



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

July 29, 2015

Refer to NMFS No: WCR-2015-3124

Cicely A. Muldoon
Superintendent
National Park Service
Point Reyes National Seashore
Point Reyes, California 94956

Re: Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Drake's Estero Restoration Project

Dear Ms. Muldoon:

On May 28, 2015, NOAA's National Marine Fisheries Service (NMFS) received your request for a written concurrence that the National Park Service's (NPS) implementation of the Drake's Estero Restoration Project is not likely to adversely affect (NLAA) species listed as threatened or endangered or critical habitats designated under the Endangered Species Act (ESA). This response to your request was prepared by NMFS pursuant to section 7(a)(2) of the ESA, implementing regulations at 50 CFR 402, and agency guidance for preparation of letters of concurrence.

NMFS also reviewed the proposed action for potential effects on essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), including conservation measures and any determination you made regarding the potential effects of the action. This review was pursuant to section 305(b) of the MSA, implementing regulations at 50 CFR 600.920, and agency guidance for use of the ESA consultation process to complete EFH consultation.

NMFS also reviewed the proposed action for potential impacts to whales, dolphins, porpoises, seals and sea lions, which are protected under the Marine Mammal Protection Act (MMPA). See 16 U.S.C. § 1361 *et seq.* Under the MMPA, it is generally illegal to "take" a marine mammal without prior authorization from NMFS. "Take" is defined as harassing, hunting, capturing, or killing, or attempting to harass, hunt, capture, or kill any marine mammal. Except with respect to military readiness activities and certain scientific research conducted by, or on behalf of, the Federal Government, "harassment" is defined as any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.



This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in compliance with applicable guidelines issued under the Data Quality Act (section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). The concurrence letter will be available through NMFS' Public Consultation Tracking System. [<https://pcts.nmfs.noaa.gov/pcts-web/homepage.pcts>] A complete record of this consultation is on file at the NMFS office in Santa Rosa, California.

Proposed Action and Action Area

The project will remove more than 5 miles of abandoned and collapsed oyster racks in a project footprint of 8.02 acres. Included within the 8.02 acre project footprint, NPS has documented 2.4 acres of heavy/moderate accumulation of aquaculture debris to be removed, located both inside and outside rack footprints. Approximately 1 acre of habitat inside the racks is littered with fallen PVC tubes, bags, strings, and lines; 0.88 acres of mats and debris on sand bars outside the racks; and 0.5 acres inside the racks comprised of thick oyster shell piles largely covering the bottom substrate. The project footprint includes 0.07 acres outside the racks for placement of a temporary dock to facilitate debris removal.

Regarding removal actions, a floating extraction barge outfitted with a piece of heavy machinery (e.g., hydraulic backhoe) will grasp and remove oyster racks and debris and place it within a container located on a floating transport barge. Both barges will be repositioned often as workers move along the rack, pulling embedded bents and other debris. As part of rack/debris removal, NPS and their contractors will establish the 0.07 acre temporary anchored floating dock (approximately 20 feet x 150 feet) to facilitate material transfer from the floating transport barges into trucks that will take the material to an approved disposal location. Boat/barge traffic will be restricted to already established boating channels previously utilized by the oyster company, and boat/barge anchoring will be minimized to the extent necessary to lessen eelgrass disturbance.

The project description also includes specific areas where broken manila clam aquaculture bags and clams are distributed on the sandbar. The 0.88 acres of sand bar debris (mainly mesh bags for clam cultivation and other aquaculture debris) will be collected from the bay shoreline at low tide when the material is accessible. NPS conducted surveys to determine the extent of manila clam distribution, and it appears the clams are generally only found directly beneath or near broken bags. NPS proposes to conduct a cleanup and clam removal of a 0.49 acre area and implement pre and post monitoring to determine effectiveness of the cleanup.

Finally, in several locations within the 2.4 acres of heavy/moderate aquaculture debris, there exists 0.5 acres of oyster shell piles that have effectively "capped" the substrate to the point where no eelgrass grows within the pile. At these sites, NPS will not attempt to dredge the shells for removal, but will instead utilize a backhoe "claw bucket" to gently rake, bury, and break up the shell piles. NPS anticipates this experimental method will allow eelgrass re-establishment.

The demolition activities are projected to start on July 1, 2016. Design engineers have estimated that the work associated with all demolition activities will take approximately 109 work days. Because of wind and tide factors, it is anticipated that the work would be completed over approximately 146 work days between July 1, 2016, and January 20, 2017. Tidal and weather

elements will have a significant impact on the ability of a contractor to conduct the demolition. In addition to potential tidal impacts to the project schedule (low tides in middle of the day), the summer months typically experience higher winds. A 16% estimated likelihood of winds between 10-20 mph has been used. Winds at this level will curtail or prevent demolition activities on the Estero.

Drake's Estero Restoration Project is a large-scale rack and debris removal project intended to increase the quality of quantity of habitat within Drake's Estero, including EFH for Federally-managed species. Due to eelgrass' ecological and economic importance, NPS has created and committed to an Eelgrass Monitoring and Mitigation Plan that aims to scientifically record the eelgrass impacts and restoration that will occur from the project's actions. NPS has adopted the pre and post monitoring schedule recommended in the California Eelgrass Mitigation Policy (CEMP) (National Marine Fisheries Service 2014) to determine the status of eelgrass impacts and restoration for 5 years, or 3 consecutive growth seasons (April-October) that match reference conditions, whichever occurs first. According to a phone call on June 18, 2015, NPS may employ an adaptive approach to the pre-monitoring effort due to the uncertain amount of time it may take for the contractor to remove the racks. For example, multiple pre-monitoring efforts occurring at different times may be implemented in order to monitor eelgrass beds within 60 days prior to the removal of each set of racks. If this approach is needed, NPS has agreed to consult with NMFS. Due to the large area of the project, NPS will conduct surveys over a portion of the entire area, and use that data as a sample and extrapolate over the entire project footprint. Accordingly, only percent cover and areal extent of eelgrass will be recorded at the oyster rack removal sites due to the difficulty of collecting shoot (turion) density over a large area in a short amount of time. However, the temporary dock monitoring will include shoot density, in addition to percent cover and areal extent, as measures of mitigation success for a 5-year period.

In addition California Department of Fish and Wildlife (CDFW) has committed to an additional multi-year monitoring effort focusing on eelgrass cover, marine debris, and associated fouling organisms (exact time commitment to be determined). Similar to NPS, CDFW aims to conduct pre and post-surveys within rack footprints and compare data to control sites. CDFW is also preparing to conduct surveys throughout the entire Estero (in addition to the rack removal areas) to assess the overall ecosystem trends.

"Interrelated actions" are those that are part of a larger action and depend on the larger action for their justification. "Interdependent actions" are those that have no independent utility apart from the action under consideration (50 CFR 402.02). There are no interdependent or interrelated actions associated with the proposed action.

The action area¹ for the Project includes the entire aquatic area of Drake's Estero, including tidally submerged shoreline, except for north of the transit corridors within Home, Creamery, and Barries bays.

¹ "Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02).

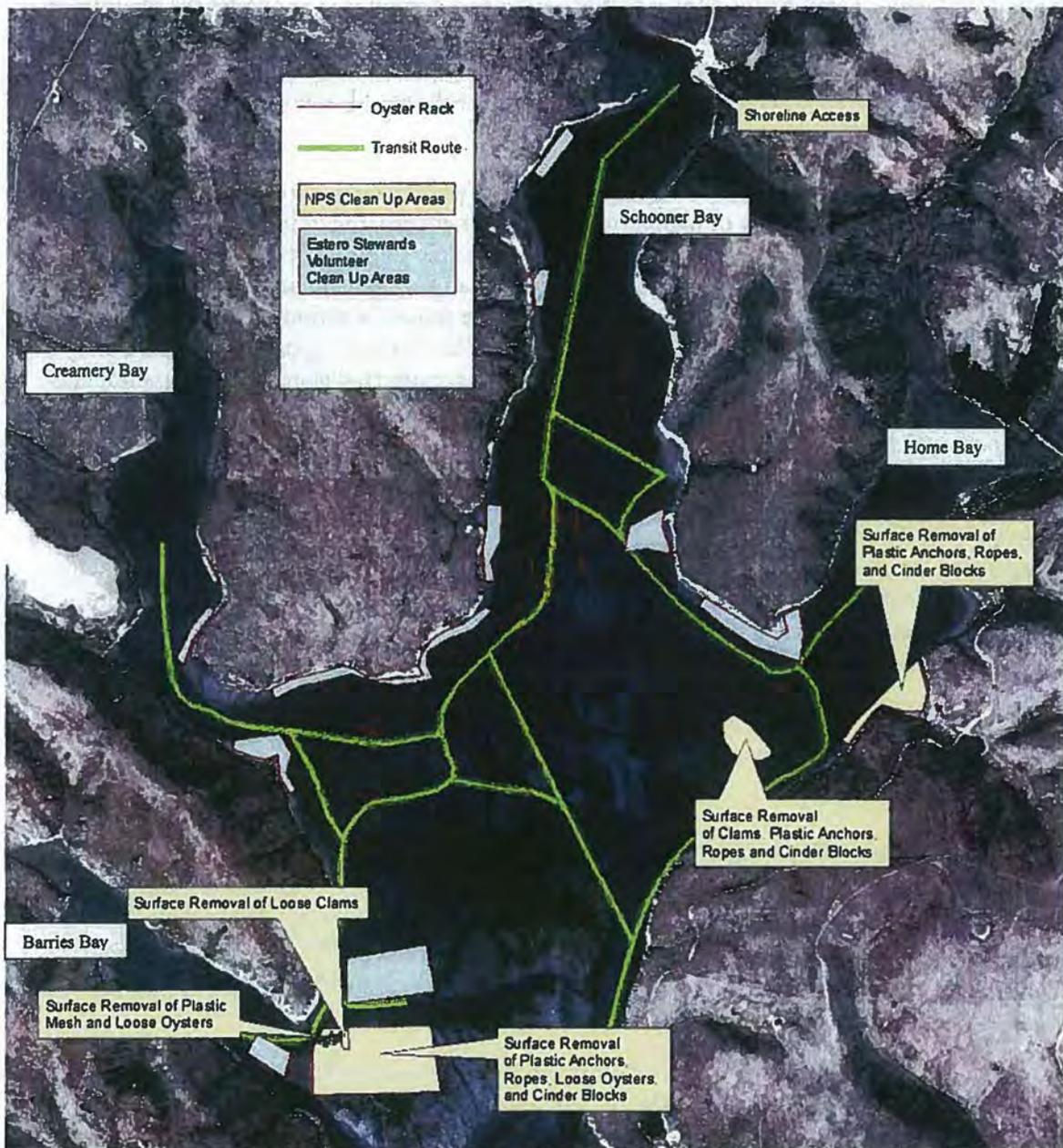


Figure 1: Photo of Drake's Estero noting oyster rack locations, clean up areas, and transit routes.

Agency's Effects Determination

California Coast (CCC) steelhead are known to inhabit Drake's Estero tributaries, and thus may be present within the action area at the time of the Project. CCC steelhead critical habitat occurs within those same tributaries, but does not extend downstream into the Drake's Estero estuary where Project impacts are expected. Coho salmon have never been sampled within the Drake's Estero or its tributaries and are not believed to inhabit the system, but all accessible habitats within the bay and tributaries is listed as critical habitat for CCC coho salmon.

NPS has determined that the Project is not likely to adversely affect threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*; 71 FR 834; January 5, 2006), or CCC coho salmon (*O. kisutch*) designated critical habitat (64 FR 24049; May 5, 1999). Their reasoning for the above determinations include the limited duration of work at any one location, and the small footprint of substrate disturbance relative to the large area of eelgrass in Drake's Estero.

Regarding EFH, NPS has determined that the project may adversely affect EFH. NPS has also determined that while there are anticipated temporary impacts to EFH for Federally-managed species under the MSA, the overall project will ultimately result in benefits to EFH at a ratio of at least 1.2:1.

The action area is located within an area identified as EFH for various life stages of fish species Federally-managed with the following Fishery Management Plans (FMPs) under the MSA:

Pacific Coast Groundfish FMP (leopard shark, starry flounder, butter sole, etc.),
Pacific Coast Salmon FMP (Chinook and coho salmon), and
Coastal Pelagic Species FMP (northern anchovy).

The project area is also located within an area designated as a Habitat Area of Particular Concern (HAPC) for various Federally-managed fish species within the Pacific Coast Groundfish FMP and the Pacific Coast Salmon FMP for coho and Chinook.² HAPCs are described in the regulations as subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPCs are not afforded any additional regulatory protection under MSA; however, Federal projects that may adversely affect HAPC are more carefully scrutinized during the consultation process.

As defined in the Groundfish FMP (Pacific Fishery Management Council 2014a) and the Salmon FMP (Pacific Fishery Management Council 2014b), Drake's Estero, including the project footprint, is defined as Estuary HAPC. In addition, the project footprint is located directly in and adjacent to eelgrass (*Zostera marina*) beds, defined as seagrass HAPC and marine and estuarine submerged aquatic vegetation HAPC (SAV) in the Groundfish FMP and Salmon FMP, respectively. Many species managed under the Groundfish FMP are dependent on stable and productive eelgrass beds throughout some or all of their lifestages (Council 2005a). Studies have shown seagrass beds to be among the areas of highest primary productivity in the world (Herke and Rogers 1993; Hoss and Thayer 1993). As described in the Salmon FMP, these habitats provide important nurseries, feeding grounds, and shelter to a variety of fish species, including salmon (Shafer 2002; Mumford 2007), as well as spawning substrate to Pacific herring (*Clupea pallasii*), an important prey species for all marine life stages of Pacific salmon. Juvenile salmon utilize eelgrass beds as migratory corridors as they transition to the open ocean, and the beds

² Regarding the designation of EFH under the Salmon FMP, Drake's Estero is designated EFH because the estuary is bounded by marine EFH and freshwater EFH. The geographic extent of freshwater EFH is specifically identified in the Salmon FMP as all water bodies currently or historically occupied by PFMC-managed salmon in Washington, Oregon, Idaho, and California; including aquatic areas above all artificial barriers that are not specifically excluded (79 FR 75450).

provide both refuge from predators and an abundant food supply (see reviews by Fresh (2006) and Mumford (2007)).

The project footprint is also located within the boundaries of EFH for the Coastal Pelagic Species (CPS) FMP, defined to be all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington offshore to the limits of the Exclusive Economic Zone (EEZ) and above the thermocline where sea surface temperatures range between 10°C to 26°C (Pacific Fishery Management Council 2011). Although primarily occurring in pelagic areas, CPS species such as northern anchovy and Pacific sardine use estuarine habitat.

Consultation History

NMFS, along with representatives from the California Coastal Commission, U.S. Army Corps of Engineers, and Regional Water Quality Control Board, met with NPS to preliminarily discuss the project and conduct a field visit on January 15, 2015. During the meeting and field visit, potential EFH mitigation/minimization measures were discussed with NPS. The initial consultation request was received by NMFS from NPS on May 28, 2015, which NMFS deemed incomplete due to insufficient information concerning impacts to EFH and listed species. NMFS notified NPS regarding the required information via email from Rick Rogers to Brannon Ketcham dated June 4, 2015, and received that information via a response email from Mr. Ketcham to Mr. Rogers dated June 11, 2015. In addition, NMFS and NPS clarified project information further during a phone call on June 18, 2015, regarding EFH-related information. A NPS email to NMFS regarding EFH on June 29, 2015, confirmed that the monitoring plan will incorporate the information included in the June 11, 2015, response email. Another NPS email sent to NMFS on June 29, 2015 included information on changes to the project time period. ESA and EFH consultation was initiated on June 29, 2015.

ENDANGERED SPECIES ACT

Effects of the Action

Under the ESA, “effects of the action” means the direct and indirect effects of an action on the listed species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR 402.02). The applicable standard to find that a proposed action is not likely to adversely affect listed species or critical habitat is that all of the effects of the action are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species or critical habitat. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur.

Operating from a floating barge, heavy equipment (*e.g.*, backhoe or similar machine) will hydraulically pull embedded oyster rack posts³ (formerly called a “bent”) from the substrate after the scaffolding and other above-substrate structure is removed. Similar equipment and methods

³ NPS defines a bent as a structure consisting of three (3) vertical 2x6 inch posts affixed and stabilized by a 14-foot long 2x6 inch horizontal cross-member.

will be used to mechanically break up accumulated shell mounds and partially mix them into the bottom substrate. Both actions will likely dislodge sediment from the substrate and create a small, localized area of turbid water. Suspended sediment can affect salmonids in several ways. High concentrations of suspended sediment can disrupt normal feeding behavior and efficiency (Cordone and Kelly 1961; Bjornn *et al.* 1977; Berg and Northcote), reduce growth rates (Crouse *et al.* 1981), and increase plasma cortisol levels (Servizi and Martens 1992). High turbidity concentrations can reduce dissolved oxygen in the water column, result in reduced respiratory functions, lower disease tolerance, and, in severe cases, can also cause fish mortality (Sigler *et al.* 1984; Berg and Northcote 1985; Gregory and Northcote 1993; Velagic 1995; Waters 1995). Even small pulses of turbid water will cause salmonids to disperse from established territories (Waters 1995), which can displace fish into less suitable habitat and/or increase competition and predation, decreasing chances of survival. With regard to physical habitat condition, increased sediment deposition can fill pools and reduce the amount of cover available to fish, decreasing the survival of juveniles (Alexander and Hansen 1986).

Yet, the severity, spatial extent and duration of turbidity that will result from the proposed action is likely much less than the conditions encountered in the above-mentioned studies. While testing the feasibility of hydraulically pulling the bents, NPS documented a resulting plume of turbidity when each bent was pulled that lasted just three to five minutes before dissipating completely (NPS correspondence June 11, 2015). Furthermore, turbidity impacts are unlikely to cumulatively combine because turbidity will dissipate before work begins at the next bent. Although not documented during the test, the spatial area of the turbid plume likely expanded to no more than a 10 foot x 10 foot area, given the relative lack of flow in Drake's Estero (as compared to a river/stream). In response to turbidity as well as the general commotion of working men and machinery, juvenile and adult steelhead will likely avoid the immediate area where active bent pulling/shell mound disturbance is taking place, and displaced fish will seek out suitable habitat to occupy until Project impacts abate. Fortunately, displaced fish have ample habitat to disperse into, as Drake's Estero contains more than 700 acres of high-quality eelgrass habitat not impacted by the Project. For this reason, NMFS believes the level of harassment steelhead will experience due to bent-pulling operations and the resulting turbidity plume is insignificant, and will not appreciably impact the species survival or recovery.

CCC coho salmon critical habitat will be temporarily impacted by the Project. For CCC coho salmon critical habitat, the following essential habitat types were identified: 1) juvenile summer and winter rearing areas; 2) juvenile migration corridors; 3) areas for growth and development to adulthood; 4) adult migration corridors; and 5) spawning areas. Within these areas, essential features of coho salmon critical habitat include adequate: 1) substrate, 2) water quality, 3) water quantity, 4) water temperature, 5) water velocity, 6) cover/shelter, 7) food, 8) riparian vegetation, 9) space, and 10) safe passage conditions (64 FR 24049). Within Drake's Estero, essential habitat types include migration habitat for both adult and juvenile fish, as well as rearing and freshwater/ocean acclimation habitat. Removing embedded bents and aquaculture debris, and mechanically breaking up shell mounds, will likely cause the small cumulative loss of some eelgrass plants directly adjacent to the bent being removed through either sediment smothering

or plant uprooting.⁴ NPS (2015) estimates that rack removal and dock installation will temporarily impact approximately 0.59 acres of eelgrass. However, as noted above, over 700 acres of near-pristine eelgrass habitat is available to rearing and migrating salmonids in Drake's Estero, suggesting that the temporary loss of approximately 0.59 acre of eelgrass habitat is unlikely to compromise the ability of critical habitat in the action area to support future CCC coho salmon survival and recovery.

On the contrary, removing derelict oyster racks and accumulated bottom debris will improve sunlight penetration and expose areas for natural eelgrass colonization, both of which will likely improve eelgrass density and overall acreage within Drake's Estero. These improvements will likely improve the ability of critical habitat to promote future CCC coho salmon survival and recovery. The restoration project, including complete removal of oyster racks and accumulated aquaculture debris (tubes, strings, and bags), is anticipated to provide an eelgrass restoration to impact ratio in excess of 1.2:1, the minimum mitigation ratio recommended in the California Eelgrass Mitigation Policy (National Marine Fisheries Service 2014). The shoreline/sandbar treatment areas identified as part of the project are not within, and therefore are not anticipated to impact eelgrass habitat or the impact calculation ratios presented above.

Conclusion

Based on this analysis, NMFS concurs with NPS that the proposed action is not likely to adversely affect the subject listed species and designated critical habitats.

Reinitiation of Consultation

Reinitiation of consultation is required and shall be requested by NPS or by NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this concurrence letter; or if (3) a new species is listed or critical habitat designated that may be affected by the identified action (50 CFR 402.16). This concludes the ESA portion of this consultation.

MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT

Under the MSA, this consultation is intended to promote the protection, conservation and enhancement of EFH as necessary to support sustainable fisheries and the managed species' contribution to a healthy ecosystem. For the purposes of the MSA, EFH means "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity", and includes the associated physical, chemical, and biological properties that are used by fish (50 CFR 600.10), and "adverse effect" means any impact which reduces either the quality or quantity

⁴ NPS will also remove aquaculture debris (mainly mesh bags and assorted anchors) from sandy areas near the mouth of Drake's Estero. However, no eelgrass exists at that location, and the work will be done at low tide when the area is not inundated with water. Thus, no impacts to fish or habitat are expected.

of EFH (50 CFR 600.910(a)). Adverse effects may include direct, indirect, site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. NMFS determined the proposed actions of rack removal and installation of a temporary loading dock would adversely affect EFH as follows.

Rack Removal

NPS proposes to remove oyster racks that exhibit a variety of conditions, ranging from recently used and intact, to aged and degraded racks that are partially collapsed or buried in the soft bottom substrate. On average, the newer intact racks have little to no eelgrass located within the rack footprint, and the older and partially collapsed racks generally have eelgrass located within the rack footprint. NPS estimates that 40% of the posts and buried cross-members occur within established eelgrass beds.

Regarding the racks that have eelgrass within the rack footprint, the removal of rack components could result in direct removal and/or burial of eelgrass plants. As described in the CEMP, it is NMFS' policy to recommend no net loss of eelgrass habitat function in California. NPS has estimated that the removal of posts within eelgrass could result in direct impacts of up to a maximum of 1.3 square feet per post (0.08 acres total impact), and the removal of buried cross-members could impact up to a maximum of 1 square foot per linear foot of the buried cross-member (0.29 acres total impact). In addition, many wooden boards called stringers that were used to hang aquaculture bags and tubes have fallen on the substrate and are embedded within eelgrass within the rack footprint (0.14 acres total impact). Thus, the anticipated total direct impact to eelgrass habitat from the removal of rack posts, buried cross-members, and fallen stringers is 0.51 acres.

As identified in NPS' Project Description, many of the racks that were more recently active have no eelgrass occurring within the rack footprint. It is possible that shading effects by previous aquaculture structures (hanging bags, tubes, etc.) were preventing eelgrass growth within the rack footprint. NPS estimates at least 0.73 acres of eelgrass expected to expand into these areas. NPS will implement monitoring (described above), using the CEMP as a guide, to track the impacts and recovery of eelgrass resulting from rack removal.

The removal of oyster racks could increase turbidity where rack components are being removed. Turbidity plumes of suspended particulates reduce light penetration through the water column. If suspended for extended periods of time, even slight reductions in light availability result in lower rates of photosynthesis for subaquatic vegetation (Dennison 1987), and phytoplankton productivity (Cloern 1987). Limited light availability has been identified as the primary factor controlling depth distribution, density, and productivity of eelgrass (Dennison and Alberte 1982; Dennison and Alberte 1985; Dennison and Alberte 1986; Zimmerman *et al.* 1991). Reductions in light available at the eelgrass canopy due to turbidity may result in eelgrass loss, especially where eelgrass is growing at or near its lower depth limit. Regarding Federally-managed fish species, if suspended sediment loads remain high, fish may suffer reduced feeding ability (Benfield and Minello 1996), increased larval mortality (Wilber and Clarke 2001), and be prone to fish gill injury (Nightingale and Simenstad 2001a). NPS conducted a pull test for rack components, and determined that sediment plumes resulting from removal would undergo rapid

decay in five minutes or less due to the Estero's tidal regime (NPS correspondence June 11, 2015). In addition, The Preliminary Engineering Report (Holladay Engineering Co. 2015) estimates that the time spent to remove each 3-post bent would be approximately 15-20 minutes, before moving on to the next bent. Thus, because turbidity plumes are anticipated to be on the order of minutes for each bent and spread over a relatively small area, localized turbidity impacts to eelgrass and water column habitat for Federally-managed species are expected to be insignificant.

Temporary Loading Dock

NPS will build and install a temporary anchored floating dock of approximately 20 feet x 150 feet at or near the old loading dock location used by the Drake's Bay Oyster Company (0.07 acre footprint) to facilitate material transfer from the floating transport barges onto trucks for land transportation. It is anticipated that this dock will be in place between July 1, 2016 and January 20, 2017. Any eelgrass that is located where the dock contacts the substrate at low tide will likely be smothered and destroyed. Eelgrass that is not directly smothered by the bottom surface of the dock, but is located in an area that is shaded by the overwater structure also will likely be impacted. The shadow cast by an overwater structure can alter a habitat, adversely affecting both the plant and animal communities below the structure (Nightingale and Simenstad 2001b). Light levels underneath overwater structures have been found to fall below threshold amounts for the photosynthesis of diatoms, benthic algae, eelgrass, and associated epiphytes and other autotrophs. These photosynthesizing organisms are an essential part of nearshore habitat and the estuarine and nearshore food webs that support many species of marine and estuarine fishes. Eelgrass and other macrophytes can be reduced or eliminated, even though partial shading of the substrate, and have little chance to recover (Council 2005b). Thus, NMFS anticipates 0.07 acres of eelgrass will be adversely affected as a result of the temporary dock. However, because of the temporary nature of the dock, NPS expects eelgrass to recover within the dock footprint. Following the CEMP (described above) to track eelgrass impacts and recovery following dock placement, NPS has committed to pre and post-monitoring and annual monitoring for 5 years, or 3 consecutive growth seasons (April-October) that match reference conditions, whichever occurs first.

Aquaculture Debris Removal

Within the footprint of the racks, NPS has documented approximately 1 acre of aquaculture debris, composed of tubes, strings, bags, and lines. NPS proposes to remove the debris using a mechanical excavator on a barge with a clam shell or dredge scoop attached to the hydraulic arm. No eelgrass has been observed in the rack footprints where debris is located, therefore no direct impacts to eelgrass from the excavator are anticipated. Although debris removal may result in plumes of increased turbidity, similar to reasons previously discussed for rack removal actions, NMFS does not anticipate significant turbidity impacts to eelgrass or water column habitat. Overall, NMFS expects the removal of aquaculture debris to benefit benthic habitat and allow eelgrass beds to expand. In addition, the removal of 0.88 acres of sand bar debris (mainly mesh bags for clam cultivation and other aquaculture debris) will be completed at low tide, where effects to habitat are expected to benefit sandbar habitat.

In addition to the 1.88 acres of aquaculture debris removal, NPS estimates 0.5 acres inside the racks are comprised of heavy accumulation of oyster shell piles covering the bottom substrate. NPS proposes to conduct an experimental method using an excavator to mix the shell piles into the soft bottom substrate. In their current state, the shell piles prohibit eelgrass recruitment and growth. The working hypothesis is that breaking up the shell 'cap' will expose the substrate enough to allow eelgrass to grow. Similar to the overall monitoring plan described above, the treatment areas will be monitored before and after the action and compared with control areas to help determine the efficacy and efficiency of the method. No eelgrass is currently located in the area where the experimental method will be implemented, and thus will not be adversely affected. Similar to analyses of rack removal and aquaculture debris removal, NMFS does not anticipate direct impacts or turbidity impacts to eelgrass from this action. It is hoped that 0.5 acres of eelgrass habitat will be restored from this treatment, although due to its experimental nature, the acreage is not included in the overall mitigation ratio calculation.

Vessel Operations

The proposed project involves boat and barge operations during high and low tide in and around known eelgrass bed locations. Prop scarring, anchoring, and vessel grounding impacts are common where shallow water vessel operations are co-located with intertidal and subtidal eelgrass beds, and can cause significant damage if care is not taken to avoid eelgrass (Council 2005b). NPS proposes to use existing boat navigation channels used by Drake's Bay Oyster Company. The contractor will utilize narrow poles to stabilize vessels where eelgrass is located beneath, and will only deploy anchors in areas without eelgrass. Further, water depth at low tide should not prohibit rack cleanup or result in impacts to eelgrass.

NPS states that the contractor will exercise caution with a loaded barge at the temporary dock, minimizing direct prop and grounding impacts that may occur during low tide. Vessel impacts to eelgrass from the operation of vessels loading and unloading at the dock, will be recorded in the pre and post-monitoring for the temporary loading dock and included in the overall mitigation ratio for the project.

Invasive Species

Oyster racks and aquaculture debris provide hard substrate in Drake's Estero for the growth and persistence of *Didemnum vexillum*, a non-native invasive colonial tunicate originally from Japan. Invasive species are known to enter new environments from aquaculture operations, and *D. vexillum* is established amongst numerous shellfish aquaculture operations around the world (Switzer *et al.* 2011). The introduction of non-native organisms to new environments is an ongoing threat to EFH, and can have many severe impacts on habitat (Omori *et al.* 1994). Long-term impacts of the introduction of non-native and reared species can change the natural community structure and dynamics, lower the overall fitness and genetic diversity of natural stocks, and pass and/or introduce exotic lethal disease, resulting in deleterious habitat conditions (Council 2005b). Removing the racks and debris from Drake's Estero is anticipated to benefit the Estero by minimizing the amount of hard substrate that *D. vexillum* relies upon. In the Project Description, NPS states that care will be taken in the removal of the racks and debris to minimize the spread of *D. vexillum* tissue and spores during removal, but some spread of the tissue and

spores may occur. NMFS and NPS have observed *D. vexillum*, to a lesser degree, attached to the surface of eelgrass blades in Drake's Estero. NPS hopes *D. vexillum* recruitment on eelgrass will not persist after the racks and debris have been removed, and that the removal of racks and aquaculture debris will ultimately reduce the abundance and distribution of *D. vexillum* in Drake's Estero. NPS' monitoring plan (described above) will evaluate recruitment of *D. vexillum* on eelgrass at survey locations for up to 5 years after racks have been removed.

Another non-native species concern is the survival of manila clams (*Venerupis philippinarum*) that Drake's Bay Oyster Company cultured in various sandbar locations. NPS proposes to conduct a cleanup and clam removal of a 0.49 acre area and implement pre and post monitoring to determine effectiveness of the cleanup. NMFS anticipates beneficial effects to sandbar habitat from their removal.

EFH Conclusion

NMFS anticipates the rack removal and dock installation components of this project will have adverse effects to EFH, including estuary and eelgrass HAPC. However, NPS is proposing to implement numerous methods, techniques, and measures to avoid and minimize adverse effects to EFH. Further, NMFS anticipates that eelgrass will expand as a result of project activities. The total amount of eelgrass anticipated to be restored as a result of the project is a minimum of 2.81 acres. The total eelgrass impacts are estimated to result in a maximum of 0.51 acres, yielding a mitigation ratio that is expected to be greater than 1.2:1, the minimum recommended by the CEMP. Per June 11, 2015 correspondence, NPS has committed to monitoring impacts and meeting restoration milestones that are synonymous with mitigation milestones described in the CEMP. No further mitigation is recommended by NMFS at this time, assuming eelgrass restoration meets the restoration milestones described in NPS' Project Description. Therefore, NMFS has no EFH Conservation Recommendations to provide to NPS regarding rack removal or dock installation at this time. NPS must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920(1)). This concludes the MSA portion of this consultation.

MARINE MAMMAL PROTECTION ACT

Marine mammals likely to be in the immediate project area are the Pacific harbor seal (*Phoca vitulina richardii*) and possibly the California sea lion (*Zalophus californianus*). During a single day, harbor seals can move from one haul out site to another within the Drake's Estero area and California sea lions may be observed transiting in the area. Potential impacts to marine mammals from the proposed project are likely from disturbance from proposed project activities, underwater sound from project-related vessels, and an increase in vessel traffic. Possible consequences from proposed project activities involving the removal of structures adjacent to haul out sites and underwater sound from project-related vessels could cause marine mammals to move away or change their normal behavior or flush from their haul out site. Harbor seal presence at haul out sites is seasonal, with peaks in abundance during their pupping (March to June) and molting periods (July to August). During the fall and winter 50-90% of individual harbor seals may remain year-round at Drake's Estero. The contract window for the project is

anticipated from July 1, 2016 to January 20, 2017, which does slightly overlap with the harbor seal molting period and the early arrival of pregnant females. Other human activities do occur in the Drake's Estero area that can disturb seals at haul out sites, causing changes in seal abundance, distribution, and behavior, and can even cause abandonment, but harbor seals do continue to haul out there. It is not clear if project-related activities could generate the same level of human-caused noise that currently has the potential to disrupt harbor seals at Drake's Estero or if it is anticipated that this level would increase due to project-related activities, even though it will be conducted outside of the harbor seal pupping season to minimize impacts. Removal activities and equipment could emit in-air sound, and NMFS recommends that NPS consider evaluating and comparing where harbor seals are expected to haul out (*i.e.*, what the received level from the sound source may be at the haul out sites) and how it corresponds to the current NMFS Level B take threshold of 90 A-weighted decibels reference $20 \mu\text{Pa}^2$ (in-air) for harbor seals. Based on the information provided, it doesn't appear that additional underwater noise would be generated as a result of the proposed project activities and therefore, NMFS does not recommend any further evaluation for potential underwater noise impacts to marine mammals. NMFS does support any mitigation measure that would limit activities during pupping season, but based on the information provided, it is difficult to evaluate the potential project-related impacts to harbor seals relative to currently proposed project-related activities.

The construction and placement of a temporary floating dock with a bulkhead on the shore in order to secure multiple barges in series to the shore, may also cause harbor seals to initially flush from the haul out site, if it is placed at a location adjacent to the haul out site or is visible to hauled out harbor seals. Potential effects of dock-related activities on the harbor seals cannot be fully evaluated because these effects have not been directly investigated, but NMFS supports precautionary measures to reduce the likelihood of disturbance of harbor seals which are consistent with current management practices in the U.S. Therefore, to reduce potential impacts to harbor seals, NMFS recommends that NPS consider avoiding locations near harbor seal haul out sites for the construction and placement of the temporary dock. In addition, the presence of a temporary dock may also attract California sea lions to haul out directly on it. NMFS offers its expertise to NPS to assist in developing a protocol, through dock design and non-lethal deterrence, should California sea lions haul out on the temporary dock.

The proposed project may also lead to an increase in ship traffic to and from the area, thus increasing the risk of a possible collision with a marine mammal. In the event of a collision with a marine mammal, Mr. Justin Viezbicke, the NMFS West Coast Regional Office's Stranding Coordinator, must be immediately contacted at 562-980-3230 and a report must be sent to the NMFS West Coast Regional Office.

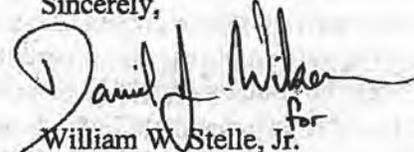
Since 1997, NPS has had a long-term harbor seal monitoring program. NMFS continues to offer its encouragement to NPS for the continuation of this monitoring program and is pleased that this will continue both pre- and post-restoration to identify trends in harbor seal pupping and population numbers relative to other sites in the National Park area.

Based on the information provided, we are unable to accurately assess the impact that this project may have on marine mammals and advise NPS on whether a permit under the MMPA is

necessary. However, should project plans change or if more information is provided, this determination can be reevaluated.

Please direct questions regarding this letter to Rick Rogers, (707) 578-8552, rick.rogers@noaa.gov for ESA, Brian Meux, (707) 575-1253, brian.meux@noaa.gov for EFH, and Monica.DeAngelis, 562-980-3232, Monica.DeAngelis@noaa.gov for MMPA.

Sincerely,



for
William W. Stelle, Jr.
Regional Administrator

cc: Brannon Ketchum, NPS Point Reyes National Seashore

bcc: Copy to File ARN 151422WCR2015SR00201
Copy to Chron File

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