



PRUNUSKE CHATHAM, INC.



Essential Fish Habitat Assessment
Doran Regional Park and Westside Regional Park
Boat Launch Improvement Project
Bodega Bay, Sonoma County, CA
October 2012

Prepared for:

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TABLE OF CONTENTS

	Page
Table of Contents	1
Essential Fish Habitat Assessment.....	1
1 Introduction.....	1
2 Project Setting.....	1
3 Project Description and Construction Specifications	1
4 Existing Communities	5
5 Essential Fish Habitat and Managed Species	5
6 Impacts on Biological Resources	7
7 Conservation Measures.....	8
8 Conclusions.....	12
9 References.....	12

Figures

- Figure 1: Project Area Location Map
- Figure 2: Doran Regional Park – Eelgrass Distribution 2012
- Figure 3: Westside Regional Park – Eelgrass Distribution 2012

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ESSENTIAL FISH HABITAT ASSESSMENT

1 Introduction

Sonoma County Regional Parks (Regional Parks) has received a grant from the California Department of Boating and Waterways to conduct regulatory compliance planning and perform design and engineering for improvements at Doran Regional Park and Westside Regional Park boat launch facilities in Bodega Harbor, Bodega Bay (Figure 1). The proposed work includes providing improved access, amenities, and safety at both facilities. A draft Biological Resources – Site Analysis Report was completed to identify potential biological resource constraints associated with the project for initial planning purposes (PCI 2012). In this report, the project sites were identified as supporting Essential Fish Habitat (EFH) for several species covered under federal management plans and eelgrass beds, which constitute Habitat Areas of Particular Concern (HAPC), a subset of EFH.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended in 1996, established procedures to identify, conserve, and enhance EFH for federally managed species covered under federal Fisheries Management Plans (FMP). Under the MSA, federal agencies are required to consult with NOAA’s National Marine Fisheries Service (NOAA Fisheries) on all actions, or proposed actions, authorized, funded, or undertaken by the agency that may adversely affect EFH. This includes the preparation of a written assessment outlining the impacts of the proposed project on EFH. Because the proposed project sites have been identified as EFH, the following assessment has been prepared to assist with the determination of potential impacts on target species and development of conservation measures to minimize impacts.

2 Project Setting

The proposed project will take place at two existing boat ramps and parking areas owned and operated by the County of Sonoma. These include Doran Regional Park, Doran Park Road (APN 100-130-006) and Westside Regional Park, 2400 Westshore Road (APN 100-020-014). The projects are located along the shoreline of Bodega Harbor, which is a small, shallow natural harbor that is approximately 2 square miles in area. It is separated from Bodega Bay to the south by a long spit of land forming Doran Park and Bodega Head. The project sites are mapped on the Bodega Head USGS 7.5-minute quadrangle. The Doran Regional Park site is located at 38.310326°N and 123.053818°W, and Westside Regional Park is at 38.322998°N and 123.054698°W, respectively (Datum WGS84). The approximate location of each site is noted on Figure 1. Representative photographs of each site follow this report.

3 Project Description and Construction Specifications

The proposed boat launch facility improvements would include replacing the existing piles, boarding floats, and related amenities at both facilities, installing replacement

lighting, improving fish-cleaning stations and boat wash-down areas, expanding the Westside boat ramp by one lane, and dredging a low spot in the access area to the Westside boat ramp from the adjacent navigation channel.

Specific improvements under consideration at Doran Regional Park are:

- Boat Ramp Refurbishment: The boat ramp would be resurfaced, probably by using precast concrete planks. Worn out piles and boarding floats would be replaced. The replacement floating dock would include a low-freeboard portion for small boats and ADA access.
- Boat Wash: The boat wash would be moved out of the parking lot and across the street for improved traffic flow and safety. The new location would be a pullout from the eastbound lane across from (south of) the current RV dump station.
- Fish-cleaning Station: The fish-cleaning station would be repaired and upgraded, which would involve structural repair or replacement, fish-cleaning surface replacement, and hose upgrades.
- Parking Area: The parking area would be resurfaced and restriped. Improvements may include features such as raised islands of plants or vegetated swales. A pedestrian sidewalk would be added along the water side of the parking lot for improved safety. The gravel parking area immediately west of the currently paved area would also be surfaced and striped.

Specific improvements under consideration at Westside Regional Park are:

- Boat Ramp Refurbishment: The boat ramp would be expanded to three lanes and resurfaced with precast concrete planks. Worn-out piles and boarding floats would be replaced. Replacement floating dock would include a low-freeboard portion for small boats and ADA access.
- Channel Dredging: Accumulated sediment would be tested and, if appropriate, removed and reused in an upland area on regional parkland or on private property. If sediment sampling indicates potential contamination, alternate placement sites will be assessed.
- Boat Wash: The boat-wash area would be upgraded with timed hoses for water conservation.
- Fish-cleaning Area: The fish-cleaning area would be repaired and upgraded, including structural repair or replacement, fish-cleaning surface replacement, and fish processing upgrades.
- Trail and Picnic Tables: A new, decomposed granite trail and picnic tables would be installed in the area between the boat launch and the fish-cleaning station.

Project Footprint

The below quantities describe the change in project footprint relative to existing development below the high tide line (Moffatt and Nichol 2012a). These are based on 30% review drawings dated October 19, 2012, prepared by Moffatt and Nichol (2012b).

Doran Regional Park:

Item	Unit	Existing	Proposed	Change in Footprint
Concrete Ramp	Square feet	1,976	2,132	156
Boarding Float Dock	Square feet	456	624	168
Rock/Gravel	Square feet	N/A	160	160
Gangway	Square feet	N/A	250	250
Low-freeboard Dock (hand launch)	Square feet	N/A	320	320
Piles	Each	4	3	-1

Westside Regional Park:

Item	Unit	Existing	Proposed	Change in Footprint
Concrete Ramp	Square feet	4,256	4,775	519
Boarding Float Dock	Square feet	1,888	1,600	-288
Gangway	Square feet	N/A	250	250
Rock/Gravel	Square feet	N/A	360	360
Low-freeboard Dock (hand launch)	Square feet	N/A	320	320
Piles	each	8	7	-1
Dredging (maintenance)	Cubic Yards		1300	1300

Construction Practices

Construction practices will be ultimately be determined by the contractor hired to complete the work and developed in accordance with the permit conditions outlined by the resource agencies and best management practices. The following includes a discussion of the proposed methods based on common practices for working within baylands. Those practices that may impact aquatic resources below the high tide line are described below. The following construction practice descriptions were taken from Moffatt and Nichols (2012a).

Ramp Construction (Westside and Doran)

The lower portion of the boat ramp (below mean low water, approximately) will likely be constructed in water by placing precast concrete planks on top of the existing concrete ramp. This will allow the existing panels to be used as a base and minimize in-water earthwork and the volume of material that would otherwise go to landfill. Below the existing ramps, gravel will be placed before setting the new panels. If, during the construction turbidity develops, silt curtains would be used. Rock slope protection will be placed at the bottom of the Westside ramp to protect from scour and undermining of the ramp. Installation will require use of a crane located on shore, a crew of 4 to 6 workers, hand tools, and generator.

If construction needs to occur under dry conditions, coffer dams may be used. This could include the use of portable cofferdams made of tubes that are filled with water to form the water retaining dam.

The upper portion of the ramp (above low water) will be cast in place at a low tide. Hardening materials will be added to the concrete to provide early set that prevents wet concrete being in contact when the tide rises.

Pile Driving and Removal (Westside and Doran)

The existing timber piles will likely be removed with a crane and cable that wraps around the pile (choker) and pulls the piles straight out. This is readily accomplished as the piles are tapered and come freely once the initial resistance is overcome and the pile broken free.

The method of installation for the new piles will depend on the pile type. Pile type has not been finalized and is pending analysis and geotechnical investigation. Concrete or steel piles between 12-18 inches in diameter may be used. Best management practices will be used to install the piles to minimize turbidity and sound levels. Installation of concrete piles will occur with the use of an impact hammer. A vibratory hammer would be used for steel piles. Existing piles are embedded approximately 15 feet into the bottom. New piles will be driven 15-25 feet into the bottom.

Dredging (Westside)

Dredging would likely be performed using a small mechanical machine (Aqua Mog) with an environmental bucket. The excavation bucket would have a smooth jaw that seals to prevent the dredged material from falling through as the bucket is being raised. This would minimize turbidity. Dredged material would be loaded onto a small barge and taken to the near shore, loaded onto a truck with a sealed gate, and driven to the Cypress day-use site at Doran for placement in dune restoration.

Docks and Gangway (Westside and Doran)

The docks will be constructed out of opaque concrete or fiberglass similar in composition to the existing docks. A portion of the footprint now used by the docks will be replaced with a gangway that will be above the water and allows greater light transmission than the existing floating docks. In addition, the decking of the gangway will utilize open (1/2-inch maximum opening size) grating that allows light transmission through it.

4 Existing Communities

The project sites support a number of biological communities, including northern foredune, salt grass flats, shoreline, tidal flats and eelgrass beds, and intertidal and subtidal habitats (e.g., pilings and floating docks). However, the majority of project-related disturbance is proposed for areas that are already developed (e.g., riprap, parking lots, existing boat ramps). See *Biological Resources – Site Analysis Report* (PCI 2012) for a complete discussion on biological communities, including eelgrass beds.

5 Essential Fish Habitat and Managed Species

Essential Fish Habitat

Essential Fish Habitat includes those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. For the purpose of interpreting this definition of EFH: Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities; necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and spawning, breeding, feeding, or growth to maturity covers a species' full lifecycle (NOAA Fisheries 2004).

Essential Fish Habitat is included in each of the Fishery Management Plans applicable to Bodega Harbor. These include FMPs for Pacific Coast Groundfish, Coastal Pelagic Species, and Pacific Salmon. In Bodega Harbor, eelgrass beds are also an important component of EFH. These areas are identified as Habitat Areas of Particular Concern (HAPC), a subset of EFH, because they are susceptible to human-induced degradation, are especially ecologically important, and/or located in environmentally stressed areas.

Managed Fish Species within Bodega Harbor

An extensive background literature review was completed as part of this assessment to determine if a comprehensive fish inventory has been completed in Bodega Harbor and available for public review. This included discussions with local biologists and staff from Bodega Marine Laboratory (BML). A complete list of all fish species present in the

harbor could not be obtained. However, lists from nearby Estero Americano and Tomales Bay are available (Commins et al. 1996; Kelly and Fox 1995). Based on the diversity of fish found in these adjacent watersheds, life history characteristics, and distribution of the target species, inferences were made about the potential for occurrence of EFH-managed fisheries within Bodega Harbor.

Pacific Salmon FMP – The Pacific Salmon FMP covers Chinook salmon and coho salmon (Council 1997).

Coho salmon (*Oncorhynchus kisutch*) are not known to spawn in Bodega Harbor or Cheney Gulch, the main tributary to Bodega Harbor. Historically, this species may have utilized Cheney Gulch. Central California Coast (CCC) coho salmon have experienced precipitous population declines within California and Sonoma County. Recently, reintroduction efforts in Sonoma County watersheds (Salmon Creek and Russian River) have shown encouraging results for recovering this species. Due to the lack of suitable spawning habitat within Bodega Harbor and Cheney Gulch, the potential for occurrence is low. However, juveniles and adults may stray into the harbor on occasion. Adult salmon can occasionally be found near the outlet to a small freshwater pond at the northwest end of the harbor, but are not known to spawn there (C. Menard, BML, personal communication, October 10, 2012).

Chinook salmon (*O. tshawytscha*) are not known to spawn in Bodega Harbor or Cheney Gulch. California Coastal (CC) Chinook salmon are known to spawn in streams both north (Russian River watershed) and south (Tomales Bay watershed) of Bodega Harbor. Due to the lack of suitable spawning habitat within Bodega Harbor and its tributaries, the potential for occurrence is low. However, juveniles and adults may stray into the harbor on occasion. Adult salmon can occasionally be found near the outlet to a small freshwater pond at the northwest end of the harbor, but are not known to spawn there (C. Menard, personal communication, October 10, 2012).

Coastal Pelagic Species FMP – The Coastal Pelagic Species FMP covers five species. These include northern anchovy, Pacific sardine, Pacific (chub) mackerel, jack mackerel, and market squid (Council 2011a). All of the Coastal Pelagic Species except market squid may occur seasonally or occasionally in Bodega Harbor. Northern anchovy, Pacific sardine, and jack mackerel have documented occurrences in the Tomales Bay watershed to the south of Bodega Bay (Kelly and Fox 1995). Northern anchovy was also reported in Estero Americano, which enters Bodega Bay less than three miles southwest of the entrance to Bodega Harbor (Commins et al. 1996). While Pacific (chub) mackerel have not been reported nearby, they are often found in association with the other pelagic species, so they too may occur in Bodega Harbor on occasion. Market squid rarely enter estuarine habitats.

Pacific Coast Groundfish FMP – The Pacific Coast Groundfish FMP covers over 90 species of fish that live on or near the bottom of the ocean. These include 64 species of rockfish (including widow, yellowtail, canary, shortbelly, and vermilion rockfish; bocaccio, chilipepper, cowcod, yelloweye, thornyheads, and Pacific Ocean perch); 12 species of flatfish (including various soles, starry flounder, turbot, and sanddab); 6 species of roundfish (lingcod, cabezon, kelp greenling, Pacific cod, Pacific whiting [hake], and sablefish), 6 species of sharks and skates (leopard shark, soupfin shark, spiny dogfish, big skate, California skate, and longnose skate), and several other species, including ratfish, finescale codling, and Pacific rattail grenadier (Council 2011b).

Bodega Harbor has the potential to support a number of fish species covered by the Pacific Coast Groundfish FMP, including Pacific sanddab, leopard shark, cabezon, kelp greenling, lingcod, English sole, starry flounder, sand sole, and shortbelly rockfish (Commins et al. 1996). Additional species are reported nearby in the Tomales Bay watershed and may be present in Bodega Harbor as well (Kelly and Fox 1995).

Eelgrass Beds

Bodega Harbor supports extensive beds of eelgrass, a vascular, perennial marine plant that grows in large colonies or beds in soft-bodied bays and estuaries. Eelgrass typically occurs in shallow waters from 0 to 6 feet below mean low tide (Jepson Interchange 2011). Comprehensive eelgrass bed surveys around the project sites were not completed as part of this assessment or the site analysis report (PCI 2012). However, visual observations of eelgrass locations were noted from shore at low tides. Eelgrass was observed to the northeast of the existing boat ramp at Doran Park (Figure 2; Photos 1 and 2). This area is a relatively large bed of eelgrass; however, it appears beyond the limits of construction. At Westside Park, two isolated clumps of eelgrass are present in deeper water areas within the Westside launching area; two isolated clumps are present on the north and south side of the boat ramps (Figure 3; Photo 4). Along the navigation channel within Bodega Harbor and adjacent to the access point from Westside Park, extensive eelgrass beds also occur. Since the proposed project will not be implemented until 2013/2014 at the earliest, more detailed surveys of the project sites will need to be completed prior to commencing construction to more accurately determine the extent of eelgrass within the area.

6 Impacts on Biological Resources

Activities associated with the proposed project may affect resources utilized by management fish species and their habitats within Bodega Harbor. The following activities that may affect EFH and other biological resources include dredging, fill material, pile installation and removal, and over-water structures (NOAA Fisheries 2003). At Westside Park, the project will result in a net increase in 879 square feet of fill (concrete and gravel) and 282 square feet increase in over-water structures, reduction

in the number of piles by one, and removal of 1,300 cubic yards of accumulated sediment. At Doran Park, the project will result in a net increase in 156 square feet of fill (concrete and gravel) and 738 square feet increase in over-water structures, and reduction in the number of piles by one. The effects of these actions are described below in Table 1. Conservation measures to minimize impacts associated with each action are provided in the following section.

Table 1. Effects of the proposed project activities.

Project Activity	Impact Assessment
Dredging	Dredging will primarily affect benthic and water column habitats. This could result in the direct removal/burial of organisms on which EFH species forage and temporary displacement of mobile animals. Submerged aquatic vegetation (e.g., eelgrass) could be damaged or removed during dredging activities. Temporary sediment plumes may be generated during removal of material.
Fill Material	Installation of the expanded boat ramp and reinforcements will primarily result in the loss of soft bottom bayland and conversion to hard bottom surface.
Pile Removal	Removing existing piles will primarily result in the suspension of sediment and potential contaminants as they are taken out. Existing sessile species utilizing the piers will also be lost during removal. The temporary adverse impact of turbidity generated during piling removal will be offset by the elimination of the creosote-treated timbers that are currently in place.
Pile Driving	Pile driving may result in generation of underwater sound pressure waves. The degree to which this impacts fish and other aquatic species will depend on a variety of factors, including techniques utilized, species composition and size, water levels, tidal conditions, etc.
Over-water Structures	The construction of additional over-water structures may directly affect light levels and patterns below the structures. This may limit plant growth and recruitment, change species assemblages, and alter behavior. Existing sessile species utilizing the docks will also be lost during replacement.

7 Conservation Measures

A programmatic consultation for Essential Fish Habitat has been completed by NOAA Fisheries and U.S. Army Corps of Engineers for over-water structures in the San Francisco Bay area (NOAA Fisheries 2011b), excluding dredging or fill activities (e.g., boat ramps) other than pilings to support over-water structures. NOAA Fisheries (2003) has also prepared *Non-fishing Impacts to Essential Fish Habitat and Recommended*

Conservation Measures. While no comprehensive mitigation policy for eelgrass beds has been adopted, it is managed in compliance with the draft *California Eelgrass Mitigation Policy* (NOAA Fisheries 2011a). The policy establishes protocols for mitigating adverse impacts on eelgrass, provides guidelines for mapping beds, and establishes criteria for mitigation planting, monitoring, and evaluation. The programmatic consultation for Essential Fish Habitat (NOAA Fisheries 2011b), noted above, also provides additional information specific to eelgrass.

As noted, the proposed project may affect EFH habitat for several federally managed species within Bodega Harbor, including eelgrass HAPC. Overall, the majority of project-related disturbance is proposed for areas that are already developed (e.g., riprap, parking lots, existing boat ramps). However, there will be an increase in the area of disturbance as a result of expansion and proposed dredging. The following conservation measures will minimize the effects of dredging, pile removal and installation, placement of over-water structures, turbidity, and changes in light patterns. Collectively, these above-mentioned documents, along with site-specific considerations, were consulted during development of the below measures. These include the following:

Construction Practices

1. Utilize a small mechanical machine with environmental bucket (bucket with a smooth jaw that seals) to prevent dredged material from falling through the bucket. This will reduce turbidity.
2. Complete pre-dredging biological surveys to assess impacts on submerged aquatic vegetation and follow appropriate mitigation measures, as needed.
3. Place dredge materials in upland areas that minimize impacts on terrestrial habitats.
4. Drive and remove piles during low-tide periods when substrates are exposed in intertidal areas. This will minimize direct impacts on fish from sound waves and the amount of sediments re-suspended in the water column.
5. When removing piles, hit or vibrate the pile first to break the bond between the sediment and the pile to minimize the likelihood of the pile breaking and to reduce the amount of sediment sloughed.
6. Slowly remove piles to allow sediment to slough off at or near the mudline.
7. Encircle the pile with a silt curtain that extends from the surface of the water to the substrate during removal.
8. Fit all pilings with devices to prevent perching by piscivorous birds.
9. Replace existing concrete docks with gangways as feasible. The gangways should be elevated above the water surface and constructed of grated material to allow for greater light transmission under the structures.
10. Decrease the number of pilings at each site as feasible.
11. Before any construction begins, a qualified biologist should conduct a training session for all construction crew personnel. The training should include a

discussion of the sensitive biological resources within the project sites and the potential presence of special-status species. This should include a discussion of special-status species' habitats, protection measures to ensure species are not impacted by project activities, project boundaries, and biological conditions outlined in the project permits.

12. During removal of the existing over-water structures, efforts to minimize mortality to attached, mobile, native species of animals (e.g., limpets, snails, chitons, starfish, crabs) should be employed. Immediately following removal, a best professional effort should be made to dislodge such animals and relocate them to alternative locations so they can attempt to reattach. This work should be overseen by a qualified biologist.

Eelgrass Surveys

Eelgrass distribution can fluctuate over time due to a variety of environmental factors. Existing beds within Bodega Harbor may expand, contract, disappear, or recolonize as conditions allow. The approximate location of eelgrass beds within the project sites and immediately adjacent to the sites have been noted on the attached Figures 2 and 3. However, as noted above, eelgrass distribution within and surrounding the sites may change between now and when construction begins in 2013/2014. Therefore, a more comprehensive survey should be completed prior to project initiation. The following methodologies are based on the draft *California Eelgrass Mitigation Policy* (Policy; NOAA Fisheries 2011a). NOAA Fisheries, California Coastal Commission, and the Policy should be consulted to confirm the approach and make project-specific adjustments, as needed.

1. Within 60 days before beginning construction, eelgrass should be surveyed and an eelgrass distribution map prepared on a bathymetric chart with contour intervals of not greater than 0.3 meters. Mapping should include the project site and immediate adjacent areas (within 100 feet) and appropriate reference sites.
2. The survey(s) should include an evaluation of eelgrass spatial distribution, areal extent, percentage of bottom coverage, and turion (shoot) density; see NOAA Fisheries 2011a.
3. The survey(s) should be completed during the active growth period for eelgrass (May through September). The survey will be valid for 60 days; if the 60 days falls outside of the active growth period it will be valid until the following May at which time the survey would need to be repeated.
4. Pre-construction survey results should be provided to the resource agencies within 30 days of the beginning of construction.
5. The reference sites surveyed should be representative of the environmental conditions present within the project sites or immediate adjacent areas (e.g., sediment type, aspect relative to prevailing winds and currents, light availability, depth) and have eelgrass beds as similar as possible to those present within the

project sites or surrounding areas (i.e., similar spatial distribution, turion density, etc.).

6. Within 30 days of construction completion, a post-action survey of the eelgrass beds within project sites and immediate adjacent areas (within 100 feet) should be completed. Results of this survey along with data collected during the pre-construction survey will form the basis for any compensatory mitigation.
7. If no impacts on eelgrass spatial distribution, areal extent, percent coverage, or turion density are documented during the post-construction survey and/or delayed or chronic impacts are not anticipated, further surveys and mitigation will not be required. If direct or indirect adverse impacts occur, eelgrass mitigation may be required as outlined in ***Eelgrass Impact Mitigation*** below.

Eelgrass Impact Mitigation

If direct impacts on eelgrass beds are known to occur or are documented during the 30-day post construction survey, and/or indirect adverse impacts are anticipated, compensatory mitigation may be required. This would include eelgrass restoration at either an on- or off-site location. Mitigation should be consistent with outlined measures below as described in NOAA Fisheries (2011a), and any additional mitigation requirements or modifications to the proposed measures developed during consultation with NOAA Fisheries and California Coastal Commission.

1. Eelgrass mitigation site(s) should be similar to the impact site(s). Site selection should consider distance from the project sites, depth, sediment type, water quality, and aspect relative to winds and currents. On-site mitigation is appropriate, assuming the areas are not subject to disturbance due to ongoing recreational uses, and the areas provide suitable habitat capable of supporting eelgrass.
2. Mitigation will be required for any impact on spatial distribution, areal extent, bottom coverage, and density of existing eelgrass. For every square meter of eelgrass bed impacted, a total of 1.2 meters of new bed should be established. Based on a 75% failure rate in northern California, 4.82 meters of eelgrass bed will need to be planted for every meter impacted. Bottom coverage of the mitigation eelgrass bed must also be equivalent to the coverage area determined during the pre-construction survey. A permanent reduction of greater than 25% density of eelgrass vegetation should also be mitigated.
3. The actual techniques for eelgrass mitigation will require taking into consideration site-specific conditions. Donor material should be taken from the site in the area of direct impact, as feasible, where known plants will be destroyed. At least two additional donor sites should be utilized to increase the genetic variability of eelgrass transplanted to the relocation site. The mitigation technique will require planting bare-root bundles of individual eelgrass turions (clusters of 8-12) in the seabed at appropriate depths (Fawcett 2011). Density and location of the

mitigation site should be developed at the time of implementation and incorporated into this plan.

4. Mitigation should be initiated prior to or concurrently with construction or within 90 days of initiating in-water work. If work occurs during the low-growth period (October through April), mitigation plantings can be delayed until the following low-growth period. If mitigation implementation is delayed, an increase in successful mitigation will be required; see *V. Mitigation Implementation Delay, Table 1* in NOAA Fisheries 2011a.
5. Monitoring of the restoration success should occur over a 5-year period. This would include monitoring of both the mitigation site and reference sites to account for any natural fluctuations in eelgrass bed distribution and characteristics. Monitoring should occur during the active vegetation growth period at 0, 6, 12, 24, 36, 48, and 60 months following completion of the mitigation. Monitoring reports should be completed and submitted to the resource agencies within 30 days of the monitoring event.
6. During the establishment period, the following annual milestones should be reached. If they are not reached, the monitoring period should be extended and supplemental plantings considered:
 - Year 1 (12 months): 40% areal coverage of mitigation site
 - Year 2 (24 months): 85% areal coverage of mitigation site
 - Year 3 (36 months): 100% areal coverage of mitigation site
 - Year 4 (48 months): 100% areal coverage of mitigation site
 - Year 5 (60 months): 100% areal coverage of mitigation site

8 Conclusions

The goal of the project is to increase the safety and accessibility for recreational boaters and visitors to the shoreline and waters of Bodega Harbor. Overall, the project has been designed to minimize direct impacts on the baylands. Much of the disturbance area is already developed or supports existing structures. However, a small increase in the project footprint is proposed. Impacts on biological resources can be minimized by implementing the above-mentioned conservation and mitigation measures, as appropriate.

9 References

Commins, M.L., M.H. Fawcett, and J.C. Roth 1996. Environmental Conditions in West County Waterways: Santa Rosa Subregional Long-Term Wastewater Project. Prepared by Merritt Smith Consulting for Harland Bartholomew & Associates, Inc., City of Santa Rosa, and U.S. Army Corps of Engineers.

Fawcett, M. 2011. Bodega Bay FEMA Projects Coastal Permit Application #2-09-015 Eelgrass Monitoring and Mitigation Plan, Final. March 31, 2011.

Kelly, J.P. and K.J. Fox. 1995. Fish Species of Tomales Bay and its Watershed. The Tomales Bay Association.

Menard, C. Personal communication with Jennifer Michaud. October 10, 2012.

Moffatt and Nichol. 2012a. Memorandum – Westside and Doran Parks BLF – Project Description Quantities 30% Design-Draft. October 22, 2012.

Moffatt and Nichol. 2012b. Boat Launch Facilities Improvement, Doran Park and Westside Park. 30% Review October 19, 2012.

NOAA's National Marine Fisheries Service (NOAA Fisheries). 2003. Non-Fishing Impacts to Essential Fish Habitat and Recommended Conservation Measures, Version 1. August 2003.

NOAA's National Marine Fisheries Service (NOAA Fisheries). 2004. Preparing Essential Fish Habitat Assessments A Guide for Federal Action Agencies, Version 1. February 2004.

NOAA's National Marine Fisheries Service (NOAA Fisheries). 2011a. California Eelgrass Mitigation Policy, Draft December 7, 2011.

NOAA's National Marine Fisheries Service (NOAA Fisheries). 2011b. Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation. October 11, 2011.

Pacific Fishery Management Council (Council). 2011. Coastal Pelagic Species Fishery Management Plan as Amended Through Amendment 13. September 2011.

Pacific Fishery Management Council (Council). 2011b. Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington Groundfish Fishery. December 2011.

Pacific Fishery Management Council (Council). 1997. Pacific Coast Salmon Plan Fishery Management Plan for Commercial and Recreational Salmon Fisheries off the Coasts of Washington, Oregon, and California as Revised in 1996 and Implemented in 1997. January 1997.

Prunuske Chatham, Inc. (PCI). 2012. Biological Resources – Site Analysis Report, Doran Regional Park and Westside Regional Park. Boat Launch Improvement Project, Bodega Bay, Sonoma County, CA. September 2012.

Project Photographs – Doran Regional Park



Photo 1. Existing boat ramp and dock at Doran Regional Park.



Photo 2. Eelgrass bed to the northeast of the boat ramp at Doran Regional Park.

Project Photographs – Westside Regional Park



Photo 3. Existing boat ramp and docks at Westside Regional Park.



Photo 4. Eelgrass bed on north side of the dock.