			
NPS			
Name	Title		
Patrick Walsh	EQD, Branch Chief, Environmental Planning and Compliance		
Doug Wetmore	EQD, Environmental Protection Specialist		
Christine S. Lehnertz	Pacific West Region (PWR), Regional Director		
George Turnbull	PWR, Deputy Regional Director		
Stephanie Burkhart	PWR, Assistant Regional Director, Communications		
Ray Sauvajot	PWR, Natural Resource Manager		
Alan Schmierer	PWR, Regional Environmental Coordinator		
Martha Crusius	PWR, Senior Planner		
Kurt Frstrup	Natural Resources Stewardship and Science (NRSS), Bioacoustics Technician		
Department of the Interior, Solicitors Office			
Barbara Goodyear	Field Solicitor		
Suzanne Carlson	Assistant Field Solicitor		

TABLE 5-2. COOPERATING AGENCY POINTS OF CONTACT

Name	Agency
Bryan Matsumoto	USACE, Regulatory Division
Diane Windham	NMFS, Southwest Regional Aquaculture Coordinator
Kirsten Ramey	CDFG, Associate Marine Biologist
Stephanie Skophammer	EPA, Environmental Review Office, Communities and Ecosystems Division
Kevin Chu	NOAA, Deputy Regional Administrator, Southwest Region

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REFERENCES

BIBLIOGRAPHY

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- 2008c Letter from Drakes Bay Oyster Company to California Coastal Commission on November 14, regarding Consent Cease and Desist Order No. CCC-07-CD-11—Additional documentation required to comply with the Consent Cease and Desist Order.
- 2008d Letter from Drakes Bay Oyster Company to California Coastal Commission on November 24, regarding Coastal Development Permit Application No: 2-06-003.
- 2008e Letter from Drakes Bay Oyster Company to California Coastal Commission on January 30, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.7 of Consent Order)—Pacific Oysters and European Flat Oysters.
- 2008f Letter from Drakes Bay Oyster Company to California Coastal Commission on February 11, regarding CCC-07-CD-04 Drakes Bay Oyster Company—Boat Transit.

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- 2009b Letter from Drakes Bay Oyster Company to California Coastal Commission on October 5, regarding Coastal Development Permit Application No: 2-06-003—Additional documentation in response to request by California Coastal Commission in letter dated June 10, 2009.
- 2009c Letter from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on December 29, regarding clerical error correction and Manila clam cultivation in CDFG Lease M-438-01.
- 2009d Letter from Drakes Bay Oyster Company to California Coastal Commission on October 2, regarding Consent Cease & Desist Order No. CCC-07-CD-11 Enforcement letter dated September 16, 2009.
- 2010a Attachment 10a to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding oyster production (oyster production, rack culture, and cluster oysters).
- 2010b Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding oyster production (oyster production bottom bags).
- 2010c Attachment 10c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding oyster production (November 2007 map).
- 2010d Attachment 10d to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding oyster production (harvest area).
- 2010e Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding maps of racks (oyster rack GPS information).
- 2010f Letter from Drakes Bay Oyster Company to California Coastal Commission on March 16, regarding Coastal Development Permit Application No: 2-06-003—Response to CCC letter dated March 9, 2010.
- 2010g Letter from Drakes Bay Oyster Company to California Department of Fish and Game Executive Director, April 27, regarding Lease No. M-428-01.
- 2010h Letter from Drakes Bay Oyster Company to California Department of Fish and Game Executive Director, May 10, regarding Lease No. M-438-01—Boundary revision.
- 2010i Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, regarding business plan.
- 2010j Attachment 17 to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, regarding employee list.
- 2010k Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, regarding housing.

- 2010l Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, regarding mooring information.
- 2010m Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Superintendent on July 22, regarding Drakes Bay Oyster Company request to modify boundaries of CDFG lease and to cultivate Olympia oysters and purple-hinged rock scallops in CDFG Lease M-438-01.
- 2010n Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Superintendent on November 24, regarding Drakes Bay Oyster Company comments on National Park Service scoping letter for Special Use Permit Environmental Impact Statement.
- 2010o Attachment 1a to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding boat transit map.
- 2010p Attachment 1b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding GPS tracking data from June 7, 2010.
- 2010q Attachment 1c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding GPS tracking data from January 18, 2010.
- 2010r Attachment 7 to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding interpretive services.
- 2010s Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, regarding vessel transit plan.
- 2010t Attachment 12a to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding map of culture beds within Drakes Estero on November 2007.
- 2010u Attachment 12b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding image of lease areas and rack locations within Drakes Estero in 2007.
- 2010v Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, regarding public health.
- 2011a Letter from Drakes Bay Oyster Company to permitting agencies on April 4, regarding Drakes Bay Oyster Farm Emergency Repair Project Description.
- 2011b Letter from Drakes Bay Oyster Company to permitting agencies on March 25, regarding Emergency Repair Permit Applications for Damages Caused by the March 19 & 20, 2011 Wind Storm.
- 2011c Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on March 4, regarding new cultured species request.

- 2011d Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on March 5, regarding boat parking and floating dock area dredging.
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- 2011f Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on March 4, regarding supplemental scoping information.
- 2011g Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on March 5, regarding alternate building design.
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- 2011i Correspondence ID 52043, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Superintendent on December 9, regarding Drakes Bay Oyster Company's comments on National Park Service Draft Environmental Impact Statement for Special Use Permit.
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GLOSSARY

A

abiotic. Characterized by the absence of life or living organisms.

abundance. An ecological concept referring to the relative representation of a species in a particular ecosystem. It is usually measured as the large number of individuals found per sample. How species abundances are distributed within an ecosystem is referred to as relative species abundances.

accretion. The process where coastal sediments return to the visible portion of the beach following storm erosion.

acidification. To make or become acidic.

action. Any federal activity including, but not limited to, acquiring, managing, and disposing of federal lands and facilities; facilitating human occupation or visitation; providing federally undertaken, financed, or assisted construction and improvements; and conducting federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, and regulating and licensing activities.

action alternative. An alternative that proposes a different management action (or actions) to address the purpose, need, and objectives of the plan. Alternatives B, C, and D are the action alternatives in this EIS. See also: “no-action alternative.”

affected environment. A description of the existing environment that may be affected by the proposed action (40 CFR 1502.15).

aggrading substrate. A net accumulation of sediment on the basin floor over time.

algal blooms. A rapid increase in the population of algae in an aquatic system. Algal blooms may occur in freshwater, as well as marine environments. Typically, only one or a small number of phytoplankton species are involved, and some blooms may be recognized by discoloration of the water resulting from the high density of pigmented cells. Although there is no officially recognized threshold level, algae can be considered to be blooming at concentrations of hundreds to thousands of cells per milliliter, depending on the severity. Algal bloom concentrations may reach millions of cells per milliliter.

ambient. Of the surrounding area or environment.

amphibian. Any cold-blooded vertebrate of the class Amphibia, comprising frogs and toads, newts and salamanders, and caecilians, the larvae being typically aquatic, breathing by gills, and the adults being typically semiterrestrial, breathing by lungs and through the moist, glandular skin.

amphipods. Any of numerous small, flat-bodied crustaceans of the group Amphipoda, including the beach fleas, sand hoppers, etc.

anadromous. Fish migrating from salt water to spawn in fresh water.

anecdotal. Based on or consisting of reports or observations of usually unscientific observers.

anthropogenic. Resulting from the influence or actions of human beings.

appropriate use. NPS *Management Policies 2006* (NPS 2006d) state that an appropriate use is “a use that is suitable, proper, or fitting for a particular park, or to a particular location within a park.”

aquaculture. The cultivation of aquatic organisms (as fish or shellfish), especially for food. (Term used interchangeably in the EIS with mariculture or commercial shellfish operation.)

archeological resource. Any material remains or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. An archeological resource is capable of revealing scientific or humanistic information through archeological research.

Area of Special Biological Significance. Areas designated by the State Water Resources Control Board as requiring protection of species or biological communities to the extent that alteration of natural water quality is undesirable. All Areas of Special Biological Significance are State Water Quality Protection Areas as defined in Public Resources Code section 36700(f).

arthropod. An invertebrate that has an exoskeleton (external skeleton), a segmented body, and jointed attachments called appendages.

B

basin morphometry. The shape and internal geometry of the catchment area of a particular river and its tributaries or of a lake or sea.

bathymetric gradient. Changes in light, temperature, salinity, and pressure with depth.

benthic. The bottom, or relating to the bottom of the ocean or other body of water.

benthic-pelagic coupling. The process in which filter feeders, such as bivalves, contribute to the cycling of nutrients and organic matter between the bottom substrate (benthic system) and the overlying water column (pelagic system). With respect to bivalves, the concept relates to the manner in which these filter feeders

remove particulate organic and inorganic matter (including plankton) from the water column and, through the process of digestion and excretion, “repackage” that material into other forms that are more readily available for uptake by other organisms inhabiting the bottom substrate.

bents. Structures that are anchored to the bottom substrate of Drakes Estero and provide the primary structural support for racks used for hanging culture methods, often 2-inch by 4-inch or 2-inch by 6-inch wooden boards.

best management practices. Practices that apply the most current means and technologies available to not only comply with mandatory environmental regulations, but also maintain a superior level of environmental performance.

biodiversity. An assessment of the numbers, types, and relative abundance of plant and animal species in natural (biotic) communities. Biodiversity encompasses species richness as well as the genetic differences among individuals, abundance, or variety of habitats, communities, ecosystems, and landscapes where species occur.

biogeochemical cycling. The chemical interactions that exist between biological organisms and the abiotic (nonliving) components of the environment such as air, water, and soil.

biological resources. NPS *Management Policies 2006* for biological resource management (NPS 2006d, section 4.4 et seq.) state that “[t]he National Park Service will maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems.”

biota. The animals, plants, fungi, etc., of a region or period.

bivalve. A mollusc with a shell consisting of two rounded plates called *valves* joined at one edge by a flexible ligament called the *hinge*. The shell is typically bilaterally symmetrical, with the hinge lying in the sagittal plane.

bottom bags. Plastic mesh bags (often 3 feet by 4 feet in size) used in cultivation of single shellfish. Bags are placed directly on the sediment in intertidal areas.

brackish. Slightly salty.

breeding activity. Shorebird behavior that includes, but is not limited to, courtship, mating, scraping, confirmed scrapes, and other breeding or nest-building activities. The terms breeding behavior and breeding activity are used synonymously.

breeding areas/breeding sites. Those areas that support the full suite of bird breeding activities including, courtship, territorial defense, copulation, scraping and nest building, egg laying and incubation, chick rearing, and associated foraging.

breeding habitat. Habitat(s) that host the birds during territorial displaying, courtship and mating, scraping, nesting, incubation, brooding, and chick foraging.

brood stock. In aquaculture, a group of sexually mature individuals of a cultured species that is kept separate for breeding purposes.

buffer. A protective area or distance surrounding a sensitive resource that limits visitor access.

C

carbon footprint. A measure of the amount of carbon dioxide released into the atmosphere by a single endeavor or by a company, household, or individual through day-to-day activities over a given period.

Census Designated Place. Delineated for each 10-year census as the statistical counterparts of incorporated places. Census Designated Places are delineated to provide data for settled concentrations of population that are identifiable by name but are not legally incorporated under the laws of the state in which they are located. The boundaries usually are defined in cooperation with local or tribal officials. These boundaries, which usually coincide with visible features or the boundary of an adjacent incorporated place or other legal entity boundary, have no legal status, nor do these places have officials elected to serve traditional municipal functions. Census Designated Place boundaries may change from one 10-year census to the next with changes in the settlement pattern; a Census Designated Place with the same name as in an earlier census does not necessarily have the same boundary. There are no population size requirements for the Census Designated Places designated in conjunction with Census 2000. For the 1990 census and earlier censuses, the U.S. Census Bureau required Census Designated Places to qualify on the basis of various minimum population size criteria.

climate change. Any long-term significant change in the weather patterns of an area.

coastal lagoons. A lagoon is a body of shallow seawater or brackish water separated from the sea by some form of barrier. A coastal lagoon is formed by the build-up of sandbanks or reefs along shallow coastal waters. Lagoons that are fed by freshwater streams are also called estuaries.

coastal scrub vegetation. Terrestrial vegetation characterized by woody shrub species from 3 to 7 feet tall. Shrubs are defined as woody perennials with multiple stems growing from the base. Most California shrublands have abundant *xerophytes*, or species adapted to arid conditions. In coastal areas, shrubs often form low-growing stands mixed with grasses. Coastal scrub is usually located inland of foredunes, where decreased wind and salt spray allow better stabilization and increased plant height.

coastal waterbirds. Birds that forage along the interface between land and salt/freshwater.

Compendium. The Superintendent's Compendium is a document, updated yearly, that provides a list of the special designations, closures, public use limits, permit requirements, and other restrictions under the discretionary authority of the Superintendent within a park unit, as provided for in 36 CFR 1.7 (b).

congressionally designated potential wilderness. According to *NPS Management Policies 2006*, potential wilderness is defined as lands that do not qualify for immediate designation as wilderness "due to temporary nonconforming or incompatible conditions" (NPS 2006d). Section 4(c) of the Wilderness Act of 1964 (PL 88-577) identifies prohibited uses, otherwise known as nonconforming uses. See "congressionally designated wilderness" for the definition of wilderness.

congressionally designated wilderness. The Wilderness Act of 1964 (PL 88-577) created the National Wilderness Preservation System and recognized wilderness as "an area where the earth and its community

of life are untrammelled by man, where man himself is a visitor who does not remain.” The Act further defined wilderness as “an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions” (for the complete definition of wilderness, see section 2[c] of the Wilderness Act). Wilderness is designated by Congress.

conserve. To protect from loss or harm; preserve. Historically, the terms conserve, protect, and preserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting, and conserving the national park system.

continental shelf. The part of a continent that is submerged in relatively shallow sea.

conveyed. To transfer or transmit (property or property rights) to another, especially in writing (as a deed or will).

cooperating agencies. A federal agency other than the one preparing the NEPA document (lead agency) that has jurisdiction over the proposal by virtue of law or special expertise and that has been deemed a cooperating agency by the lead agency.

Council on Environmental Quality (CEQ). Established by Congress within the Executive Office of the President with passage of the *National Environmental Policy Act of 1969*. CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

Crassadoma gigantean. See “purple-hinged rock scallops.”

Crassostrea gigas. See “Pacific oysters.”

Crassostrea sikamea. See “Kumamoto oysters.”

crustaceans. Any of various widespread arthropods of the class Crustacea that live mostly in water and have a hard shell, a segmented body, and jointed appendages. Crustaceans include crabs, lobsters, shrimp, barnacles, and copepods.

cultch material. Oyster shells used to furnish points of attachment for the spat.

cultivation. An aquaculture (or mariculture) practice in which oysters are raised for human consumption.

cultural landscape. A geographic area (including both cultural and natural resources and the wildlife therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.

cultural resource. An aspect of a cultural system that is valued by or significantly representative of culture, or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places, and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for NPS management purposes.

cultured/cultivated. Artificially nurtured or grown.

cumulative impacts. Those impacts on the environment that result from the incremental effect of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

D

decapods. Invertebrate animals of the order Crustacea which have five pairs of legs and includes shrimp, lobsters, crabs, etc.

decibel (dB). A unit of measure of sound intensity.

decibel, A-weighted (dBA). A unit of measure of sound intensity as perceived by the human ear, where the values of sounds at low frequencies are reduced, compared with unweighted values, in which no correction is made for audio frequency.

de minimis. So small or minimal in difference that it does not matter or the law does not take it into consideration.

determination of eligibility (DOE). An evaluation to determine whether a property meets the National Register Criteria for Evaluation by examining the property's age, integrity, and significance.

detritus. A non-living particulate organic material (as opposed to dissolved organic material). It typically includes the bodies or fragments of dead organisms as well as fecal material. Detritus is typically colonized by communities of microorganisms which act to decompose (or remineralize) the material.

diatom. Any of numerous microscopic, unicellular, marine or freshwater algae of the phylum Chrysophyta, having cell walls containing silica. Most diatoms can perform photosynthesis. They make up a large portion of the marine plankton and are an important food source for many aquatic animals.

Didemnum vexillum. A species of highly invasive nonnative tunicate found in Drakes Estero.

dinoflagellate. Any of numerous one-celled organisms found mostly in the ocean, usually having two flagella of unequal length and often an armorlike covering of cellulose. Dinoflagellates are one of the main components of plankton. Since dinoflagellates have characteristics of both plants and animals, their classification is controversial.

Director's Order. A supplement to the NPS *Management Policies 2006* (NPS 2006d), which may amend the policies.

dredging. An excavation activity or operation usually carried out at least partly underwater, in shallow seas or fresh water areas, with the purpose of gathering up bottom sediments and disposing of them at a different location.

E

ecology. The interdisciplinary scientific study of the interactions between organisms and the interactions of these organisms with their environment.

ecosystem. A natural unit consisting of all plants, animals, and microorganisms (biotic factors) in an area functioning together with all of the physical (abiotic) factors of the environment, considered as a unit. Ecosystems can be permanent or temporary. An ecosystem is a unit of interdependent organisms which share the same habitat. Ecosystems usually form a number of food webs.

El Nino–Southern Oscillation. A warming of the surface water of the eastern and central Pacific Ocean, occurring every 4 to 12 years and causing unusual global weather patterns. An El Nino is said to occur when the trade winds that usually push warm surface water westward weaken, allowing the warm water to pool as far eastward as the western coast of South America. When this happens, the typical pattern of coastal upwelling that carries nutrients from the cold depths to the ocean surface is disrupted, and fish and plankton die off in large numbers. El Nino warming is associated with the atmospheric phenomenon known as the southern oscillation, and their combined effect brings heavy rain to western South America and drought to eastern Australia and Indonesia. El Nino also affects the weather in the United States, but not as predictably.

embayment. A bay or a shape resembling a bay.

emergent. An aquatic plant having its stems, leaves, etc., extending above the surface of the water.

enabling legislation. National Park Service legislation that established a particular unit of the national park system and set forth the legal parameters by which the respective park may operate.

endangered species. “...any species (including subspecies or qualifying distinct population segment) that is in danger of extinction throughout all or a significant portion of its range (ESA section 3[6]).” U.S. Fish and Wildlife Service is responsible for reviewing the status of the species on a five-year basis.

endobenthic. Marine organisms that burrow in the soft sediments of the sea bed.

environment. The sum total of all biological, chemical, and physical factors to which organisms are exposed; the surroundings of a plant or animal.

environmental assessment (EA). A concise public document, prepared in compliance with NEPA, that briefly discusses the purposes and need for an action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

environmental consequences. Environmental effects of project alternatives, including the proposed action, any adverse environmental effects which cannot be avoided, the relationship between short term uses of the human environment, and any irreversible or irretrievable commitments of resources which would be involved if the proposal should be implemented (40 CFR 1502.16).

environmental impact statement (EIS). A detailed written statement that analyzes the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short term uses of the environment versus the maintenance and enhancement of long term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).

environmental justice. Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

environmentally preferable alternative. “The alternative that causes the least damage to the biological and physical environment; the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (CEQ 1981, Q6a).

ephemeral pools. Temporary pools of water. They are usually devoid of fish, and thus allow the safe development of natal amphibian and insect species.

epibenthic. Marine life that inhabits the soft sediments on the surface of the seafloor.

epiphyte. A plant that grows above the ground, supported nonparasitically by another plant or object, and deriving its nutrients and water from rain, the air, dust, etc.

erosion. Removal of surface material from the earth’s crust, primarily soil and rock debris, and the transportation of the eroded materials by natural agencies from the point of removal.

essential fish habitat. Habitat where fish spawn, breed, feed, or grow to maturity, designated by NMFS and regional fisheries management councils.

estero. A tidal body of water where salt water from an ocean mixes with fresh water from a river. See also “estuary”.

estuarine. Referring to the area of water passage where the tide meets a river current; especially an arm of the sea at the lower end of a river.

estuary. A tidal body of water where salt water from an ocean mixes with fresh water from a river. See also “estero.”

ethnographic resource. Any site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

European flat oysters. Otherwise known as *Ostrea edulis*, European flat oysters are native to Europe and are permitted for cultivation in Lease M-438-01; however, the last record of this species being sold at the site is from April 1968.

Executive Order. Official proclamation issued by the President that may set forth policy or direction or establish specific duties for federal agencies in connection with the execution of federal laws and programs.

exotic species. Any introduced plant, animal, or protist species that is not native to the area and may be considered a nuisance; also called nonnative or alien species.

extirpate. To destroy the whole of; eliminate or eradicate.

F

fair market value. An estimate of the market value of a property, based on what a knowledgeable, willing, and unpressured buyer would most likely pay to a knowledgeable, willing, and unpressured seller in the market.

fault zone. Area of many closely-spaced faults.

fauna. All of the animal life of any particular region or time.

fecal coliform. A group of bacteria that lives in the intestines of warm-blooded animals. Elevated measurements of these bacteria in surface waters may indicate the presence of human and/or animal waste. Health advisories may be posted when measurements indicate an increased risk to human's from exposure.

Federal Register. A daily publication of the U.S. federal government that issues proposed and final administrative regulations of federal agencies.

feral. An organism that has escaped from domestication and returned, partly or wholly, to a wild state. Otherwise known as naturalized.

filamentous algae. Algae that form filaments or mats attached to sediment, weeds, piers, etc.

flat wake speed. Flat wake speed means the minimum required speed to leave a flat wave disturbance close astern a moving vessel yet maintain steerageway, but in no case in excess of 5 statute miles per hour (36 CFR 1.4).

floodplain. Any land area susceptible to inundation by floodwaters from any source.

flood zone. An area subject to the risk of flooding by any natural means, either by water cresting the banks of channels (fluvial floodplain) or by tidal surges and tsunamis.

flushing. To flood or spray thoroughly with water, as for cleansing purposes.

foredunes. A part of a system of sand dunes on the side nearest to the sea.

fossil fuel. Any combustible organic material, as oil, coal, or natural gas, derived from the remains of former life.

French tube culture. Oyster cultivation method in which oysters are grown directly on tubes, known as French tubes, which are roughly coated in concrete. The tubes are hung on racks and take approximately

12 months for oysters to reach market size. These hanging cultures are used for growth of clusters of oysters. These clusters generally require approximately three months in bags on intertidal areas for shell hardening prior to processing.

freshwater marsh. Grassy wetlands that occur along rivers and lakes; dominated by grasses, reeds, rushes, and sedges.

G

geologic resources. Features, landforms, and viewsheds of the Earth and its crust.

granted tideland. All of the tide and submerged lands or other lands beneath navigable waters situated within the boundaries of the Point Reyes National Seashore, granted by the state of California in 1965, subject to certain limitations, and owned in fee by the U.S.

greenhouse gas emissions. Discharge associated with the burning of fossil fuels. These emissions absorb infrared radiation (net heat energy) emitted from the Earth's surface and reradiate it back to the Earth's surface, thus contributing to the phenomenon known as the greenhouse effect.

H

habitat. The environment in which a plant or animal lives (includes vegetation, soil, water, and other factors).

habitat areas of particular concern. Subsets of essential fish habitat that are rare, particularly susceptible to human-induced habitat degradation, especially ecologically important, or located in an environmentally stressed area.

haul-out site. The location especially associated with pinnipeds (seals), of temporarily leaving the water between periods of foraging activity for sites on land or ice.

harbor seal protection area. Areas within Drakes Estero of which throughout the year, all boats, personnel, and any structures and materials are prohibited from entering in order to protect the harbor seals that frequent the site.

hatcheries. Where oysters are bred in captivity to produce larvae or spat.

headlands. A narrow area of land extending into a large body of water.

Hemispheric Importance. A designation assigned by Western Hemisphere Shorebird Reserve Network to indicate sites that have greater than 500,000 shorebirds annually.

herbaceous. Designating or relating to plants or plant parts that are fleshy as opposed to woody.

historic structures. A historic structure is defined by NPS DO-28 (NPS 2002b) as "a constructed work, usually immovable by nature or design, consciously created to serve some human act." To be listed on or eligible for listing on the National Register, a site, structure, object or district must possess historic

integrity of those features necessary to convey its significance, particularly with respect to location, setting, design, feeling, association, workmanship, and materials.

human disturbance. Any human activity that changes the coexisting behavior of one or more individuals during breeding, nesting, foraging, or roosting. Behaviors indicating disturbance include defensive displays; alarm calls; flushing or leaving a nest or feeding area; and diving or mobbing pedestrians, dogs, or vehicles.

hydric. Relating or adapted to a wet but not flooded habitat.

hydrocarbons. Compounds of hydrogen and carbon including methane and ethane. Gases that are generated by unburned and wasted fuel and come from incomplete combustion of fossil fuels and from evaporation of liquid fuels.

hydrology. The study of the movement, distribution, and quality of water throughout earth, and thus addresses both the hydrologic cycle and water resources.

hydrophytes. A plant that grows wholly or partly submerged in water.

I

impairment. As used in *NPS Management Policies 2006*, “impairment” means an adverse impact on one or more park resources or values that interferes with the integrity of the park’s resources or values, or the opportunities that otherwise would exist for the enjoyment of them, by the present or a future generation (NPS 2006d). Impairment may occur from visitor activities, NPS activities in managing a park, or activities undertaken by concessioners, contractors, and others operating in a park. As used here, the impairment of park resources and values has the same meaning as the phrase “derogation of the values and purposes for which these various areas have been established,” as used in the General Authorities Act.

Important Bird Area. Important Bird Areas (IBAs) are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands or both, and they may be protected or unprotected.

To qualify as an IBA, sites must satisfy at least one of the following criteria. The site must support

- species of conservation concern (e.g., threatened and endangered species);
- restricted-range species (species vulnerable because they are not widely distributed);
- species that are vulnerable because their populations are concentrated in one general habitat type or biome; or
- species or groups of similar species (such as waterfowl or shorebirds) that are vulnerable because they occur at high densities due to their congregatory behavior.

Indian Trust resources. The federal Indian Trust responsibility is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry

out the mandates of federal laws with respect to Native American tribes. Of the federally recognized tribes pursuant to PL 103-454, 108 Statute 4791, the Coastal Miwok, part of the Federal Indian Graton Rancheria, is the only tribe affiliated with the Seashore. However, there are no known Indian Trust resources in the study area, and the lands comprising the Seashore are not held in trust by the Secretary for the benefit of Indians.

indicator species. A species whose presence gauges the ecological health of the habitat.

internal scoping. Internal NPS decision-making on issues, alternatives, mitigation measures, the analysis boundary, appropriate level of documentation, lead and cooperating agency roles, available references and guidance, defining purpose and need, and so forth.

interpretive services. Methods such as educational programs, interpretive media, and partnerships that the NPS uses to connect people to their parks, with opportunities for all visitors to form their own intellectual, emotional, and physical connections to the meanings and values found in the park's stories.

intertidal. The area that is exposed to the air at low tide and underwater at high tide (i.e., the area between tide marks). This area can include many different types of habitats, including steep rocky cliffs, sandy beaches, or wetlands (e.g., vast mudflats).

intertidal zone. The area that is exposed to the air at low tide and underwater at high tide (for example, the area between tide marks). This area can include many different types of habitats, including steep rocky cliffs, sandy beaches, or wetlands (e.g., vast mudflats). The area can be a narrow strip, as in Pacific islands that have only a narrow tidal range, or can include many meters of shoreline where shallow beach slope interacts with high tidal excursion.

invasive species. Not native to and tending to spread widely in a habitat or environment. Invasive species often have few natural predators or other biological controls in their new environment. Although not always considered harmful to an environment, invasive species can become agricultural or ecological pests and can displace native species from their habitats. Invasive species are often introduced to an environment unintentionally but are sometimes introduced for a purpose.

invertebrates. An animal that has no backbone or spinal column. Corals, insects, worms, jellyfish, starfish, and snails are invertebrates.

irretrievable. A term that applies to the loss of production, harvest, and consumptive or nonconsumptive use of natural resources. For example, recreation experiences are lost irretrievably when an area is closed to human use. The loss is irretrievable, but the action is not irreversible. Reopening the area would allow a resumption of the experience.

irreversible. A term that describes the loss of future options. Applies primarily to the effects of use of nonrenewable resources, such as minerals or cultural resources, or to those factors, such as soil productivity that are renewable only over long periods of time.

isopods. Any of numerous mostly small crustaceans of the order Isopoda, characterized by a flattened body and a series of wide, armor-like plates covering the back.

J

Japanese hanging culture. Oyster cultivation method in which oysters are grown on recycled left valves (shells), and these shells are strung along wires through holes punched in the recycled shell. Clumps of approximately 14 shells are separated by approximately 6 inches of PVC piping to allow for cluster development. These wires are completely suspended and should not make contact with the bottom. From the time oysters are initially placed on the racks, they require approximately 16-18 months to reach market size, depending upon environmental conditions.

K

kelp. Any of various brown, often very large seaweeds that grow in colder ocean regions.

Kumamoto oysters. Otherwise known as *Crassostrea sikamea*, Kumamoto oysters are native to Japan and have not been permitted for cultivation within Drakes Estero since 1979. Remnant populations from historic cultivation are reported to have been removed.

L

La Niña. A cooling of the surface water of the eastern and central Pacific Ocean, occurring somewhat less frequently than El Niño events but causing similar, generally opposite disruptions to global weather patterns. La Niña conditions occur when the Pacific trade winds blow more strongly than usual, pushing the sun-warmed surface water farther west and increasing the upwelling of cold water in the eastern regions. Together with the atmospheric effects of the related southern oscillation, the cooler water brings drought to western South America and heavy rains to eastern Australia and Indonesia.

larvae. An animal in an early stage of development that differs greatly in appearance from its adult stage. Larvae are adapted to a different environment and way of life from those of adults and go through a process of metamorphosis in changing to adults.

light attenuation. The energy loss of a beam as it passes through a material.

lightscares. Natural ambient landscapes and other values that exist in the absence of man-made light (NPS 2006).

logarithmic scale. A scale of measurement that uses the logarithm of a physical quantity instead of the quantity itself.

low-income. CEQ Guidelines state that low income populations should be identified using the annual statistical poverty thresholds developed by the U.S. Census Bureau. Data for poverty from the 2006-2010 American Community Survey 5-Year Estimates, which are based on U.S. Census data, were used to identify low-income populations in this EIS.

M

macroalgal mats. “Blooms” of green marine algae that become encrusted on the sediment surface.

Manila Clams. Otherwise known as *Venerupis philippinarum*, Manila clams are native to the Philippines.

This species was added to Lease M-438-02 in 1993 by CFGC and was transferred to M-438-01 in 2009; however, the NPS SUP permits cultivation of this species in Lease M-438-02, not Lease M-438-01. See Chapter 1 for additional administrative history regarding cultivation of this species within the project area.

mariculture. The cultivation of marine plants and animals in their natural environment. (Term used interchangeably in the EIS with aquaculture or commercial shellfish operation.)

marine. Of or pertaining to the sea; existing in or produced by the sea.

Marine Protected Areas (MPAs). Term that encompasses a variety of conservation and management methods in the United States.

maritime. Of or relating to navigation or commerce on navigable waters.

marshbirds. Birds foraging primarily in freshwater.

mean high tide. The mean average of all the high tides (high high tides and low high tides) occurring over a certain period of time, usually 18.6 years (one lunar epoch).

microcultch. Oyster shells ground for use in single oyster culture on which juvenile oysters can grow.

microhabitats. The environment of a very small, specific area, distinguished from its immediate surroundings by such factors as the amount of incident light, the degree of moisture, and the range of temperatures. The side of a tree that is shaded from sunlight is a microenvironment that typically supports a somewhat different community of organisms than is found on the side that receives regular light.

microorganisms. An organism that can be seen only with the aid of a microscope and that typically consists of only a single cell.

mid zone. A zone within intertidal rocky shore habitats that is periodically exposed to air and harbors an abundance of organisms dwelling within the spaces between the rocks. Examples of organisms include mussels, limpets, crabs, anemones, chitons, black turban snails, and several species of algae.

molluscs. Any of numerous invertebrate animals of the phylum Mollusca, usually living in water and often having a hard outer shell. They have a muscular foot, a well-developed circulatory and nervous system, and often complex eyes. Molluscs include gastropods (snails and shellfish), slugs, octopuses, squids, and the extinct ammonites.

monocultures. The cultivation of a single crop on a farm or in a region or country.

monitoring. A process of collecting information to evaluate if an objective and/or anticipated or assumed results of a management plan are being realized (effectiveness monitoring) or if implementation is proceeding as planned (implementation monitoring).

morphometry. Measurement of the form of organisms or of their parts.

mudflats. Coastal wetlands that form when mud is deposited by tides or rivers. They are found in sheltered areas such as bays, bayous, lagoons, and estuaries. Mudflats may be viewed geologically as exposed layers of bay mud, resulting from deposition of estuarine silts, clays, and marine animal detritus. Most of the sediment within a mudflat is within the intertidal zone, and thus the flat is submerged and exposed approximately twice daily.

N

National Environmental Policy Act of 1969 (NEPA). The federal legislation that requires all federal agencies to examine the environmental impacts of their actions, incorporate environmental information, and utilize public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements and prepare appropriate NEPA documents to facilitate better environmental decision making. NEPA requires federal agencies to review and comment on federal agency environmental plans/documents when the agency has jurisdiction by law or special expertise with respect to any environmental impacts involved (42 U.S.C. 4321-4327) (40 CFR 1500– 1508).

National Environmental Policy Act (NEPA) process. The objective analysis of a proposed action to determine the degree of its impact on the natural, physical, and human environment; alternatives and mitigation that reduce that impact; and the full and candid presentation of the analysis to, and involvement of, the interested and affected public—as required of federal agencies by the National Environmental Policy Act of 1969.

National Register of Historic Places (National Register). To be listed on or eligible for listing on the National Register, a site, structure, object or district must possess historic integrity of those features necessary to convey its significance, particularly with respect to location, setting, design, feeling, association, workmanship, and materials.

naturalized. An organism that has escaped from domestication and returned, partly or wholly, to a wild state. Otherwise known as feral.

nesting habitat. Habitat(s) that host the birds during nesting including incubation, brooding and chick foraging.

no-action alternative. An alternative that maintains established trends or management direction. Section 1502.14(d) of the CEQ regulations implementing NEPA requires an EIS to include the alternative of “no action.” There are two distinct interpretations of “no action” that must be considered, depending on the nature of the proposal being evaluated. The first interpretation involves the continuation of the present course of action until that action is changed. The second interpretation of “no action” involves federal decisions on proposals for projects. “No action” in such cases would mean the proposed activity would not take place, and the resulting environmental effects of from taking no action would be compared with the effects of permitting the proposed activity to go forward (CEQ 1981, Q3 [48 Fed. Reg. 18027]). In the case of this EIS, the second interpretation of “no action” applies; therefore, Alternative A is the no-action alternative.

nonattainment areas. Areas of the country where air pollution levels persistently exceed the national ambient air quality standards of the EPA.

nonconforming use. Section 4(c) of the Wilderness Act of 1964 (PL 88-577) identifies prohibited uses, otherwise known as nonconforming uses, in wilderness. Nonconforming uses include a prohibition on commercial enterprises, mechanized equipment such as motorboats, and manmade structures.

O

ocean acidification. The chemical changes in the ocean as a result of carbon dioxide emissions.

offshore. In this document, the term offshore is used to refer to operations and facilities in Drakes Estero, including intertidal areas such as the shoreline and mudflats. This definition is not limited by any other agency's definition of the term. For instance, NOAA generally uses the term offshore to refer to open ocean; this document uses the term to refer to the estuarine environment of Drakes Estero, as well.

Olympia oysters. Otherwise known as *Ostreola conchaphila*, Olympia oysters are native to the Pacific coast. This species has not been permitted for cultivation within Drakes Estero since 1979. The last record of sale of this species at the site is from July 1963.

onshore. In this document, the term onshore generally refers to those areas above mean high tide but also may include items that stretch into the intertidal area, such as the main dock.

Ostrea edulis. See "European flat oysters."

Ostreola conchaphila. See "Olympia oysters."

outwelling. The process by which coastal habitats produce an excess amount of carbon and release organic nutrients into the surrounding area, creating an increase in productivity.

ozone, 1-hour. One of several classifications for areas designated "nonattainment" by the EPA; this standard is attained when the expected number of days per calendar year with maximum hourly average ozone concentrations above 0.12 ppm is less than or equal to one.

ozone, 8-hour. One of several classifications for areas designated "nonattainment" by the EPA; this standard is attained when the three-year averages of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm.

ozone transport region. The Clean Air Act sets out specific requirements for a group of northeast states that make up the Ozone Transport Region. States in this region are required to submit a State Implementation Plan and install a certain level of controls for the pollutants that form ozone, even if they meet the ozone standards.

P

Pacific decadal oscillation. Pacific Ocean phenomena which result in changes to wind persistence and intensity as well as ocean temperatures and climatic events.

Pacific oysters. Otherwise known as *Crassostrea gigas*, Pacific oysters are native to Japan and are the primary shellfish species cultivated in Drakes Estero.

paleontological resources. A resource related to the forms of life existing in prehistoric or geologic times, such as fossils of plants, animals, and other organisms.

palustrine. Relative to wetlands, the palustrine wetland system includes all nontidal wetlands dominated by trees, lichens, shrubs, persistent emergents, or emergent mosses. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes.

park. Any one of the hundreds of areas of land and water administered as part of the national park system. “Park” is synonymous with “Seashore” which is used throughout this EIS to identify Point Reyes National Seashore.

particulate matter (PM). Also known as particle pollution; a complex mixture of extremely small particles and liquid droplets made up of organic chemicals, metals, soil, dust, and acid particles.

pastoral zone. The enabling legislation specifically recognized the dairying and ranching operations by limiting the use of eminent domain within an area known as the “pastoral zone.” The pastoral zone was depicted on map number NS-PR-7002, dated August 15, 1961. Congress ratified this map by specifically referring to it in section 4 of the legislation which provided:

No parcel of more than five hundred acres within the zone of approximately twenty-six thousand acres depicted on map number NS-PR-7002, dated August 15, 1961...shall be acquired without the consent of the owner so long as it remains in its natural state, or is used exclusively for ranching and dairying purposes including housing directly incident thereto. (PL 87-657, section 4, September 13, 1962, 76 Stat. 538)

The section additionally defined ranching and dairying purposes as “such ranching and dairying, primarily for the production of food, as is presently practiced in the area” (PL 87-657, section 4, September 13, 1962, 76 Stat. 538). The administrative history of the Seashore identifies several rationales behind the creation of the pastoral zone and the special treatment of ranching and dairying operations within the zone: responding to the concerns of ranchers, lessening the cost of initial land acquisitions, stabilizing the county’s property tax base, and preventing commercial development within the area.

pelagic zone. Of or pertaining to the open seas or oceans, as opposed to the subtidal or intertidal zones. The biological community of the pelagic zone consists of phytoplankton, or small or microscopic free-floating plants, which are the predominant source of primary productivity via photosynthesis

perennial. Plants having a life cycle lasting more than two years; streams lasting or continuing throughout the entire year.

physiological. Being in accord with or characteristic of the normal functioning of a living organism.

phytoplankton. Plankton consisting of free-floating algae, protists, and cyanobacteria. Phytoplankton form the beginning of the food chain for aquatic animals and fix large amounts of carbon, which would otherwise be released as carbon dioxide.

pinniped. Any of various carnivorous, aquatic mammals of the group Pinnipedia, which some believe is a

suborder of the Carnivora but others consider a separate mammalian order. Pinnipeds have long, smooth bodies and finlike flippers for swimming. Seals and walruses are pinnipeds.

piscivorous. Habitually feeding on fish.

pollen core analysis. Study of the plant life of a certain period using the remains of pollen grains found in the soils of the same period. The proportions of the pollen grains representing different species give an indication of the type and mix of flora.

pollutants. The introduction of contaminants into an environment that causes instability, disorder, harm or discomfort to the ecosystem (i.e., physical systems or living organisms). Pollution can take the form of chemical substances, or energy, such as noise, heat, or light. Pollutants, the elements of pollution, can be foreign substances or energies, or naturally occurring; when naturally occurring, they are considered contaminants when they exceed natural levels.

population (or species population). A group of individual plants or animals that have common characteristics and interbreed among themselves and not with other similar groups.

potential wilderness. See “congressionally designated potential wilderness area.”

pneumatic hammers/drills. A hammer driven by compressed air. Pneumatic hammers are used to break apart clusters of Pacific oysters (particularly those grown using the Japanese hanging culture method).

predation. Describes a biological interaction where a predator (an organism that is hunting) feeds on its prey, (the organism that is attacked). Predators may or may not kill their prey prior to feeding on them, but the act of predation always results in the death of the prey. The other main category of consumption is detritivory, the consumption of dead organic material. It can at times be difficult to separate the two feeding behaviors, for example where parasitic species prey on a host organism and then lay their eggs on it for their offspring to feed on its decaying corpse. The key characteristic of predation however is the predator’s direct impact on the prey population. On the other hand, detritivores simply eat what is available and have no direct impact on the “donor” organism(s).

predator. An organism that hunts and feeds on its prey (the organism that is attacked). Predators may or may not kill their prey prior to feeding on them, but the act of predation always results in the death of the prey.

preserve. To protect from loss or harm; conserve. Historically, the terms preserve, protect and conserve have come collectively to embody the fundamental purpose of the NPS—preserving, protecting and conserving the national park system.

primary productivity. A measure of the rate at which new organic matter is developed through photosynthesis and chemosynthesis in producer organisms based on the oxygen released and carbon taken in; the transformation of chemical or solar energy to biomass.

private tideland. Land not owned by the State of California. CFGC does not issue leases for aquaculture operations on private tidelands, and CDFG does not collect lease fees or privilege use taxes from private tideland operators. Instead, private tideland operators make payments to the entity that holds title to these tidelands.

production limit. The average annual production over a rolling three year period, which would include the current year and the two previous years. Annual harvest is reported in pounds of shellfish per year. Specifically, the weight of Pacific oysters is calculated assuming 100 oysters per gallon (per California Fish and Game Code Section 15406.7) for shucked product and 8.5 pounds per gallon. Manila clams are calculated as 30 clams per pound.

public scoping (also external scoping). The early involvement of the interested and affected public.

pupping season. Harbor seal pup-birthing season occurs within Drakes Estero between March 1 and June 30.

Purple-hinged rock scallops. Otherwise known as *Crassadoma gigantea*, purple-hinged rock scallops are native to the California rocky coast. Lease M-438-02 was established in Drakes Estero in 1979 for the purpose of experimentally cultivating this species. The last record of this species being sold at the site was May 1994.

R

rack culture. A type of oyster cultivation which uses wooden racks to support “off-bottom” cultivation methods such as Japanese hanging culture and the French tube culture.

radiocarbon dating. The determination of the age of objects of organic origin by measurement of the radioactivity of their carbon content.

reasonable alternatives. CEQ has defined reasonable alternatives as those that meet the project objective to a large degree and are economically and technically feasible. Alternatives that cannot be implemented or that do not resolve the need for action nor fulfill the stated purpose (to a large degree) should be eliminated from further analysis. DO-12 further states that options that are unreasonably expensive, that do not meet park mandates, that are inconsistent with park statements of purpose and significance or management objectives, or that have severe environmental consequences may also be unreasonable alternatives to consider, though none of these factors automatically renders it so.

record of decision (ROD). A concise public record of decision prepared by a federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).

reservation of use and occupancy (RUO). An arrangement that allows for residents to continue to use and/or occupy their property for a set period of time after selling their property to the U.S. government.

riparian. Relating to or living or located on the bank of a natural watercourse (as a river) or sometimes of a lake or a tidewater.

roosting. A resting state or period of relative inactivity employed by birds to save energy and compensate for the high metabolic rates that occur during the active part of the day. Sleeping birds often use a type of

sleep known as vigilant sleep, where periods of rest are interspersed with quick eye-opening ‘peeks,’ allowing them to be sensitive to disturbances and enable rapid escape from threats.

S

sacred sites. Places which have established religious meaning and locales of private ceremonial activities of the American Indian tribes, including Native Alaskans.

salinity. The saltiness or dissolved salt content of a body of water. It is a general term used to describe the levels of different salts such as sodium chloride, magnesium and calcium sulfates, and bicarbonates.

scoping. An early and open process for determining the extent and variety of issues to be addressed and for identifying the significant issues related to a proposed action (40 CFR 1501.7).

scrublands. An area of land that is uncultivated and covered with sparse stunted vegetation.

scrub-shrub vegetation. The class scrub-shrub wetland includes areas dominated by woody vegetation less than 20 feet (6 meters) tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions.

sediment. Any particulate matter that can be transported by fluid flow, and which eventually is deposited.

semidiurnal. Pertaining to, consisting of, or accomplished in half a day; occurring every 12 hours or twice each day.

sessile. Permanently attached or fixed and not free-moving, as corals and mussels.

setting tanks. The setting tanks located onshore provide a location for remote setting. Remote setting is a human-controlled process by which shellfish larvae imported for DBOC mariculture operations are grown on site to the stage of maturity marked by attachment to cultch material, at which point the larvae become seed.

shellfish. Any aquatic invertebrate having a shell or shell-like carapace, especially such an animal used as human food. Examples are crustaceans such as crabs and lobsters and molluscs such as oysters.

socioeconomic. The study of the relationship between economic activity and social life.

sorting room. A room in the processing plant where workers sort the oysters.

soundscape. the aggregate of all the natural, nonhuman-caused sounds that occur in parks, together with the physical capacity for transmitting natural sounds.

special-status species. Special-status species include plant and animal species that have regulatory protection under current federal and state laws. Federal protection is afforded through the Endangered Species Act of 1973 (ESA), which is administered by USFWS and NMFS. In California, state protection is afforded through the California ESA, which is administered by CDFG. Additional protection is afforded by the Marine Mammal Protection Act and the Migratory Bird Treaty Act.

The USFWS defines an “endangered” species as one that is in danger of extinction throughout all or a significant portion of its range. A “threatened” species is one that is likely to become endangered in the foreseeable future. The USFWS maintains a list of plants and animals native to the U.S. that are ESA candidates or are proposed for possible addition to the federal list.

special use permit (SUP). An authorization from an appropriate government body (as a zoning board) for a use of property that is a special exception: lawful approval for a special exception.

species diversity. The variety of different species present in a given area; species diversity takes into account both species richness and the relative abundance of species.

splash zone. The very upper zone within intertidal rocky shore habitats which is rarely submerged. species such as periwinkle snails, barnacles, and some types of green algae have adapted to live in the splash zone.

State Historic Preservation Officer (SHPO). Responsible for the operation and management of the Office of Historic Preservation, as well as long range preservation planning.

state-managed tideland. Lands owned by the State of California. These tideland leases are managed by the CDFG, which collects annual payments from operators. Payments include an annual lease fee based on the number of acres in the lease and annual privilege use taxes. The CDFG also has authority to regulate aspects of the operations on these lands.

stringers. Wooden boards (usually 3-inch by 4-inch or 2-inch by 4-inch boards) that overlap and line across the bents and extend the length of each oyster rack.

substrate. The earthy material that exists in the bottom of a marine habitat, like dirt, rocks, sand, or gravel.

subtidal zone. An area within the coastal marine environment in which various species of kelp are dominant. This area is submerged most of the time, exposed briefly during extreme low tides around full and new moon events. This zone provides habitat to a large diversity of plants and animals in contrast to the other zones.

superintendent. The senior on-site NPS official in a park. Used interchangeably with “park superintendent,” “park manager,” or “unit manager.”

T

take. Take is defined differently depending on the governing legislation (i.e., Title 36 CFR, Endangered Species Act, and Migratory Bird Treaty Act).

“Take” as it applies to Title 36 CFR and as stated in 36 CFR 1.4 means to pursue, hunt, harass, harm, shoot, trap, net, capture, collect, kill, wound, or attempt to do any of the above.

“Take” as it applies to the Endangered Species Act and as stated in the Act section 3.19 means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in

any such conduct. Harass is defined by Fish and Wildlife Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding feeding or sheltering. Harm is further defined by the Fish and Wildlife Service to include significant habitat modification or degradation that results in death to listed species by significantly impairing behavioral patterns such as breeding, feed or sheltering (50 CFR 17.3).

“Take” as it applies to the Migratory Bird Treaty Act and as stated in 50 CFR 10.12, includes pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect. Executive Order 13186 which calls for an MOU that has not been completed by NPS or other land management agencies defines intentional and unintentional take.

temperate. Marked by moderate temperatures, weather, or climate.

terrestrial resource. A natural resources present on land.

tide and submerged land. The California General Assembly granted to the U. S. “all right, title, and interest of the State of California, held by the state by virtue of its sovereign in and to all of the tide and submerged lands or other lands beneath navigable waters situated within the boundaries of the Point Reyes National Seashore. . .” (chapter 983, section 1, Statutes of California, July 9, 1965). This bill is included in appendix B of this document.

traditional cultural property. A property associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community’s history or is important in maintaining its cultural identity and development as an ethnically distinctive people. Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places.

transient. Not lasting, enduring, or permanent; transitory.

triploid stock. A best management practice in shellfish mariculture; effectively sterile stock, with three sets of chromosomes rather than two.

trophic levels. A step in a nutritive series, or food chain, of an ecosystem. The organisms of a chain are classified into these levels on the basis of their feeding behavior. The first and lowest level contains the producers, green plants. The plants or their products are consumed by the second-level organisms-the herbivores, or plant eaters. At the third level, primary carnivores, or meat eaters, eat the herbivores; and at the fourth level, secondary carnivores eat the primary carnivores. These categories are not strictly defined, as many organisms feed on several trophic levels.

tunicate. Any of various primitive marine chordate animals of the subphylum Tunicata, having a rounded or cylindrical body that is enclosed in a tough outer covering. Tunicates start out life as free-swimming, tadpolelike animals with a notochord (a primitive backbone), but many, such as the sea squirts, lose the notochord and most of their nervous system as adults and become fixed to rocks or other objects. Tunicates often form colonies.

turbidity. Muddy or opaque, as a liquid clouded with a suspension of particles.

U

unacceptable impacts. Impacts that, individually or cumulatively, would

- be inconsistent with a park's purposes or values, or impede the attainment of a park's desired future conditions for natural and cultural resources as identified through the park's planning process, or
- create an unsafe or unhealthful environment for visitors or employees, or
- diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values, or
- unreasonably interfere with
 - park programs or activities, or
 - an appropriate use, or
 - the atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.
 - NPS concessioner or contractor operations or services.

untrammled. Essentially unhindered and free from modern human control or manipulation, as articulated in the Wilderness Act of 1964 and further defined in the handbook *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character across the National Wilderness Preservation System* (Landres et al. 2008).

Upper Cretaceous Period. Circa 100 million years ago to 65 million years ago.

V

Venerupis philippinarum. See "Manila clams."

viewsheds. An area of land, water, or other environmental element that is visible to the human eye from a fixed vantage point. The term is used widely in such areas as urban planning, archaeology, and military science. In urban planning, for example, viewsheds tend to be areas of particular scenic or historic value that are deemed worthy of preservation against development or other change. Viewsheds are often spaces that are readily visible from public areas such as from public roadways or public parks. The preservation of viewsheds is frequently a goal in the designation of open space areas, green belts, and community separators.

visitant. A migratory bird that is present in a particular region only at certain times.

visitor. Anyone who physically visits a park for recreational, educational or scientific purposes, or who otherwise uses a park's interpretive and educational services, regardless of where such use occurs (e.g., via Internet access, library, etc.).

visitor experience. The perceptions, feelings, and reactions a park visitor has in relationship with the surrounding environment.

visitor service. Public accommodations, facilities, and services that are necessary and appropriate for public use and enjoyment of the unit of the national park system in which they are located (16 U.S.C. 5951[b] to 5952; 36 CFR 51.3).

W

wading birds. Birds that wade to forage in fresh or brackish water.

water quality. The physical, chemical, and biological characteristics of water that measure the condition of water relative to the requirements of various species or a particular purpose and need.

watershed. The region or area drained by a river, stream, etc.; drainage area.

Western Hemisphere Shorebird Reserve Network. A conservation strategy launched in 1986, after scientists from around the Americas began documenting serious population declines in shorebirds. Recognizing that these birds were in trouble prompted the science community to take action and develop the framework for an international strategy to protect shorebirds and their habitats. The Network aligns with the simple strategy that we must protect key habitats throughout the Americas in order to sustain healthy populations of shorebirds.

wetlands. Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (Classification of Wetlands and Deepwater Habitats of the United States [Cowardin et al. 1979]).

wilderness. See “congressionally designated wilderness.”

Z

zooplankton. The aggregate of animal or animal-like organisms in plankton.

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