Agenda Item D.2
Attachment 1
April 2016

VESSEL MOVEMENT MONITORING PUBLIC SCOPING DOCUMENT

Overview

In November 2015, the Council narrowed the number of management measures, adopted purpose and need statements, and selected preliminary preferred alternatives for the following three management measures:

1. Monitoring Restricted Areas with VMS
2. Fishery Declaration Enhancements
3. Movement of IFQ Fishpot Gear Across Management Lines

The Council is scheduled to adopt final preferred alternatives at its April 2016 meeting. The following table provides the public scoping process and Council action timeline.

Proposed timeline for public scoping for VMM and the Council decision making process.

Council Meeting	Decision/Product
April 2015	Council adopts purpose and need statements and a range of alternatives for analysis.
May-Oct 2015	National Environmental Policy Act (NEPA) scoping, Council staff develops analysis.
November 2015	Council adopts preliminary preferred alternatives.
April 2016	Council adopts final preferred alternatives with intent that Final Rules are effective Jan 1, 2017.

This document provides an overview of the management measures, potential alternatives that may be selected for implementation, and a summary of expected impacts of the alternatives.

One management measure supports cost effective and sufficient monitoring of vessel movement in restricted areas: 1) Monitoring Restricted Areas with VMS. The Council is also considering two management measures to create efficiencies in fishery operations and promote safety at sea: 2) Fishery Declaration Enhancements; and 3) Movement of Fishpot Gear Across Management Lines.

Table of Contents

1 Management Measure 1 - Monitoring Restricted Areas with VMS

This document analyzes proposed management measures that would apply to limited entry (LE) groundfish (except midwater trawl for whiting), open access non-groundfish, LE fixed gear, open access fixed gear (non-IFQ), and open access non–groundfish trawl (except pink shrimp trawl) and drift gillnet fisheries. The measure under consideration is to modify the current VMS requirements for these fisheries to improve enforcement of restricted areas.

1.1 Background

The Vessel Monitoring System (VMS) first became a requirement for limited entry (LE) vessels, both trawl and fixed gear, in 2004 with the establishment of rockfish conservation areas (RCAs) for protecting overfished rockfish stocks. The VMS requirement was expanded to open access vessels retaining groundfish in Federal waters in 2006. Today, any vessel registered to a limited entry groundfish permit must have VMS to fish in state or federal waters (0-200 nautical miles offshore). In addition, non-groundfish trawl vessels, vessels that use trawl gear but are not registered to limited entry groundfish permits, must have VMS to fish in federal waters (3-200 nautical miles offshore). Any vessel using non-trawl gear that is not registered to a limited entry groundfish permit must have VMS on trips in which groundfish are taken and retained, possessed or landed in federal waters.

In addition, NMFS requires the use of a NMFS-approved VMS units for West Coast large-mesh swordfish drift gillnet (DGN) fishery. VMS went into place to assist law enforcement personnel with the ability to monitor the DGN fishery for compliance with conservation measures, efficiently deploy agents to inspect vessels, and provide the ability to more closely examine and compare the distribution of observed and unobserved fishing effort. It also VMS help to ensure compliance with pre-trip notification requirements for placing observers on vessels.

For further information on the West Coast VMS program please visit:
http://www.westcoast.fisheries.noaa.gov/fisheries/management/vms.html

Recent case law (NOAA Case. No. SW1002974, F/V Risa Lynn) has revealed a need for more VMS data to show a vessel is not fishing in a closed area or is transiting a closed area when required to do so. The current NMFS type-approved VMS units may not be sufficient at a one-hour ping rate to enforce the requirement for vessels to continuously transit restricted areas. In 2014 and 2015, both the NOAA Office of Law Enforcement (OLE) and the Council's Enforcement Consultants Advisory Body (EC) briefed and made comments/recommendations to the Council regarding the case of the F/V Risa Lynn. This Magnuson Act case involved a single charge of operating a vessel in a restricted area for purposes other than continuous transit, as required by the West Coast Groundfish Fishery regulations.

This case was notable in that the primary issue for litigation was whether the VMS provided sufficient evidence of the vessel's activity in the restricted area. The Administrative Law Judge (ALJ) determined that the hourly VMS position report evidence in the case was insufficient to prove that the vessel was not operating in continuous transit through the closed area as required by regulation. Additionally, the ALJ agreed with the assertion that under certain maritime conditions (e.g., wind, swell, current), it might be impossible for a vessel to comply with the regulatory definition of "continuous transiting" due to its requirement for vessels to stay on a "constant heading, along a continuous straight line course." Since it may be difficult to move in a straight line continuously based on wind, swell and other factors, a new definition may need to be implemented under the proposed measures to support the ALJ findings (See Section Continuous Transit Definition1.7.3.1.1).

In a separate process, the Council is considering changes to essential fish habitat designations and RCAs for trawl and non-trawl fisheries. This may result in a reduction or expansion of these areas and could include multiple changes to the shape of these designated areas, especially the RCAs. These potential changes in area management may increase the complexity of enforcement and would support the need for a different type of VMS unit (not NMFS type-approved) to accurately and efficiently monitor the closed areas on the west coast.

United States Coast Guard, OLE, and its state enforcement partners may find it difficult to successfully enforce on a consistent basis the continuous transit requirement using VMS with a ping rate of 1 per hour. Achieving this enforcement objective requires a data stream that demonstrates that the vessel has not stopped or reduced speed, and maintained continuous transit through the restricted area. By providing more data either through an increase in the VMS ping rate or through some other electronic technologies, the vessel would be able to clearly show it is transiting the area and has not slowed or stopped to fish in the RCA.

In March, 2014 the Enforcement Consultants Report (Agenda Item H1b) recommended that the following fisheries be considered for an increased ping rate of up to 4 times per hour:

- Limited Entry Fixed Gear
- Limited Entry Bottom Trawl
- Limited Entry Demersal Trawl
- Limited Entry Midwater Trawl, except when operating during the primary whiting fishery, Mothership exempt (includes whiting and nonwhiting targeting with midwater trawl).
- Open Access Longline, Groundfish and Halibut
- Open Access Trap or Pot, Groundfish and Halibut
- Open Access California Gillnet Complex Gear
- Open Access Salmon Troll when retaining Groundfish.

The Council directed staff, the EC, and Office of Law Enforcement to explore alternatives to a one-hour VMS ping rate. The exploration of options has identified various alternatives which may provide the Council, fisheries managers, industry, and enforcement with more precise vessel location and gear deployment status at a lower cost to the industry.

During the November 2014 meeting, the EC worked with advisory bodies to discuss their informational report with the goal of developing a range of alternatives for Council consideration at its April 2015 meeting. On February 18, 2015 the EC conducted a meeting via webinar to further discuss and develop alternatives.

Originally, VMS requirements were used to monitor groundfish fishing activity, however; the VMS requirements have now expanded to the drift gillnet fishery. Therefore the proposed measures consider the adequacy of VMS to enforce closed areas for all fisheries currently required to use VMS. Some area restrictions prohibit fishing (i.e. EFH) and may require more monitoring to show fishing activity is not occurring. This is a change from the original scoping document that focused on solutions to address enforcement concerns of the continuous transit requirements for the non-trawl and trawl RCAs. Therefore alternatives were developed to assist managers to better enforce transit requirements for restricted areas and potentially monitor gear deployment.

The Council adopted a range of alternatives for VMS at its April 2015 meeting. At its November 2015 meeting, the Council adopted preliminary preferred alternatives. These alternatives are discussed in this document as well as some preliminary impact analyses.

1.1 Description of VMS Units and Use

The VMS is a satellite surveillance system primarily used to monitor the location and movement of commercial fishing vessels in the U.S. Exclusive Economic Zone (EEZ) and treaty areas. It is a tool that allows vessel activity to be monitored in relation to geographically defined management areas. VMS transceiver units installed aboard vessels automatically determine the vessel′s position and transmit that position (vessel identification, time, date, and location) to a processing center via a communication satellite. Typical fields of data included in a transmission (ping) is shown in Table 1-1.

Table 1-1. Data fields that may be collected in a VMS ping and transmitted to the VMS provider and government agencies.

Time (GPS)	Received	Type	Latitude	Longitude	Speed [knots]	Course
10/16/2015 14:54:00	10/16/2015 14:56:07	Request/ Timecycle	N26 11.2000	W80 10.4800	0.0	0°

At the processing center, the information is validated, mapped and displayed on the end user's computer screen, then analyzed before being disseminated for various purposes, which may include fisheries management, surveillance and enforcement. VMS transceivers automatically determine the vessel′s position using Global Positioning System (GPS) satellites. Generally, the vessel′s position is determined once per hour and transmitted to the VMS provider and NMFS OLE on a random basis within the hour. VMS transceivers are designed to be tamper resistant. In most cases, the vessel owner is not aware of exactly when the unit is transmitting and is unable to alter the signal or the time of transmission.

Alerts can be sent to the VMS technicians and other personnel when a particular vessel location might require additional inquiry or contact with the vessel operator. VMS is used to support law enforcement initiatives and to prevent violations of laws and regulations. VMS also helps enforcement personnel focus their patrol time on areas with the highest potential for significant violations. It is used as evidence in the prosecution of many environmental laws and regulations including regional fishing quotas, the Endangered Species Act, and the Marine Mammal Protection Act, and others.

The National VMS program currently monitors more than 4,000 vessels across the nation. It is the largest national VMS fleet in the world. The system operates 24 hours a day every day with near-perfect accuracy, which is why the program is of interest to other users, including the U.S. Coast Guard, academia, and the coastal states. In the Pacific Coast groundfish fishery, the position data is primarily used to monitor fishing activity relative to closed areas. VMS data is subject to strict confidentiality requirements.

1.1.1 Other Uses for VMS

- Managing sensitive areas such as marine sanctuaries
- Monitoring activity & arrivals in port to plan for sampling
- Supporting catch share programs
- Tracking, monitoring, and predicting fishing effort, activity, and location
- Managing observer programs
- Verifying/validating data from other sources
- Identifying fishing vessels
- Supporting Homeland and National Security initiatives

To assure compatibility with the national monitoring center, NMFS requires that VMS systems meet defined standards (March 31, 1994, 59 FR 15180; October 27, 2005, 70 FR 61941; and 72 FR 60826, October 6, 2007), while recognizing the need to promulgate regulations and approve systems on a fishery-by-fishery basis. VMS transceiver units approved for use by NMFS are referred to as type approved. On November 17, 2003 (68 FR 64860), NMFS first published a notice identifying VMS transceiver units and communication service providers that are type-approved for the Pacific Coast groundfish fishery. The most recent list of type-approved VMS units for the West Coast fisheries is in Appendix A.

1.1.2 Current VMS Requirements and Incursions of Restricted Areas

A vessel is required to have VMS if it is registered to a limited entry groundfish trawl (LE) permit. The LE vessels that retain groundfish must continuously move through the trawl and non-trawl RCAs (a closed area for groundfish fishing) with some exceptions for midwater trawl vessels during the primary whiting season.

Other fisheries have area restrictions as well. Open access fixed gear vessels are subject to restricted areas such as the non-trawl RCA and cow cod conservations areas and may not fish for groundfish in those areas. Salmon troll vessels that retain groundfish are subject to VMS requirements and cannot fish in the non-trawl RCA; however, these vessels would need to be declared as open access line gear participants in order to retain groundfish other than yellowtail rockfish and lingcod. In addition, vessels that fish with drift gillnets (DGN) are subject to restricted areas, such as the Protected Resources Area Closures (PRAC) and cannot fish in the PRAC with DGN.

Table 1-2 provides a list of fisheries that have VMS units and the area restrictions that apply to them. Not all vessels in the list are required to have VMS, rather these vessels have used VMS in 2014 in the fisheries they declared into. Table 1-3 provides the number of incursions that enforcement has noted from 2011 to 2015.

Table 1-2. Number of vessels with VMS that declared participation, by fishery, and the applicable restricted area, 2014.

Key: CCA=Cowcod Conservation Areas, EFHCA=Essential Fish Habitat Conservation Areas, GCA=Groundfish Conservation Areas, PRAC=Protected Resource Conservation Area, RCA=Rockfish Conservation Areas; SCA=Salmon Conservation Areas, Bycatch Reduction Areas

Fishery with VMS	Number of vessels	Applicable Federal Restricted Area*
Limited Entry Trawl Groundfish:		
LE Midwater Trawl Non-whiting	4	GCAs including Trawl RCA (outside primary whiting season),CCAs
LE Bottom Trawl	51	GCAs including Trawl RCA, EFHCAs, CCAs
Open Access (other gears):		
Prawn trap	5	Non-Trawl RCA, EFHCAs, CCAs
Dungeness crab	255	Non-Trawl RCA, EFHCAs, CCAs
Pacific halibut longline	47	Non-Trawl RCA, EFHCAs, CCAs
CA halibut line gear	6	Non-Trawl RCA, EFHCAs, CCAs
Sheephead trap	5	Non-Trawl RCA, EFHCAs, CCAs
Salmon troll gear**	152	Non-Trawl RCA**, CCAs, Salmon Troll YRCA
HMS line gear**	90	Non-Trawl RCA**, CCAs
Open Access Fixed Gear for Groundfish (non-IFQ):		
Longline	82	Non-Trawl RCA, EFHCAs, CCAs
Trap or pot	58	Non-Trawl RCA, EFHCAs, CCAs
Line gear	66	Non-Trawl RCA, EFHCAs, CCAs
Open Access Non-groundfish trawl:		
Ridgeback prawn	4	EFHCAs, CCAs
CA halibut	6	EFHCAs, CCAs
Sea cucumber	3	EFHCAs, CCAs
LE Fixed Gear (e.g. sablefish)	130	Non-Trawl RCA, EFHCAs, CCAs, YRCAs
Swordfish Drift Gillnet	4	PRACs: Pacific Loggerhead and Leatherback Conservation Areas, Mainland Area Closures, and Channel Islands Area Closures

*Federal restricted areas are closed to fishing. Some closures are restricted seasonally.

**If a salmon troll or HMS line gear vessel would like to retain groundfish then it would need to declare participation in the open access fixed gear fishery with line gear and is therefore subject to the non-trawl RCA

Although RCA incursions have declined since 2011, the majority of them occur in fisheries other than trawl (Table 1-3). A total of 152 investigations were opened in 2014, 138 were for fisheries other than trawl.

Table 1-3. 2011 to 2015 VMS/RCA incursion report, April 2015.

VMS/RCA Investigations Opened (all fisheries) Disposition			
Year	**SW**	**NW**	**Total Number of Investigations**
2011	72	162	234
2012	89	134	223
2013	107	100	207
2014	62	90	152
2015	14	17	31

VMS/RCA (Trawl)	RCA/EFH Incursions	Total Number of Vessels
2011	122	59
2012	50	18
2013	30	26
2014	14	11
2015	3	5

1.1.3 Required Declaration Reports in the Groundfish Fishery

VMS is used to determine a vessel's position, while declaration reports are used to identify the fisher's intent to use the vessel to participate in a particular fishery with a specific gear. Because closed areas and EFH area restrictions are specific to the gear type and target fisheries, declaration reports are needed to adequately assess the vessel's activity in relation to the area restrictions. Declaration reports are submitted to NMFS OLE by telephone and are valid until revised by the vessel operator (See Appendix B).

1.1.4 Description of the Proposed Enhanced VMS Units

While there are a variety of off-the-shelf (OTS) VMS units that are capable of transmitting GPS coordinates and other data, most of the OTS units have significant drawbacks for use in the marine environment. The unit needs to be rugged enough to withstand time at sea and tied into a vessel's power grid vs. running on batteries. It became clear that to capture the type of data desired, taking into account the environment the equipment would be placed in and the reliability needed, many common OTS units simply would not be viable solutions.

By stepping up to a more commercial application, it was possible to identify equipment that would fit the stated minimum requirements. Council staff and NMFS SFD staff searched for existing OTS components that could meet numerous stated objectives. The following is a list of minimum requirements that was developed to guide the search:

Minimum Requirements:

- Unit cost under $1,000.00
- Geo-fencing capabilities
- Adjustable ping frequency
- Capability to store location data locally and transmit at set intervals to minimize costs
- Ideal transmission cost around $30-$60/month
- Rugged & tamper-proof design for saltwater environments
- Additional input/output (I/O) ports for scalability. Addition of hydraulic sensors, gear movement sensors, etc.

The core benefits of utilizing commercial units are the rugged design, proven track record for this type of application, and overall reliability offered from companies that design these types of units. After detailed discussions with vendors, the group identified two devices as recommended alternatives to augment VMS for reliable vessel monitoring. These units, the Polestar IDP-690 by SkyWave and the FW Telematics FWT 750VMS; and a description of their attributes can be found in the Appendix C.

These units are capable of transmitting at higher intervals (higher ping rate) at a similar or lower cost than the NMFS type-approved units. Based on more frequent pings, the heading and speed can be determined with more accuracy which can be analyzed to show whether the vessel was fishing or just transiting the area (Figure 3-1).

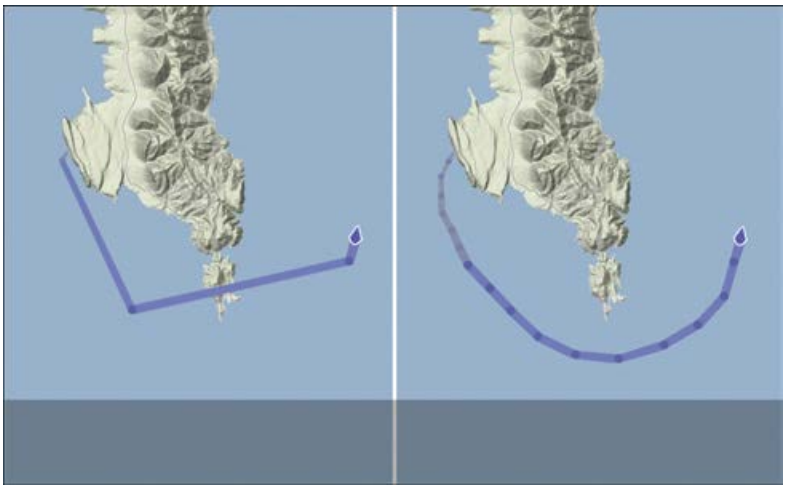

Figure 1-1. Schematic of vessel track. Left panel is one hour ping rate, right panel is one minute ping rate.

Source: Polestar Global Space Applications (http://fisheries.polestarglobal.com/)
Note: HDtrack (high density tracking) via Pole Star provides real time tracking of vessel activity. HDtrack activates automatically when vessels enters a closed area.

These units are capable of transmitting gear use information. For example, gear sensors can be added to the vessel's hydraulic line to detect pressure changes over a period of time, indicating gear use and possible fishing activity. In order to collect and transmit this information a small microcomputer must be added to the VMS system to collect the data over a period of time (e.g. gear pressure status every 5 minutes for one hour) and "package" the data into a data string (similar to Table 1-1) that can be transmitted by the VMS unit in a burst (or ping) at a specified interval (i.e., 4 times per hour). This information would provide the pressure changes that were recorded for a set interval of time and can be

read by a technician to examine if gear activity occurred in a closed area. These additional features can cost roughly $2,000 for purchase and installation (See 1.7.5.3 for cost analysis).

These units are capable of Geofencing. A unit can be pre-loaded with closed are coordinates and programmed to transmit at a higher ping rate (more bursts per hour) when the vessel enters the area. This requires additional data and may add some additional costs, dependent on how many data bursts are required (ping rate per hour). See 1.7.5.3 for the cost analysis.

The two units in Appendix C are being tested by PSMFC on several vessels. As of February 2016, 5 Polestar units and 5 Faria units have been deployed, however only 3 Polestar units are actively collecting data. The PSMFC purchased the units for $700-$900 and the cost of the data transmission is $50.00 per month per vessel. The units are collecting data every 5 minutes (12 pings per hour) and transmitting the data to the VMS service provider and PSMFC every 60 mins.

1.2 Description of Applicabel Conservation Management Areas

A summary of applicable conservation management areas and protected resource conservation areas are provided. These areas are monitored with VMS.

1.2.1 Groundfish Conservation Areas (GCA)

Groundfish Conservation Area means a geographic area defined by coordinates expressed in degrees latitude and longitude, wherein fishing by a particular gear type or types may be prohibited.

1.2.1.1 Rockfish Conservation Areas.

RCAs are a groundfish closed area. RCAs may apply to a single gear type or to a group of gear types such as “trawl RCAs” or “non-trawl RCAs.” Specific latitude and longitude coordinates for RCA boundaries that approximate the depth contours selected for trawl, non-trawl, and recreational RCAs are provided in §§660.71 through 660.74. Also provided in §§660.71 through 660.74, are references to islands and rocks that serve as reference points for the RCAs.

- *Trawl RCAs - Trawl (Limited Entry and Open Access Nongroundfish Trawl Gears) Rockfish Conservation Areas.* Trawl RCAs are intended to protect a complex of species, such as overfished shelf rockfish species, and have boundaries defined by specific latitude and longitude coordinates intended to approximate particular depth contours.

- *Non-Trawl RCAs - Non-Trawl (Limited Entry Fixed Gear and Open Access Non-trawl Gears) Rockfish Conservation Areas*. Non-trawl RCAs are intended to protect a complex of species, such as overfished shelf rockfish species, and have boundaries defined by specific latitude and longitude coordinates intended to approximate particular depth contours.

- Yelloweye Rockfish Conservation Areas (YRCA) It is unlawful to take and retain, possess, or land groundfish taken with limited entry fixed gear within the theses areas, on dates when the closure is in effect. The closure is not in effect at this time. This closure may be imposed through inseason adjustment. Limited entry fixed gear vessels may transit through these areas, at any time, with or without groundfish on board.

- North Coast Commercial Yelloweye Rockfish Conservation Area
- Point St. George YRCA
- South Reef YRCA
- Reading Rock YRCA
- Point Delgada (North) YRCA
- Point Delgada (South) YRCA

It is unlawful for commercial salmon troll vessels to take and retain, possess, or land fish taken with salmon troll gear within the Salmon Troll YRCA. Open access vessels may transit through the Salmon Troll YRCA with or without fish on board.

- Salmon Troll YRCA

1.2.1.2 Other Groundfish Restricted Areas:

Western Cowcod Conservation Areas: Vessels using limited entry trawl gear are prohibited from fishing within the CCAs. Limited entry trawl vessels may transit through the Western CCA with their gear stowed and groundfish on board only in a corridor through the Western CCA.

Farallon Islands: Under California law, commercial fishing for all groundfish is prohibited between the shoreline and the 10 fm (18 m) depth contour around the Farallon Islands.

Cordell Banks: Commercial fishing for groundfish is prohibited in waters of depths less than 100-fm (183-m) around Cordell Banks

1.2.2 Essential Fish Habitat Conservation Area (EFHCA)

Essential Fish Habitat Conservation Area (EFHCAs) means a geographic area defined by coordinates expressed in degrees latitude and longitude, wherein fishing by a particular gear type or types may be prohibited. EFHCAs are created and enforced for the purpose of contributing to the protection of West Coast groundfish essential fish habitat. EFHCAs apply to vessels using bottom trawl gear or to vessels using "bottom contact gear."

These ecologically important closed areas are intended to minimize, to the extent practicable, the adverse effects of fishing on groundfish EFH (Figure 1-2). There are two types of closures: 1) areas where bottom trawling is prohibited, and; 2) areas where the use of bottom-contacting gears is prohibited. The boundaries of the EFH conservation areas are straight lines connecting latitude and longitude coordinates. Unlike RCAs, EFH conservation areas do not vary seasonally.

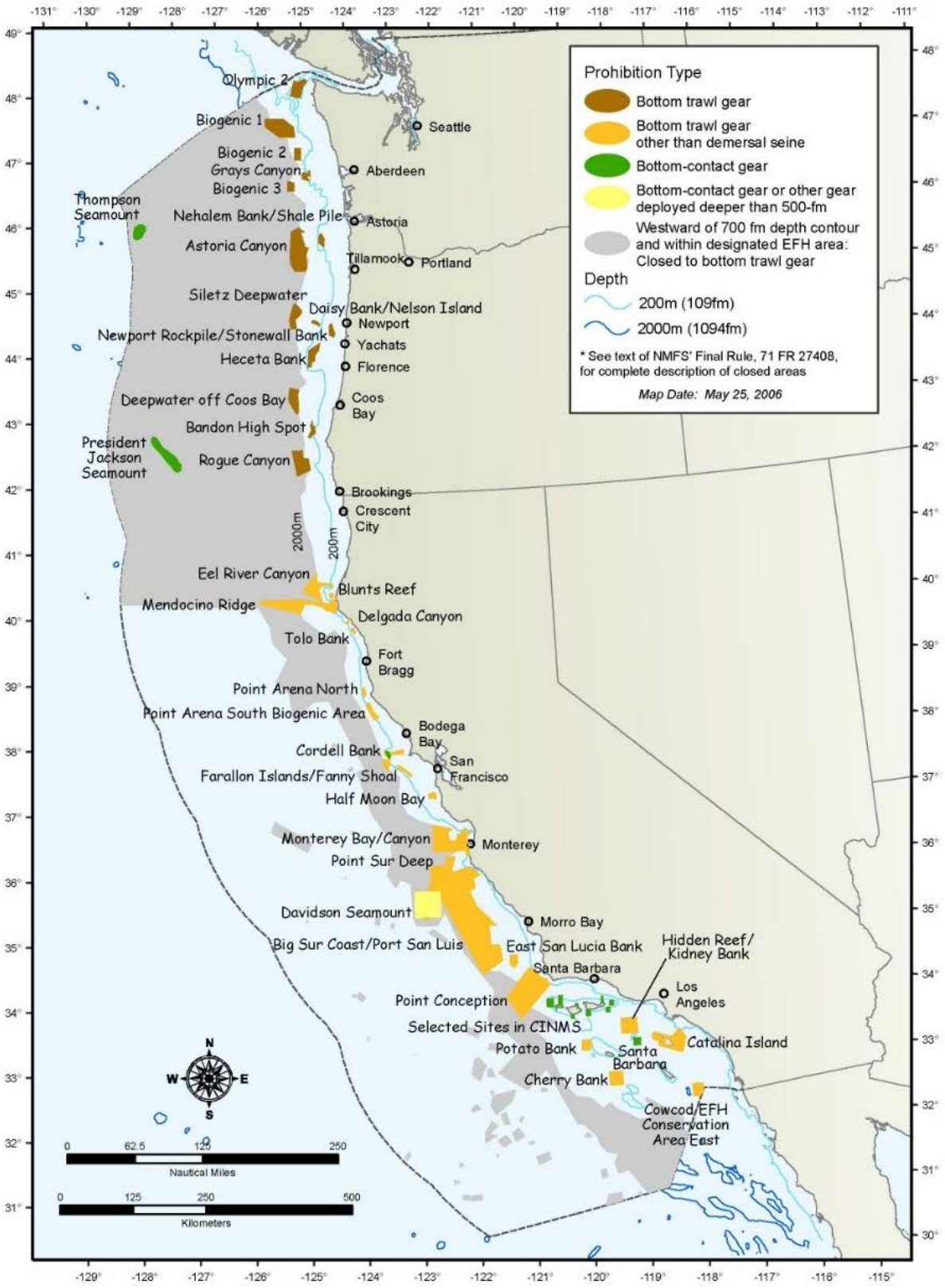

Figure 1-2. EFH and EFH closed areas of the West Coast.

Source: NWFSC

1.2.3 Drift Gillnet Protected Resource Area Closures (PRACs)

These area closures only apply to the drift gillnet fishery. A map of EFH and EFH closed areas is provided in Figure 1-3.

- *Leatherback Conservation Areas.* No person may fish with, set, or haul back drift gillnet gear in U.S. waters of the Pacific Ocean from August 15 through November 15
- *Pacific loggerhead conservation area.* No person may fish with, set, or haul back drift gillnet gear in U.S. waters of the Pacific Ocean east of the 120° W. meridian from June 1 through August 31 during a forecasted, or occurring, El Nino event off the coast of southern California
- *Mainland Area Closures.* Areas off the Pacific coast are closed to driftnet gear
- *Channel Islands Area Closures*. Areas off the Channel Islands are closed to driftnet gear

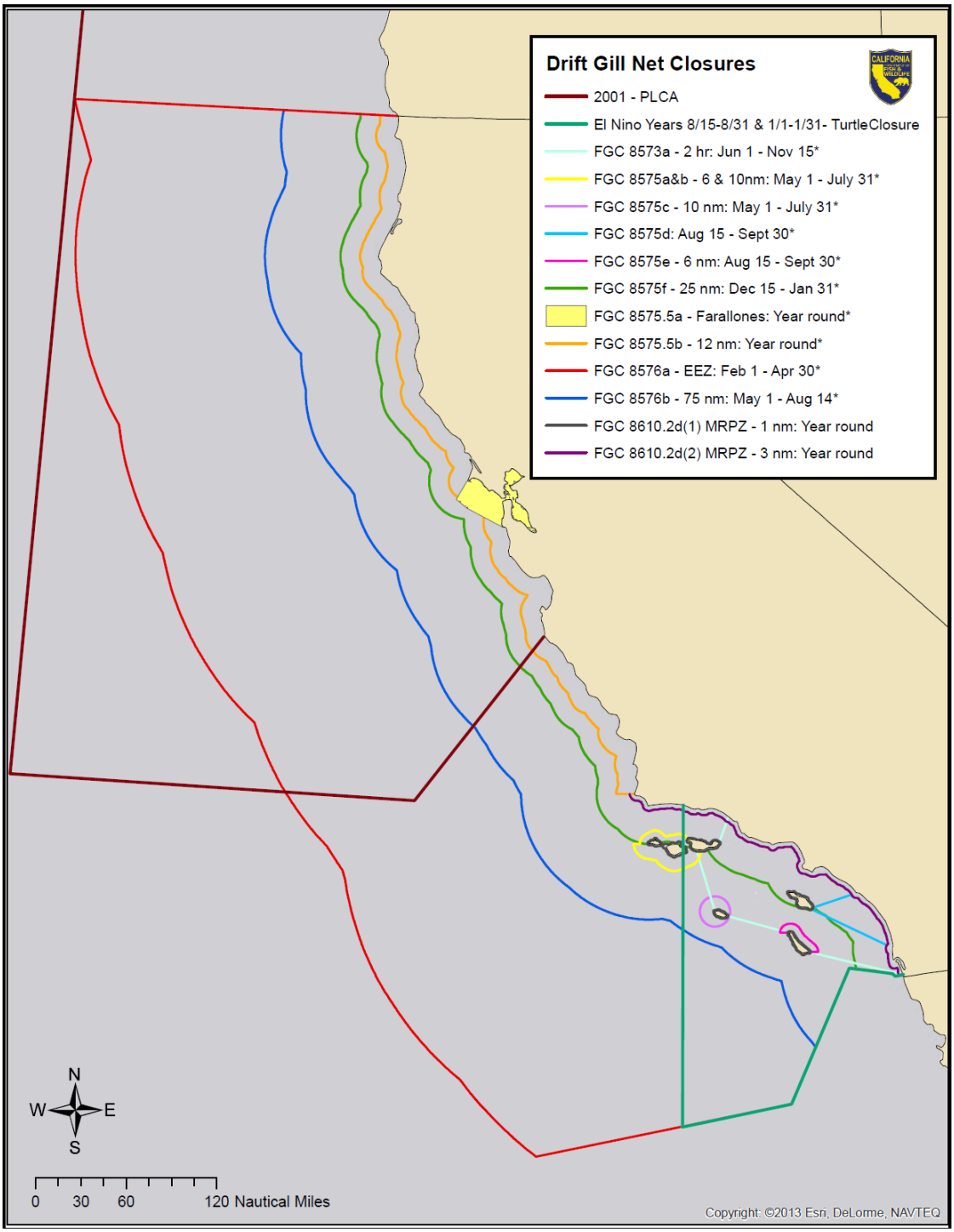

Figure 1-3. PRCA closed areas for the drift gillnet fishery.

Source: SWFSC

1.3 Purpose and Need for Proposed Measures

The purpose of this management measure is to improve the Vessel Monitoring System (VMS) data collection program for vessels that are currently required to have VMS. Restricted areas, such as Rockfish Conservation Areas (RCAs) and protected resource closed areas, are monitored by NMFS using VMS systems on some vessels; however, the location information collected can be insufficient for enforcement. Therefore, this measure is needed to enhance monitoring of restricted areas.

1.4 Description of Alternatives for Management Measure 1

The following draft alternatives were developed to address the need to enhance the monitoring of restricted areas and are grouped as 1) non-groundfish trawl and other groundfish fisheries and 2) drift gillnet fishery. The Council's preliminary preferred alternatives are identified per the November 2015 meeting. More than one alternative could be selected in a group to provide the industry a suite of options to choose from based on their business plan, or to meet the management goal of the restrictions that are applicable to that fishery or fishery group.

Section 1.4 is organized as follows:

Section 1.4.1 Alternatives for Non-groundfish Trawl and Other Groundfish Fisheries

1.4.1.1 Alternatives relative to use of only NMFS type approved units:

- No Action (Status quo) - Maintain ping rate of one per hour with NMFS type-approved units
- Alternative 1a - Increase ping rate to four times per hour with NMFS type-approved units (***Preliminary Preferred***)
- Alternative 1b - Maintain ping rate of one per hour with Electronic Monitoring System with NMFS type-approved units ***(Preliminary Preferred***)

1.4.1.2 Alternatives relative to use of only new enhanced VMS units:

- No Action (Status quo) – Continue use of current NMFS type-approved VMS system
- Alternative 2 – Allow use of enhanced VMS units (non-type approved) (***Preliminary Preferred***)

Section 1.4.2 Alternatives for the Drift Gillnet Fishery

1.4.2.1 DGN Alternatives relative to use of only NMFS type approved units:

- No Action (Status quo) – to maintain ping rate one per hour with NMFS type-approved units
- Alternative 3a – Increase the ping rate to 4 times per hour with NMFS type-approved units and add a continuous transit requirement to the *HMS* VMS regulations (***Preliminary Preferred***)
- Alternative 3b – Maintain ping rate one per hour with NMFS type-approved units when using an Electronic Monitoring System

1.4.2.2 DGN Alternatives relative to use of only new enhanced VMS units:

- No Action (Status quo) – Maintain ping rate of one per hour with NMFS type-approved units
- Alternative 4 – Allow use of enhanced VMS units (non-type approved)

1.4.1 Alternatives for Non-groundfish Trawl and Other Groundfish Fisheries

These alternatives would be applicable to limited entry (LE) groundfish (except midwater trawl whiting), open access non-groundfish, LE fixed gear, open access fixed gear (non-IFQ), and open access non–groundfish trawl (except pink shrimp trawl) fisheries. The list of gears that may be applicable under these fishery groups is found in Table 1-2.

1.4.1.1 Alternatives relative to use of only NMFS type approved units:

No Action (Status quo) - Maintain ping rate of one per hour with NMFS type-approved units

Under the status quo all area restrictions and associated regulations would remain unchanged. The No Action Alternative would maintain each fishery's current VMS requirements (status quo). Vessels would still be required to install and maintain the units at their expense. The ping rate would remain at one per hour for each vessel that is required to use VMS; regulatory exceptions for reduced VMS rates and turning off the VMS system would remain in place.

Under No Action, all vessels that are registered must operate and maintain the mobile transceiver unit in good working order continuously and provide the vessel's position at least once every hour, 24 hours a day throughout the fishing year (one ping per hour). The standard ping rate provides the date/time of ping, date/time ping was received, latitude/longitude, speed, and course/direction. The mobile transceiver unit must remain in continuous operation at all times (powered up and operating). When a vessel remains in port for an extended period of time, regulations allow the VMS to provide less frequent position reporting at least once every four hours (sleep mode). In addition, less frequent ping rates are allowed by regulation through several exemptions: when the vessel is hauled out, when the vessel fishes beyond the EEZ (outside 200 miles) for at least one week or for an extended period of time, if the limited entry permit had a change in vessel registration, and for emergency (fire, flooding, or extensive physical damage to critical areas of the vessel).

The National Marine Fisheries Service (NMFS) Office of Law Enforcement (OLE) would also retain the ability to increase the ping rate above one per hour through an official request to the NMFS OLE headquarters in Silver Spring, MD. NMFS OLE may request an increase the ping rate for an individual vessel under the program if, for example the vessel is suspected of behavior not characteristic of their fishing method, whether trawl, non-trawl, etc.

Alternative 1a - Increase ping rate to four times per hour with NMFS type-approved units (*Preliminary Preferred*)

Under this alternative vessels would continue to use NMFS type-approved units with VMS ping rate of four times per hour. All other regulatory requirements described in Alternative 1 would remain unchanged.

Alternative 1b - Maintain ping rate of one per hour with Electronic Monitoring System with NMFS type-approved units (*Preliminary Preferred*)

Under this alternative vessels would continue to use NMFS type-approved units and maintain a VMS ping rate of one per hour when the vessel uses an electronic monitoring system (e.g., video monitoring under the IFQ shorebased program). All regulatory requirements would remain in place as described in the No Action Alternative - Status quo to maintain ping rate one per hour. If the vessel does not use EM for a period of time then it would be subject to applicable VMS requirements for that fishery.

1.4.1.2 Alternatives relative to use of only new enhanced VMS units:

No Action (Status quo) – Continue use of current NMFS type-approved VMS system

Under this alternative vessels required to have VMS can *only* use the current NMFS type-approved VMS systems. OLE would continue to monitor vessel activity and restricted areas via direct access to VMS data. All regulatory requirements would remain in place as described in the No Action Alternative - Status quo to maintain ping rate one per hour.

Alternative 2 – Allow use of enhanced VMS units (non-type approved) (*Preliminary Preferred*)

Alternative 2 would allow the use of enhanced VMS units that can bundle and transmit multiple positions via satellite, offer Geofencing capabilities, and contain sensor ports to provide gear activity reports. The VMS position data would be collected at a minimum of 5 minute intervals and transmitted at least once per hour at random times within the one hour period.

Under this alternative, Geofencing and gear sensors would not be required. These units would not be NMFS type-approved units, but would need to meet reporting standards of NMFS (e.g., type and frequency of data collected, form of transmittal, ruggedized, and an encrypted format). The data collected by the VMS vendor would be sent directly to PSMFC for data storage and future access. NMFS would have access to the data at any time. Restricted area incursions would be monitored and investigated by NMFS.

1.4.2 Alternatives for the Drift Gillnet Fishery

1.4.2.1 DGN Alternatives relative to use of only NMFS type approved units:

No Action (Status quo) – to maintain ping rate one per hour with NMFS type-approved units

Under this alternative drift gillnet (DGN) vessels would continue to use NMFS type-approved units with VMS ping rate of one per hour regardless of area fished. All regulatory requirements would remain in place as described in the No Action Alternative - Status quo to maintain ping rate one per hour. Vessels would still be allowed to transit, drift, or stop in the restricted areas but not fish with DGN. See section 1.1 for a description of the applicable area restrictions.

Alternative 3a – Increase the ping rate to 4 times per hour with NMFS type-approved units and add a continuous transit requirement to the HMS VMS regulations (*Preliminary Preferred*)

Under this alternative DGN vessels would continue to use NMFS type-approved units with an increase in the VMS ping rate to four times per hour. In addition, the fishing restricted areas that are applicable to

the drift gill net fishery would include a continuous transit requirement whereby vessels would need to move through the restricted area in a continuous manner as defined in regulations. All other regulatory requirements would remain in place as described in the No Action Alternative - Status quo to maintain ping rate one per hour.

Alternative 3b – Maintain ping rate one per hour with NMFS type-approved units when using an Electronic Monitoring System

Under this alternative DGN vessels would maintain a VMS ping rate of one per hour when the vessel uses an electronic monitoring system. All regulatory requirements would remain in place as described in the No Action Alternative - Status quo to maintain ping rate one per hour. If the vessel does not use EM for a period of time then it would be subject to applicable VMS alternatives for that fishery.

1.4.2.2 DGN Alternatives relative to use of only new enhanced VMS units:

No Action (Status quo) – Maintain ping rate of one per hour with NMFS type-approved units

DGN vessels required to have VMS would maintain a ping rate of one per hour regardless of area fished. All regulatory requirements would remain in place as described in the No Action Alternative - Status quo to maintain ping rate one per hour as described above. Under the status quo all area restrictions and associated regulations would remain unchanged. Vessels would still be allowed to transit, drift, or stop in the restricted areas but not fish. See section "Drift Gillnet Protected Resource Area Closures (PRACs)" for a description of the applicable area restrictions.

Alternative 4 – Allow use of enhanced VMS units (non-type approved)

DGN Alternative 2 would allow the use of enhanced VMS units that can bundle and transmit multiple positions via satellite, offer Geofencing capabilities, and contain sensor ports to provide gear activity reports. The VMS position data would be collected at a minimum of 5 minute intervals and transmitted at least once per hour at random times within the one hour period. Under this alternative, Geofencing and gear sensors would not be required. These units would not be NMFS type-approved units, but would need to meet reporting standards of NMFS (e.g., type and frequency of data collected, form of transmittal, ruggedized, and an encrypted format). The data collected by the VMS vendor would be sent directly to PSMFC for data storage and future access. NMFS would have access to the data at any time. Restricted area incursions would be monitored and investigated by NMFS.

1.5 Alternatives Considered but Rejected from Further Analysis

1.5.1 Alternative to maintain a VMS ping rate of one per hour when the vessel uses a secure data logger

This alternative would require vessels to maintain a VMS ping rate of 1 per hour when the vessel uses a secure data logger with capabilities to store and transmit positional reports and sensory data via cell tower and/or Wi-Fi. After consideration, it was determined that vessel plotters, which were designed as a navigational aid, would not be an adequate enforcement monitoring tool for depth-based management and that there were no devices that could prevent tampering.

1.5.2 Alternative to Increase ping rate to two or three times per hour with NMFS type-approved units

Under this alternative vessels would continue to use NMFS type-approved units with VMS ping rate of 2 or 3 times per hour. All other regulatory requirements as described in Alternative 1 would remain unchanged. These alternatives were presented as possible solutions but were rejected from further analysis because the ping rates may not be frequent enough information to enforce small closed areas or provide enough information to calculate a vessel's course for enforcement of continuous transit requirements.

Alternative with ping rate of four per hour for drift gillnet fishery. This alternative was rejected because increasing the ping rate does not show the status of the vessel's gear if the vessel is in the restricted area (i.e., fishing or not). Standard VMS units do not provide this information and are not an effective tool for managing the restrictions.

1.5.3 Alternatives that only apply to albacore tuna fishery

This fishery is currently required to maintain a VMS unit at a ping rate of one per hour. The VMS requirement was implemented via the Inter American Tropical Tuna Commission to locate vessels that are actively fishing; there are no area restrictions that apply to this fishery. The Council chose not to include this fishery into the analysis of alternatives since this fishery is managed internationally and closed-area monitoring is not necessary.

1.5.4 Alternatives that only apply to LE midwater trawl whiting fishery

This fishery is currently required to maintain a VMS unit at a ping rate of one per hour; however, there are no closed areas for midwater trawl whiting fishing during the primary whiting season. A vessel is required to declare the type of gear being used for each trip so enforcement can verify that the vessel is authorized to fish in the RCA during the primary whiting season. Therefore the Council decided that additional monitoring for vessels participating in the midwater trawl whiting fishery is not necessary.

1.5.5 Alternative that only applies to drift gillnet fishery

Increase ping rate to four times per hour without continuous transit
This alternative would increase the ping rate for the drift gillnet fishery from one per hour to four per hour. Vessels are currently allowed in closed areas and may drift or move through the area in any manner; there are no requirements to continuously move through a closed area. The Council considered the applicability of VMS to monitor the fishery activity and decided that an increase in the ping rate would not provide managers enough information to determine the vessel's gear status. Therefore the Council did not consider this alternative a viable option to meet the purpose a need of monitoring the closed areas.

Maintain the ping rate at one per hour with NMFS type-approved units and add a continuous transit requirement to the HMS VMS regulations
Under this alternative DGN vessels would continue to use NMFS type-approved units with VMS ping rate of one time per hour. In addition, the fishing restricted areas that are applicable to the drift gill net fishery would include a continuous transit requirement whereby vessels would need to move through the restricted area in a continuous manner as defined in regulations. All other regulatory requirements would remain in place as desc constant heading, along ribed in the No Action Alternative - Status quo to maintain ping rate one per hour.

This alternative may not meet the objective of monitoring a vessel for continuous transit since NMFS has indicated that the ping rate of one time per hour is not adequate for monitoring closed areas with continuous transit requirements. Therefore this alternative was rejected based on previous discussions of the adequacy of a one hour ping rate. However, through discussions with the industry and an analysis conducted by the SWFSC of fishing activity/behavior when DGN fishing, it may be possible to determine whether a vessel is fishing (drift speed of 1.25 knots or less for 12 hours) or under power to continuously transit an area (6 to 7 knots) with a ping rate of one per hour. The industry has noted that adding a continuous transit requirement would affect vessels by not allowing other gears to be fished in the restricted areas; thereby, reducing potential fishing opportunities and financial gain during a trip.

1.5.6 Alternatives that only apply to pink shrimp fishery

This fishery is currently required to maintain a VMS unit at a ping rate of one per hour; however, there are no closed areas for the pink shrimp trawl fishery. A vessel is required to declare the type of gear being used for each trip so enforcement can verify that the vessel is authorized to fish in the RCA. Therefore the Council decided that additional monitoring for vessels participating in the pink shrimp trawl fishery is not necessary.

1.6 Rational for Preferred Alternatives

1.6.1 Alternative 1a and 3a - Increase ping rate of four times per hour (*Preliminary Preferred*)

This method was designed to allow vessels to use current type-approved units. An increase from one ping per hour to four times per hour would provide a more robust data set to better determine speed and direction. Thus providing an improved opportunity to determine whether a vessel went through or around a restricted area and whether the continuous transit requirement was met.

1.6.2 Alternative 1b and 3b - Maintain ping rate one per hour with Electronic Monitoring System (*Preliminary Preferred*)

This method was designed for vessels that use EM systems. Since EM systems would provide a more robust data stream regarding vessel location and fishing activity, the vessel could maintain the current VMS type-approved system with a ping rate of 1 per hour. As currently deployed in the LE IFQ trawl fishery under exempted fishing permits, the system provides camera video stream with a corresponding lat/long assigned to each picture at 10 second intervals, coupled with hydraulic and drum sensors indicating gear deployment and retrieval. Using this system in conjunction with VMS, the VMS monitoring technicians would monitor VMS reports. If potential incursions are identified, the EM system data could be used to confirm the location of the vessel and the status of the gear.

1.6.3 Alternative 2 and 4 – Allow use of enhanced VMS units (non-type approved) (*Preliminary Preferred*)

This method was designed to provide location information at a finer scale with the potential for an additional data stream to monitor gear deployment. In addition, the purchase price is less expensive than current NMFS type-approved units. The non-typed approved VMS unit would collect location data (latitude and longitude), for example, every 5 minutes and then transmit that data every 60 minutes. The 5-minute

position reports could provide high resolution data on location which can also be extrapolated to determine heading and speed.

These units are also capable of collecting other data such as hydraulic activity and drum speed. The gear deployment information can be coupled with the time and location data to determine if gear was deployed in a closed area. Much of the location data is not needed in real time and can be stored for examination at a later date if necessary. There would be additional costs if sensors are added to monitor gear activity, such as winch and drum sensors. These would be an added cost above the quoted costs noted in Table 1-7. The improved data set may provide better resolution when gear may have been deployed or retrieved.

These type of units would not meet the NMFS type-approval criteria because they would not have two-way communication ability. VMS units without the two-way communication feature is less expensive compared to the current purchase price of NMFS type-approved units. Devices may range in cost from $800 to $1,000 per unit and $20 to $39 per month for data transmission.

The enhanced VMS units would expand the data collection burden and management of the data would be needed by another entity, such as PSMFC rather than Office of Law Enforcement. See Section 1.7.4 for discussion of this issue.

1.7 Impact Analysis of Alternatives

1.7.1 Summary of Potential Impacts

Table 1-4 provides a summary of the alternatives and their potential benefits and cost changes for each fishery. For the non-groundfish trawl and other groundfish fisheries in Table 1-4, an alternative would have a similar impacts to all fisheries under that alternative. Alternatives 1a, 2, 3a, and 4 would implement new requirements to collect more location data (VMS data), and if a fisher chooses to do so, may install new software/hardware to collect and transmit the data to NMFS. Therefore, the proposed measures are not likely to impact the physical or biological environment.

Under alternatives 1a, 2, 3a, and 4 there may be a cost savings or minimal cost increase to some participants in each fishery (Table 1-4 through Table 1-7). Alternatives 1b and 3b (1 ping per hr with EM) would not incur additional cost to the industry or government entities. It's expected that fishery participants may realize long-term cost savings through reduced monthly costs for data transmissions under the preferred alternatives (1a, 1b, 2 and 3a) because VMS data rates (costs per ping) are more competitive between providers of the service (Table 1-8). Based on VMS service providers, data transmission may be provided at a cheaper rate because less data is being transmitted with a new enhanced unit than the current NMFS type-approved VMS units (potential cost savings of $20 to $30 per month with new enhanced VMS units). If a vessel chooses to continue using NMFS type-approved units and is required to transmit more data at a higher interval (Alternative 1a and 3a) then the vessel owner may realize slight increase in costs per month, dependent on their VMS service provider. However, since service providers are more competitive, rates for NMFS type-approved units may only increase up to $25 per month dependent on which service provider is used.

If a vessel owner chooses to use new, enhanced VMS units as proposed (Alternative 2 and 4), then there will likely be an initial cost to replace their current NMFS type-approved VMS unit. If a new enhanced unit is installed to replace a failing NMFS type-approved unit then a cost saving of roughly $2,000.00 may be realized (current approximate value of type-approved units are $3,000.00 vs. $795.00 to $995.00 for a

new enhance unit). As described under alternatives 2 and 4, Geofencing and gear sensors are not mandatory at this time. Should they be required, the total impact on the industry with these added features are roughly $3,000 per vessel.

Under alternative 3a for the DGN fishery, the addition of a continuous transit requirement may negatively affect vessels that use multiple gears on a trip. A continuous transit requirement would prevent vessels from stopping in the PRCAs to harpoon swordfish or fish for albacore. This can impact the profitability of a vessel.

One item of importance for the DGN fishery is that in September of 2015 the Council took final action that would require 100% observation of the DGN fishery through either observers or electronic monitoring. This action, when implemented, may provide the necessary information for managers to monitor the PRCAs for illegal fishing activity and negate the need for additional VMS monitoring or a continuous transit requirement.

Finally, if the data collection burden is shifted from NOAA Office of Law Enforcement to the Pacific States Marine Fisheries Commission (PSMFC) then there may be some additional costs to PSMFC to manage and store the data (See Section 1.7.4).

Table 1-4. Potential benefits and cost changes under each alternative for non-groundfish trawl and other groundfish fisheries.

Fishery with VMS	No Action Status Quo	Alternative 1a - Increase ping rate to 4 times per hour (Preliminary Preferred)	Alternative 1b - Maintain ping rate 1 per hour with Electronic Monitoring System (Preliminary Preferred)	Alternative 2 - Enhanced VMS (non-type approved), No Geofencing or gear sensors required (Preliminary Preferred)
Limited Entry Groundfish: LE Midwater Trawl Non-whiting LE Bottom Trawl	Status Quo, 1 ping every 60 minutes, insufficient for enforcement of continuous transit or gear status. No change in VMS costs to industry or government.	Provides improved data set on maintaining continuous transit. Minor increase in costs to industry. No change to government costs.	EM provides data on gear status and location coupled with VMS at 60 min ping rate. No change in VMS costs to industry or government.	Provides improved data set for location. May provide data on gear status, indicating fishing. Potential cost savings for industry. Minor increase in costs to PSMFC, no change in costs to government.
Open Access Non-Groundfish (other gears): Prawn trap Dungeness crab Pacific halibut longline CA halibut line gear Sheephead trap Salmon troll	Status Quo, 1 ping every 60 minutes, insufficient for enforcement of continuous transit or gear status. No change in VMS costs to industry or government.	Provides improved data set on maintaining continuous transit. Minor increase in costs to industry. No change to government costs.	EM provides data on gear status and location coupled with VMS at 60 min ping rate. No change in VMS costs to industry or government.	Provides improved data set for location. May provide data on gear status, indicating fishing. Potential cost savings. Minor increase in costs to PSMFC, no change in costs to government.
Open Access Fixed Gear (non-IFQ): Longline Trap or pot Line gear (includes salmon troll)	Status Quo, 1 ping every 60 minutes, insufficient for enforcement of continuous transit or gear status. No change in VMS costs to industry or government.	Provides improved data set on maintaining continuous transit. Minor increase in costs to industry. No change to government costs.	EM provides data on gear status and location coupled with VMS at 60 min ping rate. No change in VMS costs to industry or government.	Provides improved data set for location. May provide data on gear status, indicating fishing. Potential cost savings. Minor increase in costs to PSMFC, no change in costs to government.
Open Access Non-groundfish trawl: Ridgeback prawn CA halibut Sea cucumber	Status Quo, 1 ping every 60 minutes, insufficient for enforcement of continuous transit or gear status. No change in VMS costs to industry or government.	Provides improved data set on maintaining continuous transit. Minor increase in costs to industry. No change to government costs.	EM provides data on gear status and location coupled with VMS at 60 min ping rate. No change in VMS costs to industry or government.	Provides improved data set for location. May provide data on gear status, indicating fishing. Potential cost savings. Minor increase in costs to PSMFC, no change in costs to government.
LE Fixed Gear (sablefish)	Status Quo, 1 ping every 60 minutes, insufficient for enforcement of continuous transit or gear status. No change in VMS costs to industry or government.	Provides improved data set on maintaining continuous transit. Minor increase in costs to industry. No change to government costs.	EM provides data on gear status and location coupled with VMS at 60 min ping rate. No change in VMS costs to industry or government.	Provides improved data set for location. May provide data on gear status, indicating fishing. Potential cost savings. Minor increase in costs to PSMFC, no change in costs to government.

Table 1-5. Potential benefits and cost changes under alternatives for drift gillnet fishery.

Fishery with VMS	No Action – Status Quo	Alternative 3a - Increase ping rate to 4 times per hour/add continuous transit requirement (Preliminary Preferred)	Alternative 3b - Maintain ping rate 1 per hour with Electronic Monitoring System	Alternative 4 - Enhanced VMS (non-type approved), No Geofence or gear sensors required
Swordfish Drift Gillnet	Status Quo, 1 ping every 60 minutes, insufficient for enforcement of "no-fishing" restricted areas. No change in VMS costs.	Provides improved data set on maintaining continuous transit. Could result in minor increase in costs to industry for VMS service. There is a potential for higher financial impact to loss of fishing opportunity (no estimates avail). No change to government costs.	EM provides data on gear status and location coupled with VMS at 60 min ping rate. No change in VMS costs to industry or government.	Provides improved data set for location. May provide data on gear status, indicating fishing. Potential cost savings to industry. Minor increase in costs to PSMFC, no change in costs to government.

1.7.2 Impacts to the Biological and Physical Environment

None of the alternatives will result in an impact to the physical or biological environment. It's expected that vessels will not change fishing operations (increase the number of trips, gear deployed, or areas fished) under the proposed actions. Impacts to habitat would similar to normal fishing activity.

1.7.3 Impacts to Area Management and Enforcement

All alternatives are expected to improve monitoring of restricted areas. Table 1-6 provides a summary of impacts that may be expected under each alternative.

The additional information collected under Alternatives 1a, 1b, 2, 3a, 3b, and 4 is an opportunity to continue providing access to areas and potentially provide more access if RCAs and EFH are modified in the future. Changes to the VMS requirements may provide a suite of options to provide confidence that vessels are not operating in closed or prohibited fishing areas and may provide an enforcement tool for state officials that lack presence on the water to enforce closed areas. It's also possible that state managers of Marine Protected Areas could benefit from the change in VMS requirements to support enforcement. A summary of improvements to enforcement under each alternative is provided in Table 1-6.

Table 1-6. Potential benefits to enforcement of closed and prohibited fishing areas under each alternative.

	No Action	**1a (4 hr ping)**	**1b (1 hr ping w EM)**	**2 Enhanced VMS**	**3a (Drift gillnet - 4 hr ping WITH continuous transit req added)**	**3b (Drift gillnet- 1 hr ping w EM, NO continuous transit req)**	**4 (Drift gillnet - Enhanced VMS, NO continuous transit req)**
Improves enforcement of closed areas with continuous transit requirement	No	Yes	Yes	Yes	Yes	No	No
Improves enforcement prohibited fishing areas	No	No	Yes	No	No	Yes	No

1.7.3.1 Enforcement of Closed Areas with Continuous Transit

Ping rate data points can be plotted to create a trawl track line in GIS program; however, the line may not represent the actual route the vessel traveled (Figure 1-1 and Figure 1-4).

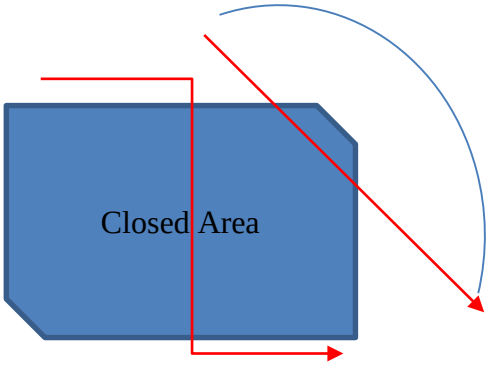

Figure 1-4. Vessel movement schematic.

The VMS track can be greatly improved by using the enhanced VMS units (Alternative 2 and 4). These units are capable of transmitting at higher intervals (higher ping rate). Based on more frequent pings, the heading and speed can be determined with more accuracy which can be analyzed to show whether the vessel was fishing or just transiting the area (Figure 3-1).

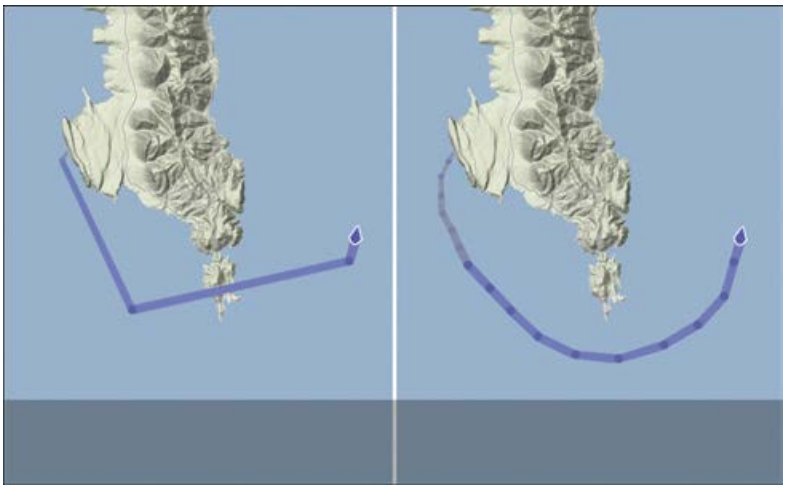

Figure 1-5. Schematic of vessel track. Left panel is one hour ping rate, right panel is one minute ping rate.

Source: Polestar Global Space Applications (http://fisheries.polestarglobal.com/)
Note: HDtrack (high density tracking) via Pole Star provides real time tracking of vessel activity. HDtrack activates automatically when vessels enters a closed area.

Alternatives 1a, 1b, 2, and 4 would improve the monitoring capabilities for enforcement of all restricted areas that have continuous transit requirements. Alternative 3a would add continuous transit requirement to the drift gillnet regulations and would improve the monitoring of the PRCAs.

Alternatives 1a, 1b, 2, and 3a provide a more robust data set that would show vessels are continuously transiting closed area. All data would still be accessible for NOAA OLE to examine any incursions of the

RCA. Alternatives 1a and 3a (increase to 4 per hour ping rate) and alternatives 2 (enhanced VMS) would provide more data transmissions for the entire trip. The data points would provide a better "track" of the vessels movements. Alternative 1b and 3b (1 hour ping rate with EM) would provide additional video and GPS tracking through he EM system. The VMS unit would provide data points to show the vessel is in a closed area and enforcement would be able to monitor the vessel real time. If an incursion needs to be investigated then the EM data set can provide details of the vessels' activity.

The decision to change the status quo VMS ping rate for a fishery is dependent on whether continuous transit is required and the size of the restricted areas that are being monitored. For those fisheries that require continuous transit in restricted areas, the 1 hour ping rate may not be appropriate. Therefore Alternatives 1a, 1b, 2, 3a, 3b, and 4 would be appropriate for all fisheries noted in Table 1-4 and Table 1-5 if the closed area requires continuous transit.

Vessel speeds when transiting versus fishing vary greatly in the each fishery listed in Table 1-2. An analysis of vessel speed for each fishery is not provided since NMFS enforcement has provided background information from court decisions that show a more robust data set is needed in the groundfish fishery to support enforcement of the continuous transit requirements for groundfish fishing activity.

For the DGN fishery an analysis of observer data was conducted to characterize the range of drift gillnet vessel speeds while fishing, using the 8,513 observed sets of drift gillnet fishing over the 1990-2014 fishing seasons for which time and location data were available at the start and end of the sets. For each fishing event to set the net, the methodology calculates: 1) the amount of fishing time by subtracting the start time from the end time; 2) measures the distance covered while fishing as the great circle distance from the start location to the end location and then; 3) computes the average speed as the distance covered divided by the fishing time. Calculating an accurate speed of a drift is dependent on the observer data; however, observers are not present on all trips.

Figure 1-6 is a histogram representing the distribution of DGN fishing speeds. The horizontal axis labels display vessel speed ranges included in the figure, and the bar heights represent percentages of observed sets, with the numeric percentages provided inside each bar. The figure documents that over 99% of observed DGN vessel fishing speeds were on the range from 0 to 1.25 knots. The three observations with fishing speeds over 5 knots most likely represent data entry error. Further analysis shows the median DGN vessel fishing speed was 0.2586 knots and the mean speed was 0.3241 knots, reflecting right skewness in the distribution. Normal DGN fishing operations involve the deployment of a net at dusk which is over 1 mile long during roughly a one hour period, drifting in the current while fishing overnight, and hauling the net at dawn over a period that exceeds one hour, significantly higher fishing speeds or rapid movement into and out of closures between hourly VMS pings are not technically feasible.

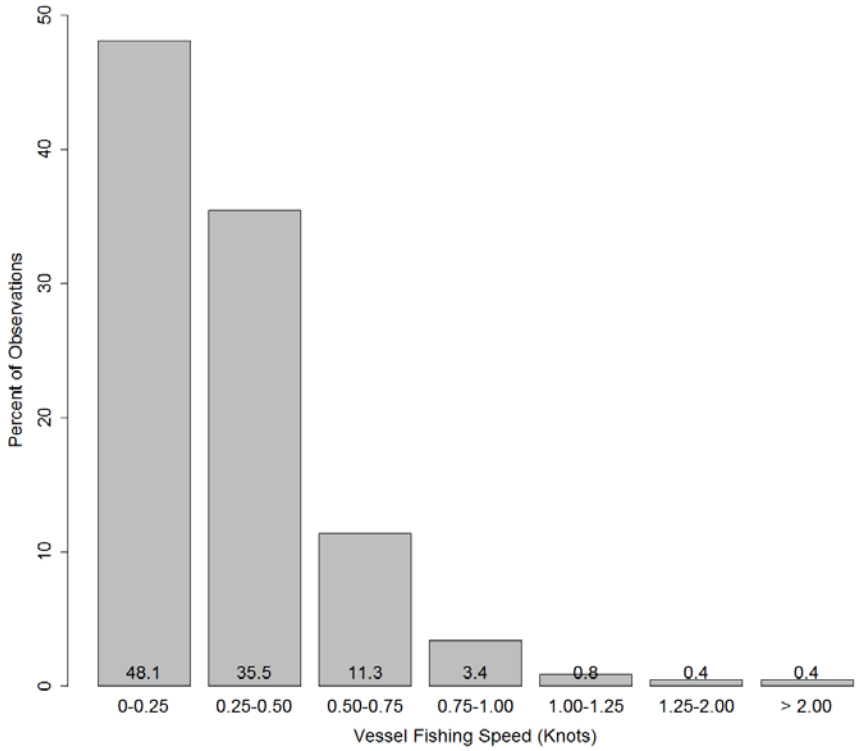

Figure 1-6. Histogram of observed DGN vessel fishing speeds.

Source: Southwest Fisheries Science center data analysis March 2016

The operational aspects of the DGN fishery are distinct from other fisheries. The DGN fishery typically sets a net and drifts for 12 hours at a speed of 0 to 1.25 knots. Information provided by DGN fishermen indicates that typical transit speeds range from 7 to 9 knots, although inclement weather may reduce the speed to 3 knots.

VMS could be used to monitor a continuous transit requirement for the DGN fishery but as stated earlier more data or pings may be necessary to get a more accurate picture of speed and heading. This DGN analysis shows a distinct difference between a vessel's speed when fishing (setting a net) versus a transit speed; therefore, under Alternative 3a, four pings per hour with a continuous transit requirement would be viable. An enhanced VMS system could collect vessel location, heading, and speed every 10 minutes (Alternative 4) and would be a viable alternative to detect drifting versus transiting.

1.7.3.1.1 Continuous Transit Definition

As part of the proposed action for groundfish and the DGN fishery, the definition of "continuous transit or transit through" may be revised for the groundfish and highly migratory species (HMS) sections of the regulations as appropriate. NMFS would revise the current definition of "continuous transiting or transit through" in order to encompass a broader array of vessel activity that is akin to loitering within a closed area, whether that be by means of a source of power or by drifting with the prevailing water current or weather conditions. General Council for enforcement has developed a revised definition so vessels can clearly demonstrate through visual, electronics, or other monitoring devices, that they are

moving through the RCA without delay and on a direct course. The following definition is an amalgam of some USCG regulations, SE fishery regulations, and lessons learned from the RISA LYNN litigation.

The groundfish version of this draft definition is:

> 50 CFR Subpart C, WEST COAST GROUNDFISH FISHERIES,
> 660.11 General definitions
>
> **CURRENT DEFINITION** (with proposed deleted text):
>
> *Continuous transiting or transit through* means that a fishing vessel crosses a groundfish conservation area or EFH conservation area on a constant heading, ~~along a continuous straight line course, while making way by means of a source of power at all times, other than drifting by means of the prevailing water current or weather conditions.~~
>
> **REVISED DEFINITION** (with proposed new text added):
>
> *Continuous transiting or transit through* means that a vessel crosses a groundfish conservation area or EFH conservation area on a heading as nearly as practicable to a direct route, consistent with navigational safety, while maintaining headway throughout the transit without loitering or delay.

If a continuous transit requirement is added for the DGN fishery it's likely that the same definition would be used. In addition, some latitude and longitude coordinates would be needed for the PRCAs because some areas are described with some ambiguity, using landmarks.

1.7.3.2 Enforcement of Prohibited Fishing Areas

Alternatives 1b, 2, 3b and 4 would improve monitoring of restricted areas that only prohibit groundfish fishing and do not have continuous transit requirements (EFHCAs, CCAs, YRCAs, and PRCAs). Except for some EFHCAs that have restrictions for bottom contact gear and no bottom trawling, the remaining areas do not require vessels to continuously transit the area. In these areas, vessels are allowed to drift or transit the area; however, it's not possible to know the status of its gear when the vessel is in the area. Therefore, VMS alone may not be the tool to manage these restrictions. Using either electronic monitoring (EM) or the enhanced VMS units with a requirement to use gear sensors provides the necessary gear use data info to show the vessel did not use the gear when transiting or drifting in the area. If these restricted areas are modified, shrunken or expanded, these alternatives could provide the confidence managers need to ensure these areas are not fished, especially if the area is small or narrow.

Alternatives 1b and 3b would require EM to be used in conjunction with a one hour ping rate. A vessel that uses EM could maintain a VMS ping rate of one per hour since video and GPS tracking is recorded during fishing activity. The EM system can monitor fishing activity and track vessel movements at 5 second intervals and provide video images of activity. These alternatives would improve the enforcement of these closed areas and deter vessels from incursions.

Alternatives 2 and 4 would allow the use of enhanced VMS units that collect information at a finer scale through more frequent pings that can show speed and heading. These enhanced units can collect location

information (every 5 minutes) with very little increase in cost from the current costs incurred using the NMFS type-approved units. These units are capable of Geofencing, and can collect gear sensor data however, at this time, these features would not be required under Alternatives 2 and 4. Gear sensors (e.g., drum or winch) can be placed in-line and provide a report when the vessel uses the equipment. The enhanced units could further improve the enforcement of areas that prohibit fishing (EFHCAs, CCAs, YRCAs, PRCAs, Farallon Islands, and Cordell banks) if the gear sensor equipment is added to the unit.

The units under Alternatives 2 and 4 have been used in other fisheries with success. A case study under the Louisiana Department of Wildlife and Fisheries implemented one of the Polestar units on 500 + vessels to monitor 1.6 million acres of oyster beds. The unit tracked vessel movement on a one minute reporting requirement. The unit also provided Geofencing and real-time web based monitoring of each vessel with great success.

1.7.4 Shifting the Data Collection and Management Burden

The National Oceanic and Atmospheric Administration Office of Law Enforcement (OLE) develops the official list for type-approved VMS equipment for the nation by region. The OLE West Coast Region manages the vessel monitoring system (VMS) program and uses the information gathered as part of enforcement for restricted areas and as evidence for potential violations.

The initial development of the VMS program was housed under OLE for "real-time" management of vessel movements and provides OLE with direct access to the data being gathered. OLE currently only has capacity to collect and store GPS location data, with no immediate plans to expand the type of EM data it collects and stores. Under all alternatives 1a, 2, 3a, and 4, the amount and type of data currently collected under the VMS program would expand therefore the burden to collect and store this information would shift from OLE to the Pacific States Marine Fisheries Commission. This move may be consistent with development of the electronic monitoring program (EM) that is currently being considered by the Council under the Shorebased IFQ Program. The OLE would continue to have direct access to data when needed.

1.7.5 Impacts to Fishing Industry - Cost Analysis

1.7.5.1 Purchase, Installation, and Ping Rates Adjustments

1.7.5.1.1 No Action

Under the No Action (Status Quo), all vessels that are registered must operate and maintain the mobile transceiver unit in good working order continuously and provide the vessel's position at least once every hour, 24 hours a day throughout the fishing year (one ping per hour). The standard ping rate provides the date/time of ping, date/time ping was received, latitude/longitude, speed, and course/direction. The mobile transceiver unit must remain in continuous operation at all times (powered up and operating). When a vessel remains in port for an extended period of time, regulations allow the VMS to provide less frequent position reporting at least once every four hours (sleep mode). In addition, less frequent ping rates are allowed by regulation through several exemptions: when the vessel is hauled out, when the vessel fishes beyond the EEZ (outside 200 miles) for at least one week or for an extended period of time, if the limited entry permit had a change in vessel registration, and for emergency (fire, flooding, or extensive physical damage to critical areas of the vessel). There are no additional cost impacts to the industry or government agencies under the No Action.

1.7.5.1.2 Action Alternatives

Under Alternative 1a, 1b, 2, 3a, 3b, and 4 cost impacts will vary but not significantly. Purchase and installation costs are compared in Table 1-7 for all alternatives that use either NMFS type-approved or non-NMFS type-approved units. Purchase and installation costs would be less under Alternatives 2 and 4 than under all other alternatives.

The costs associated with an increased in ping rates for NMFS type-approved units is noted in Table 1-8. Under Alternative 1a and 3a the ping rate would be increased to 4 times per hour or 15 minute ping rate; vessel owners would incur the most costs if they purchase a NMFS-approved unit with a ping rate of 4 times per hour. For comparison we provide the base cost of one ping per hour and the costs of adjusting the ping rate to 2 and 3 times per hour with NMFS type-approved units and enhanced non NMFS type-approved units.

Table 1-7. Overall costs for NMFS type-approved units and new enhance VMS units.

VMS Vendor	VMS Purchase Cost	VMS Installation cost	Geofence/gear sensor purchase and install costs	Overall cost
Current VMS Units (NMFS Type-Approved) for Alternatives 1a, 1b, 3a, & 3b				
McMurdo FMCT/G	$3,095	$200 – $300	NA	$3,295 – $3,395
CLS America Thorium TST A2.0 & CLS America Thorium LEO A2.0	$2,999	$400 – $700	NA	$3,399 – $3,699
Faria WatchDog 750VMS (with Messaging Terminal)	$3,150 – $3,250	$300 – $400	NA	$3,450 – $3,650
Network Innovations - Sailor VMS Gold & Sailor VMS Gold Plus	$2,500	$400 – $800	NA	$2,900 – $3,300
Skymate I 1500	$3,100	$100 – $200	NA	$3,200 - $3,300
Enhance VMS systems for Management Measure 1 (Non NMFS Type-Approved) for Alternatives 2 and 4				
Polestar by Skywave IDP690	$795	self-install*	$1,700 – $2,000	$795 (no geo/gear sensors)
Faria Watchdog FWT 750VMS	$995	self-install*	$1,700 – $2,000	$995(no geo/gear sensors)

Note: Typical one-time activation fees are not included in cost estimates but can range from $60 to $149.00 dependent on vendor and data package.
*If a vessel chooses to contract out for gear sensor installation then the vessel may incur additional costs between $400 and $1000 per install.

Table 1-8. Monthly transmission costs with varying ping rate per hour.

VMS Vendor	1 ping per hr (Status Quo)	2 ping per hr	3 ping per hr	4 ping per hr
NMFS-Approved VMS Units for Alternatives 1a, 1b, 3a, & 3b				
McMurdo FMCT/G*	$48	$63	$63	$63
CLS America Thorium TST A2.0 CLS America Thorium LEO A2.0	$45	$55	$62	$69
Faria WatchDog 750VMS (with Messaging Terminal)	$32.95	$34.95	$36.95	$38.95
Network Innovations - Sailor VMS Gold Network Innovations – Sailor VMS Gold Plus	$43.20	$86.40	$129.60	$172.80
Skymate I 1500	$38.99	$73.99	$94.99	$115.99
Enhance VMS systems for Management Measure 1 (Non-NMFS approved) for Alternatives 2 and 4				
Polestar by Skywave**	$19.80	$27.50	$38.50	$38.50
Faria Watchdog FWT 750VMS**	$32.95	$34.95	$36.95	$38.95

*1 ping report/hour (60 minute interval) = $48/vessel/month. 2, 3 or 4 ping reports/hour (30, 20 or 15 minute intervals) = $63/vessel/month fixed rate.
** If Geofencing is enabled, rates can slightly increase but the increase in data transmissions needed to support this feature is minimal.

At some point NMFS type-approved VMS units will need to be replaced and the NMFS/PSMFC VMS reimbursement program has ended. Allowing the option for enhanced units will be a lower cost solution for fishermen with the management benefit of higher data quality and quantity.

1.7.5.2 Continuous Transit Costs for the DGN Fishery

Alternative 3a could impact those vessels that use multiple gears during a fishing trip. Some vessels target albacore or harpoon swordfish when the opportunity is available. For example, a vessel may set a net outside the PRCA then enter the PRCA to harpoon swordfish or target albacore tuna with jig gear (both gears are legal with in the PRCA). Based on industry input, much of this activity happens in the PRCA while headed to the DGN fishing grounds or when returning to port. Under a continuous transit requirement vessels would not be allowed to stop in the PRCA to conduct this type of activity. No financial impact assessment was conducted to gauge the breadth of the potential impact on the industry. The industry indicated that the transit requirement would impact the profitability of a trip especially if swordfish catch is low; vessels may fish longer for albacore or look for other opportunities during the trip to make the trip more profitable.

1.7.5.3 Costs for Geofencing and Gear Sensors

As described under these alternatives, these two features are not mandatory at this time, therefore the impacts of implementing Alternatives 2 and 4 could be similar to Alternative 1a and 3a (See Table 1-7 and Table 1-8). Total impact of Alternative 2 and 4 with these added features may add up to a total of $3,000 per vessel.

Under Alternative 2 and 4, the ping rate can be adjusted automatically based on area fished (Geofencing). For example, if the vessel enters a closed area, the unit can automatically increase the data transmission (ping rate, GPS track, or sensor info), potentially increasing the cost of data transmissions. Most vendors would include this feature in the monthly data needs and final cost estimates for the client. Geofencing data would likely be included in larger monthly data rates (roughly 12,000 bytes per month equals 4 pings per hour contract rates, See Table 1-8). The transmission rates would need to be specified by the client with the GPS coordinates preloaded in the VMS unit.

In addition, sensors and a microprocessor can be added to the VMS unit. These cost can vary based on the sensor that is installed and who installs it. One sensor (e.g., drum or hydraulic winch) may cost $150 to $200. A microcomputer or data processor would need to be built for the purpose of collecting and processing the sensor data. These units are currently not available on the open market and would need to be created with the data collection specifications. It's estimated these may cost roughly $1,000 per unit. Installation cost could be lowered if a vessel owner installs the sensor themselves. If a contractor conducts the installation then costs may range from $400 to $500 per sensor installation. It may cost an industry participant an additional $2,000 to add gear sensors to the VMS unit. Government agencies may incur minor costs for additional data storage.

Sensor data can increase the amount of data that is transmitted; costs would be included in the monthly VMS data package that is charged to the vessel owner. Costs per month are typically based on the number pings per month (or data bytes) allowed as noted in Table 1-8 for enhanced VMS units (Non-NMFS approved). This additional data could require a higher data package of $38.50 per month or more (i.e., 4 pings per hour or 12,000 to 14,000 bytes per month).

1.7.5.4 Cost to Switch Fisheries

If a vessel operator changes fisheries, a change in the ping rate and costs incurred would be dependent on the type of VMS unit the vessel has, the unit's ability to be adjusted for a lower rate, and the provider of the VMS service. If the new policy for ping rates varies base on fishery, then the fishery appropriate rules would apply to the vessel when it registers or changes its declaration to that fishery. Again, the ping rate change would be dependent on the client, VMS provider, and the unit that was installed. For example, if an LE vessel switches to an open access fishery or LE fixed gear it would still be subject to VMS requirements and non-trawl RCAs. The appropriate ping rate would apply for that fishery.

Allowing multiple VMS options for a fishery provides flexibility for a fishermen to switch fisheries and continue using the same VMS system or possibly change the ping rate to fit the management need of another fishery. For example, by implementing the option to use enhanced VMS for all fisheries (Alternatives 2 and 4), vessels can freely switch fisheries without having to meet NMFS-Type approved VMS requirements and the ping rate be adjusted remotely to fit the requirement. Implementing the use of EM and a ping rate of one per hour (Alternative 1b and 3b) for a fishery that currently does not offer EM would provide flexibility for fishers in the future. For example, a vessel could switch from midwater trawl whiting (assuming implementation of EM in 2016) to fixed gear (assuming that EM will be an option in the future for fixed gear IFQ participants).

Switching fisheries to avoid VMS may not be practical. For example, in order for a vessels with a limited entry "A" endorsed permit to eliminate a ping rate, the permit would have to be removed from the vessel and fished in another fishery without VMS requirements. Permit removal is unlikely to occur in order to lower a ping rate (for example six months) since the vessel is allowed one transfer per year and the cost savings would be minimal. Open access vessels would have to opt out of the fishery and enter a state fishery that does not require VMS or catch groundfish outside the US EEZ (3-200 miles) throughout the year to avoid VMS requirements, the vessels contract requirements would dictate the usefulness of opting out of a fishery and if cost savings for turning of the unit is viable. For example, vessels that switch to California halibut, shrimp or some other state fishery would not be required to have VMS if they do not retain groundfish therefore the unit could be turned off.

Switching HMS fisheries may benefit DGN vessels. Vessels that use multiple gears could switch solely to albacore fishing and not need VMS if the vessel is under 24 meters. However, it may or may not be not be cost effective if a VMS provider requires an additional activation fee to turn the unit back on after several months or early termination fees for contracts that require a 12-moth subscription.

Some providers do not allow an adjustment in the rate based on the contract, and some do not provide lower monthly costs or may increase costs for changing the rate mid contract. Some providers charge a service fee for turning the system on again (when powered off and transmission of the ping stops for a period of time and then is turned on again). The VMS unit can go into sleep mode or have reduced reporting rate when in port if the unit is capable, but that choice is made through the individual vessel operator/owner and the provider.

The ping rate frequency for the enhanced VMS units (Alternatives 2 and 4) can be remotely adjusted as needed. So vessels that switch fisheries may be able adjust the ping rate as needed without additional service fees; however, data rates may increase causing additional data charges.

2 Management Measure 2: Fishery Declaration Enhancements (Gear Testing and Whiting Fishery Declaration Changes)

There are two topics under this management measure: 1) Gear Testing; and 2) Whiting Fishery Declaration Changes. The first measure would set up a formal fishery declaration process that includes a waiver or exemption for observer coverage when the fishermen want to test legal commercial fishing gear. The gear test would need to be done with the intention of not catching fish or other species. The waiver/exemption request could be processed through the VMS call-in system. The second measure would allow midwater trawl whiting vessels to change their fishery declaration at sea or allow operators to declare two fisheries prior to leaving port.

2.1 Gear Testing

2.1.1 Background

Infrequently fishermen want to test their equipment or fishing vessel during an open or closed season. For purposes of analysis, "gear testing" means the deployment of lawful gear without the intention of catching fish. For example, using trawl gear with an open cod end to test the deployment of the net, engine horsepower with a new net, deployment of wire and doors to tighten the spool, testing new electronic equipment, or testing a new engine. Even though this type of activity may not involve retention of fish, it falls under the definition of fishing as defined in the Magnuson-Stevens Act 109-479 (16)(D) (see the following underline text).

> "(16) The term "fishing" means—
> (A) the catching, taking, or harvesting of fish;
> (B) the attempted catching, taking, or harvesting of fish;
> (C) any other activity which can reasonably be expected to result in the catching, taking, or harvesting of fish; or
> (D) any operations at sea in support of, or in preparation for, any activity described in subparagraphs (A) through (C).
> Such term does not include any scientific research activity which is conducted by a scientific research vessel."

Fishermen seek to increase efficiencies in fisheries management and lessen the cost burden to them for activity that may be considered unnecessary for observer coverage. A waiver from the random observer coverage provided by NMFS in the open access or LE fixed gear fishery or an exemption from the 100% observer coverage requirement in the shorebased IFQ program could be provided for non-retention type fishing activity.

Currently, fishermen call the NMFS West Coast Groundfish Observer Program (WCGOP) per federal requirements prior to embarking on a fishing trip to request an observer. These vessels sometimes inquire if certain gear testing situations are considered fishing activity and if they are required to carry an observer when testing gear. Inquiries for gear testing and potential exemptions from observer requirements are examined on a case by case basis by WCGOP and NOAA OLE. The WCGOP may ask OLE if certain activity is considered fishing and if waivers for observer coverage may be granted.

This process could be formalized under the existing VMS program through OLE or in accordance with management measure 1. For example, a vessel operator could call the VMS line to request a change in their declaration (e.g., "gear/equipment testing") and a VMS technician could evaluate the request to determine

if the vessel is eligible for a waiver or exemption, then make the declaration change. This would be similar to a fishery declaration when an operator calls NMFS to switch gears. For vessels that are not required to carry VMS/observer, the vessel operator could call the VMS line in the same manner to provide a fishery declaration. This information would be noted in the OLE vessel activity logs to be sure the agents and WCGOP know that a vessel is not required to carry an observer for a specific trip.

The term "gear testing" under these options is inclusive of fishing activities to test: deployment of nets using open cod ends; calibration of engines and transmission under load, i.e. towing a net; deployment of wire and/or doors; testing new electronic equipment associated with the deployment of fishing gear; and testing and calibration of newly installed propulsion systems, i.e. engine, transmission, shaft, propeller, etc.

The alternatives would apply to all vessels that are subject to observer coverage (i.e., open access, limited entry trawl, shorebased IFQ vessels, and limited entry fixed gear). However, the mothership and catcher processor vessel would excluded from applying for an exemption to carry an observer. Under all alternatives, the following restrictions would apply:

1. No harvest would be allowed,
2. Gear testing for trawl vessels would only be allowed with an open or absent codend,
3. Terminal gear would be prohibited (i.e., no hooks),
4. Pot gear must be closed so fish could not enter, and
5. Gear testing in areas with sensitive habitat concerns (i.e. EFH) would be prohibited.
6. Only gear that is currently approved for groundfish fishing can be tested under this action.
7. Testing experimental gear would not be allowed under this action.

2.1.2 Purpose and Need

The purpose of this management measure is allow vessels an exemption from observer coverage to test fishing gear. There is a desire by the industry to create a formal process for requesting a waiver or exemption from observer coverage when vessel operators want to test fishing gear and related vessel systems, without the intent of catching fish. Therefore this management measure is needed to create a more efficient groundfish fishery, provide efficient and effective monitoring, and increase profitability or create cost savings for the industry.

2.1.3 Description of Alternatives for Gear Testing

2.1.3.1 No Action (Status quo) - All vessels continue to make informal requests to the WCGOP and OLE for potential waivers, or make inquiries for applicable rules for observer requirements when testing gear.

Under the No Action alternative, vessels would continue to work with observer providers or the WCGOP to secure an observer when required to do. Vessel operators can continue to make informal requests for an observer exemption to test gear (phone call or email).

Vessel operators that declare participation under the shorebased IFQ program to test gear would be required to carry an observer on 100% of their trips; exemptions would not be allowed. Vessels operators that declare participation in other fisheries, for example open access or non-trawl gear fishery, would still be subject to random placement of an observer; however, these vessels may be granted a waiver from observer coverage to test gear. The request would be reviewed by WCGOP and verified with OLE.

2.1.3.2 Alternative 1 – Set up formal waiver/exemption process to ***allow any groundfish vessel*** subject to observer coverage be waived or exempted from observer coverage for a trip that tests gear. The trip could be during an open or closed fishing season.

This alternative would implement a formal waiver/exemption process to allow all groundfish fishing vessels that are required to have observer coverage. Vessels that declare gear testing could be granted a waiver and would not be required to carry an observer for that trip. This would apply to all groundfish vessels that are subject to 100% observer coverage (shorebased IFQ program) or are subject to random selection for observer coverage (e.g. open access or LE fixed gear). This alternative would allow the exemption to occur during the fishing season or during a closed season.

2.1.3.3 Alternative 2 – Set up formal exemption process to allow ***only Shorebased IFQ vessels*** (excluding MS and CP vessels) to be exempt from observer coverage for a trip that tests gear. The trip could be during an open or closed fishing season. (***Preliminary Preferred***)

Same as Alternative 1 but limited to only LE shorebased IFQ vessels. Vessels that are required to have 100% human observer coverage (shorebased IFQ program) could receive an exemption from the WCGOP. This alternative would exclude whiting catcher vessels that deliver to motherships and catcher processors.

2.1.3.4 Alternative 3 - Set up formal exemption process to allow ***only groundfish trawl vessels*** to be exempt from observer coverage for a trip that tests gear. The trip could be during an open or closed fishing season.

This alternative is the same as Alternative 1 but limited to groundfish trawl vessels. Vessels that are required to have 100% human observer coverage (shorebased IFQ program) and those that are subject to random observer coverage could receive an exemption from the WCGOP.

2.1.4 Impact Analysis of Alternatives

2.1.4.1 Impacts to the Biological and Physical Environment

None of the alternatives will result in an impact to the physical or biological environment. It's expected that vessels will not catch fish and any contact with habitat would similar to normal fishing activity. The action is not expected to increase the number of trips, gear deployed or tested, or change the fishing operations. Under all alternatives, vessels would not be allowed to test gear and equipment in sensitive habitats such as EFHCAs. All groundfish vessels will have an active VMS unit, therefore enforcement can continue to monitor vessel incursions and address them as needed.

2.1.4.2 Impacts to Fishing Industry and Government

Under No Action, vessels that are not under the shorebased IFQ program could be granted a waiver. However, this action would formalize the declaration process for those vessel operators under Alternative 1, 2, and 3.

Under all alternatives, the proposed action could lower the industries costs since an observer would not be needed for the trip. This could result in a cost savings for shorebased IFQ participants of $450 to $550 per day dependent on the third party observer provider that is used by the vessel owner. Some cost saving could be realized by all other fleets that are covered by the WCGOP. When the WCGOP provides observers, vessel operators are responsible for supplying food to observers therefore some cost savings would be gained if an observer is not needed.

The collection of information would not be a large burden on the public. Public reporting burden for this collection of information is estimated to average 4 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. The addition of one more fishery declaration to the current list would not add additional time to this estimate. Therefore, no additional cost to the industry would be incurred as result of implementation of either alternative.

Under Alternatives 1 and 2, financial impacts to government agencies (WCGOP, USCG and OLE) would be minor or de minimis. The action may result in additional fielding of calls and/or emails to answer waiver requests and require communication between agencies to verify information. Each year up to 7 requests are processed for waivers. The number of requests is not expected to increase significantly as a result of this action.

2.1.4.3 Impacts to Observer Programs

Under all alternatives, a new code for "gear/equipment test" would be added to regulations for the fishery declaration list (See Appendix C for current list and declaration form). Under all alternatives, a vessel operator would call the West Coast Groundfish Declaration Line to declare gear/equipment testing. This declaration would provide OLE, WCGOP, and the USCG the information they need to monitor activity in closed areas and verify if an observer is needed for a given trip. A technician would review the information submitted and evaluate the request, determine if the vessel is eligible for a waiver, and make the declaration change. This is similar to the current process when a vessel operator calls in to change their gear declaration.

A vessel would not need an observer for the trip since fish would not be caught or retained. Under all alternatives, the vessel operator would not need to call an observer provider (under Shorebased IFQ program) or notify NMFS WCGOP to request an observer (if the vessel was selected for random observer placement in the open access fishery) if the declaration code is entered for gear/equipment testing.

In addition, under all alternatives, the action lowers the risk to human life since an observer is not present for the trip.

2.2 Whiting Fishery Declaration Changes

2.2.1 Background

The current regulation found at 660.13 (d)(1) requires a declaration report to be filed before a midwater trawl whiting fishing vessel leaves port. Additionally, 660.13(d)(5)(iv) restricts vessels to one fishery. Vessels that participate during the primary whiting season can declare one of the following:

- Limited entry midwater trawl, Pacific whiting shorebased IFQ,
- Limited entry midwater trawl, Pacific whiting catcher/processor sector,
- Limited entry midwater trawl, Pacific whiting mothership sector (catcher vessel or mothership)

This restriction does not allow catcher vessels in the mothership fishery that have completed their delivery obligations to make a tow for Pacific whiting for delivery to a shoreside processor without first returning to port. This current situation is described as inefficient and expensive. Note that midwater trawl catcher vessels would not declare they are entering the catcher/processor sector; therefore, the alternatives do not include the catcher/processor declaration option.

2.2.2 Purpose and Need

The purpose of the measure is to allow vessels to change their declaration at sea or declare more than one fishery prior to leaving port. Midwater trawl vessels that fish for whiting in the at-sea mothership fishery or shorebased IFQ fishery are currently required to declare only one fishery prior to leaving port and must return to port to change their declaration. This requirement is inefficient for the whiting fishery. Therefore this management measure is needed to increase the operational flexibility and create a more efficient groundfish fishery.

2.2.2.1 Description of Alternatives for Whiting Fishery Declaration Changes

The alternatives would allow midwater whiting vessels to change their fishery declarations at sea or allow an additional fishery declaration prior to leaving port.

Both Alternative 1 and 2 are viable options and both could be selected to provide a suite of options to choose from based on a vessel's business plan.

2.2.2.2 No Action (Status quo) - Midwater trawl whiting vessels would still be required to return to port to declare a change in fishery participation.

2.2.2.3 Alternative 1 – Allow midwater trawl vessels to change their whiting fishery declaration while at-sea. Other restrictions for fishery declaration reporting would remain in place. (*Preliminary Preferred*)

This alternative was developed to provide a vessel with an opportunity to select a new fishery while at sea and optimize available resources before returning to port. Vessels would likely move from the at-sea portion of the whiting fishery to the shoreside, harvest fish on the way into port and deliver fish to a shoreside facility under the shorebased IFQ program. A vessel could not declare into any other fishery while at seas other than Pacific whiting mothership sector or Pacific whiting shorebased IFQ.

2.2.2.4 Alternative 2 – Allow midwater trawl vessels to declare participation in both Pacific whiting shorebased IFQ and Pacific whiting mothership sector prior to leaving port. Other restrictions for fishery declaration reporting would remain in place.

This alternative was developed to provide a vessel with an opportunity to select a new fishery while in port. If the vessel anticipates moving from the at-sea fishery to the shoreside fishery it could declare participation in both fisheries prior to leaving port. Again, vessels would likely move from the at-sea portion of the whiting fishery to the shoreside, harvest fish on the way into port, and deliver fish to a shoreside facility under the shorebased IFQ program. A vessel could not declare into any other fishery while at seas other than Pacific whiting mothership sector or Pacific whiting shorebased IFQ.

2.2.3 Impact Analysis of Alternatives

2.2.3.1 Impacts to the Biological and Physical Environment

This action is largely administrative and would not negatively impact the physical or biological environment. The biological and physical environments may experience less exposure to oil spillage or encounters with fishing hulls moving to and from port. Overall vessels may spend less time on the water therefore this action could lower the risk and exposure to potential fishing hazards and lower a vessels fossil fuel footprint.

2.2.3.2 Impacts to Fishing Industry and Government

The whiting fishing industry will be more efficient under both alternatives 1 and 2 versus the status quo. Vessels that operate in the shoreside and mothership fisheries will be able to freely switch between fisheries by calling the West Coast Groundfish Declaration Line. Up to 26 vessels participate in both fisheries therefore any vessel that chooses to change their declaration at sea (Alternative 1) or chose to declare both fisheries prior to leaving port (Alternative 2) would benefit from the action.

This action could increase profits for vessels due to lower costs for travel time, fuel, and crew time. Under No Action, a vessel would need to leave the fishing grounds, head back to port, declare a change in fishing activity, and then head back to the fishing grounds. On average a vessel may run 300 to 400 miles roundtrip; this can take up to 37 to 40hrs of run-time and burn up to 1000 to 1,200 gallons of fuel. Average fuel cost are roughly $2.50 per gallon. Therefore either alternative may result in an average savings of $3,000 to $3,500 per vessel per change in the declaration. If a vessel needs get ice, food and conduct other business additional cost may be incurred. On average, vessels may change their declaration 3 to 5 times between the

spring and fall fisheries per year. Therefore either alternative may result in an average savings of $9,000 to $17,500 per year per vessel.

Under both alternatives, government costs are not expected to increase since vessel operators are already required to call to declare changes in fishing activity. This action would not increase the declarations or change the number of time a vessel would need to modify their declarations. Therefore, the activity associated with the action would not increase the workload for government staff that monitor fishery declarations. No additional communications between government agencies or within NMFS agencies would be needed.

2.2.3.3 Impacts to Safety at Sea

This action would support the national standard to increase safety at sea by lessoning the time on the water for vessels and crew. In addition, less run time on the water results in less burning of fossil fuels and would lower the carbon footprint from fishing vessels.

3 Management Measure 3: Movement of IFQ Fishpot Gear Across Management Lines

The management measure would allow Shorebased IFQ Program fixed gear vessels to move pot gear across management lines during a single trip. The measure would allow the vessel to retain fish from the primary management area while moving to a new management area to deploy gear. The vessel would not be able to catch and retain fish from the second management area with fish aboard the vessel from the primary management area (i.e., fish from multiple management areas could not be mixed during a single trip).

3.1 Background

3.1.1 Area of Operation

The area of operation of the shorebased IFQ fixed gear fishery stretches along the entire west coast (Figure 3-1). However, coast is split into four IFQ management areas:

A. Between the US/Canada border and 40°10′N. lat.,
B. Between 40°10′ N. lat. and 36° N. lat.,
C. Between 36° N. lat. and 34°27′ N. lat., and
D. Between 34°27′ N. lat. and the US/Mexico border

All IFQ species are managed within these areas; Table 3-1 shows that 12 of the 25 IFQ species or species groups are managed relative to one of the above management lines. A vessel may have multiple IFQ quotas that are specific to a management area, such as sablefish north and south of 36° N. latitude or shortspine thornyhead north and south of 34°27′ N. latitude.

Figure 3-1. Fishery management lines on the U.S. west coast.

Table 3-1. IFQ Species and associated management lines (50 CFR 660.140) [1/]

Roundfish	Rockfish
Lingcod N of 40°10′	Bocaccio S. of 40°10′
Lingcod S of 40°10′	Canary rockfish.
Pacific cod.	Chilipepper rockfish S. of 40°10′
Pacific whiting.	Cowcod S. of 40°10′
Sablefish N of 36° N. lat.	Darkblotched rockfish
Sablefish S of 36° N. lat.	Longspine thornyhead N of 34°27′ N. lat.
	Minor shelf rockfish complex N. of 40°10' N. lat.
Flatfish	Minor shelf rockfish complex S. of 40°10′ lat.
	Minor slope rockfish complex N. of 40°10′ lat.
Pacific halibut (IBQ) N of 40°10′	Minor slope rockfish complex S. of 40°10' N. lat.
Starry flounder.	Pacific ocean perch S. of 40°10′
Dover sole.	Shortspine thornyhead S of 34°27′ N. lat.
English sole.	Shortspine thornyhead N of 34°27′ N. lat.
Petrale sole.	Splitnose rockfish S. of 40°10′
Arrowtooth flounder.	Widow rockfish.
Other Flatfish stock complex.	Yellowtail rockfish N. of 40°10′
	Yelloweye rockfish

1/ Species or species groups without north/south latitude designations in the table are managed coast wide.

Vessels cannot harvest fish from two areas during a trip because the area of harvest supports stock assessments and allocations to fishermen stem from area-based stock management. The biological information that is collected at-sea and shoreside from area-specific species are used to support stock assessments; mixing fish from two areas would result in a loss of data. Current regulations require fixed gear vessels to first return to port before deploying their gear in a different management area (660.140 (c)(2)). For example, if a fisher makes a fixed gear set in area B, they must land their fish before re-setting their gear in area C.

3.1.2 Potential Efficiencies to Be Gained

In 2011, the Council directed the Trawl Regulatory Review and Evaluation Committee (TRREC) to evaluate the issue of fishing in two or more management areas on the same trip. This issue was first raised by an IFQ fixed gear pot fisherman who explained that, unlike trawl vessels or longline vessels who can stow all their gear on deck, pot gear vessels may have to make multiple trips to move their gear from one management area to the next. Some vessel owners report that the regulation is expensive to their operations, particularly those that fish out of ports in close proximity to a management line.

The November, 2012 Gear Workshop report provided a recommendation to "allow IFQ program vessels to move fixed gear across management lines." This recommendation does not allow for setting fixed gear in two (or more) management areas at the same time and delivery of the combined catches to a single port. This prohibition is mentioned because the location of catch from each management area cannot be determined when the catches are mixed. Such separation is important for species that are allocated based on management areas such as minor slope rockfish. Also, this recommendation does not address the issue of fishing across management lines using

trawl gear. The workshop did not receive sufficient input on this latter issue to make a recommendation. Therefore the recommendation in the Gear Workshop Report limited the recommendation to Shorebased IFQ vessels.

Since the issue relates to limited space on deck for pot gear and a need for increased efficiencies in the deployment of that gear, the management measure was narrowed in scope by Council staff. Therefore the management measure would only apply to Shorebased IFQ fixed gear vessels using pot gear.

Vessels may gain efficiencies by either pulling pots from one area then moving them to a second management area, then return to port to deliver fish from the first management area. The vessel could continue to do this until all pots from the first area are moved to the second. Another possible scenario would be to pull pots from the first area, deliver fish, then deploy the pots in the second management area and return to the first management area to continue harvesting fish. Again, the vessel could repeat these steps until all pots are deployed in the second management area. Allowing the pots to be baited upon deployment would provide maximum efficiency for the fishery.

3.2 Purpose and Need

The purpose of this management measure is to allow these vessels to move pot gear across management lines during a single trip. The measure would allow the vessel to retain the IFQ fish from the primary management area when moving to a new management area to deploy gear. A vessel participating in the Shorebased IFQ Program may not fish in more than one IFQ management area during a trip; therefore, vessels must return to port to deliver fish before moving gear to a new management area. Due to limited space on the vessel, IFQ fixed gear vessels that use pots make multiple trips to deploy gear; this can be inefficient and expensive. This measure is needed to reduce time at sea, create a more efficient groundfish fishery, and increase profits for IFQ fixed gear vessels that use pot gear.

3.3 Description of Alternatives for Management Measure 3

Under the draft alternatives, the vessel would not be allowed to harvest fish from any additional management areas with fish aboard the vessel from a previous management area (i.e., fish from multiple management areas could not be mixed during a single trip). The deployed gear could only be retrieved during a separate IFQ fishing trip. Note that, per regulation, these trips are 100 percent observed and would ensure that harvest from two areas has not occurred.

3.3.1 No Action (Status quo) - IFQ fixed gear vessels would continue to return to port to start a new trip in order to deploy gear in a new management area.

Under the status quo, vessels would continue to fish in one management area per trip. Vessels would still be required to return all pots to shore prior to the start of a new fishing trip to another management area. Vessels would still be prohibited from mixing fish from two management areas.

3.3.2 Alternative 2 –Allow IFQ fixed gear vessels to move pot gear from one management area to another management area during a single trip then deploy the gear *baited.* (*Preliminary Preferred*)

3.3.3 Alternative 3 – Allow IFQ fixed gear vessels to move pot gear from one management area to another management area during a single trip then deploy the gear *non-baited.* (*Preliminary Preferred*)

3.4 Impact Analysis of Alternatives

3.4.1 Impacts to the Biological and Physical Environment

This action have beneficial impacts to the physical or biological environment. Vessels currently move pots to different management areas to harvest fish. The biological and physical environments may experience less exposure to oil spillage or encounters with fishing hulls moving to and from port since less trips to and from fishing grounds would be necessary. In addition, less run time on the water would result in less burning of fossil fuels and would lower the carbon footprint of fishing vessels. Vessels would not change the operational aspects of the fishery (type of gear, number of pots, area fished) under Alternative 1 or 2; therefore, no additional impacts to the physical environment are expected as currently analyzed under previous NEPA documents.

Alternative 1 was developed to allow vessels to deploy gear baited so operators could efficiently harvest the catch upon return. Alternative 2 was developed to allow vessels to deploy non-baited gear as an incentive to not harvest the pots and mix fish between management areas. There are no expected biological impacts or differing impacts through deployment of baited (Alternative 1) versus non-baited pots (Alternative 2). Under either alternative, human observers would be present to monitor all fishing activity to ensure fish are not mixed from two management areas.

3.4.2 Impacts to Fishing Industry and Government

Under the No Action, a vessel would need to pull all pots from the fishing grounds, head back to port with all gear (using multiple vessels or trips), and then head to a new management area to deploy pots (again using multiple vessels or trips). This can hinder productivity and efficiency; however, no negative monetary impacts would be added to the industry or government agencies as a result of No Action.

The industry will be more efficient and increase profits under both Alternatives 1 and 2 versus the status quo. Both alternatives would increase the efficiency of the fishery. Under both Alternative 1 and 2, travel time would be reduced thereby lowering cost for fuel and crew time. Based on one vessel owner's comments, on average a vessel may run 160 to 180 miles roundtrip; this can take up to 20 to 24 hours of run-time and burn up to 160 to 200 gallons of fuel. A vessel may take an average of 3 trips each to get the gear to the dock and 3 trips to get all pots back out. Timewise, that adds up to almost a week to just get the gear across the line. If a vessel does this twice in a year, it amounts to almost two weeks for just hauling pots around rather than fishing.

Average diesel fuel costs roughly $4.00 per gallon in Morro Bay. This may amount to an average savings of $640 to $800 per vessel per trip. If a vessel needs to get ice, food and conduct other business while in port then additional cost may be incurred. On average, vessels may utilize this opportunity up to 2 times per year. Therefore this action could result in an average savings of fuel from $7,680 to $9,600 per year per vessel. Since an observer is required for the trips to just move pots, an additional savings of $6,000 (12 observer days x $500 per day) could be realized if less days were spent moving pots. Therefore total savings for a vessel per year (minus food, crew time, and other additional expenses) would range from $13,680 to 15,600 per year per vessel.

Deploying baited pots under Alternative 1 would provide the most efficient use of time and provide the most cost benefits. Alternative 2 provides similar opportunities; however, deployment of non-baited gear adds inefficiencies since the vessel would need to spend time pulling the pots to bait them and deploy them again. This may reduce the cost saving as described earlier.

The activity associated with either alternative would not increase the workload for government staff that monitor fishery activity and management of the IFQ data. No additional communications between government agencies or within NMFS agencies would be needed. Therefore, no additional monetary impacts to government agencies are expected under Alternative 1 and 2.

3.4.3 Impacts to Safety at Sea

Under both Alternative 1 and 2, vessels would spend less time on the water therefore this action could lower the risk and exposure to potential fishing hazards. This action would support National Standard 10 to promote safety at sea for vessels, crew, and observers.

From 2011 to 2015, up to 26 vessels operated under the catch share fishery with fixed gear each year; however, the proposed action would likely affect only those vessels that operate above and below a management line. Roughly 2 to 4 vessels operate out of the Morrow Bay area and work north and south of the 36° north latitude. Roughly 4 vessels operate north and south of the 34°27′ north latitude. Finally, approximately 6 vessels operate north and south of the 40°10′ north latitude. Therefore this action would benefit at least 14 vessels.

Appendix A

NOAA Fisheries Service Type-Approved VMS Units
For Fisheries of the West Coast of the United States

Skymate I1500 VMS
McMurdo FMCT/G[1]
CLS America Thorium TST A2.0
CLS America Thorium LEO A2.0
Faria WatchDog 750VMS (with Messaging Terminal)
Network Innovations - Sailor VMS Gold[2]
Network Innovations – Sailor VMS Gold PlusThrane & Thrane Sailor VMS Silver (no new installs approved)[3]

[1] Formerly Boatracs
[2] Formerly GMPCS – Thrane & Thrane Sailor TT-3026D VMS Gold
[3] Units no longer approved for new purchase/install

Appendix B

OMB Control No. 0648-0573; Expires 2/28/2014

Declaration Report Worksheet

This worksheet is for your own use and is intended to help you organize information that will be submitted in a declaration report.

Please do not submit this worksheet to NMFS.

1) Dial 1-888-585-5518 to connect to the West Coast Groundfish Declaration Line.

2) You will be connected to a live operator during normal business hours (8:00 am to 4:30 pm Monday through Friday) to file a declaration or be asked to leave a voice mail declaration after hours, on weekends or holidays.

3) Provide your vessel identification number to the operator or voicemail.

Vessel Number						

4) Provide your 5 digit vessel pass code to the operator or voicemail.

Vessel Pass code				

5) Provide the two digit gear code from the list below, to the operator or voicemail.

Gear Code		

10 - Limited entry fixed gear,
not including shorebased IFQ 11
- Limited entry groundfish non-trawl,
shorebased IFQ
20 - Limited entry midwater trawl gear,
non-whiting shorebased IFQ,
21 - Limited entry midwater trawl,
Pacific whiting shorebased IFQ
22 - Limited entry midwater trawl,
Pacific whiting catcher/processor sector
23 - Limited entry midwater trawl,
Pacific whiting mothership sector
(catcher vessel or mothership)
30 - Limited entry bottom trawl,
shorebased IFQ,
not including demersal trawl
31 - Limited entry demersal trawl,
shorebased IFQ

33 - Open access longline gear for groundfish
34 - Open access groundfish trap or pot gear
35 - Open access line gear for groundfish
40 - Non-groundfish trawl gear for ridgeback prawn
41 - Non-groundfish trawl gear for pink shrimp
42 - Non-groundfish trawl gear for CA halibut
43 - Non-groundfish trawl gear for sea cucumber
50 - Tribal trawl gear
60 - Open access prawn trap or pot gear,
61 - Open access Dungeness crab trap or pot gear,
62 - Open access Pacific Halibut longline gear
63 - Open access salmon troll gear
64 - Open access California halibut line gear
65 - Open access sheephead trap or pot gear
66 - Open access Highly Migratory Species line gear
67 - Open access Coastal Pelagic Species net gear
68 - Open access California gillnet complex gear
69 - A gear that is not listed above

For your records, record the confirmation number provided by the operator. Re-enter the confirmation number in the area provided below.

Confirmation Number						

6) Ask the operator to review the information in your declaration. Once you confirm that your declaration report is correct you may disconnect from the West Coast Groundfish Declaration Line.

Public reporting burden for this collection of information is estimated to average 4 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Becky Renko, National Marine Fisheries Service/West Coast Region, at Becky.Renko@noaa.gov.

This information is confidential under Section 402 of the Magnuson-Stevens Fishery Conservation and Management Act. Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control

Appendix C

POLE STAR

IDP-690 by Skywave

http://www.skywave.com/en/our-technology/satellite-cellular-communication/idp-series/idp-600

Unit Cost?
$ 799.00. Includes IDP-690, power cable and mounting bracket. About one hour install time.

Transmission Cost?
$20-40/mo—Pings every 10 minutes, stored locally, then transmitted every 2 hours.

GeoFencing Capable?
Yes. Up to 128 boundaries (fences), each of which can be a circle or a polygon (256 points in each).

Additional I/O Ports for additional sensors?
Yes. 4 additional I/O (Analog or Digital) ports and one serial interface. (Sensors sold separately)

Satellite System?
Inmarsat IsaData Pro Type approved

Power?
Hard wired to vessel. 9-32V

Over the air Programming capable? Yes. Ability to remotely change ping rate frequency over the air as needed.

FWI 750 (Irridium only or DB includes cellular)

http://www.fwtelematics.com/commercial-fishing.html

Unit Cost?
$ 995.00

Transmission Cost?
$34.95/mo—720 position reports. NOAA type approval for this unit does not allow storing ping data locally and offloading it at designated intervals.

GeoFencing Capable?
Yes. Up to 380 GeoZones can be downloaded to the unit, which support complex polygon GeoFences.

Additional I/O Ports for additional sensors?
Yes. 4 additional I/O (Analog or Digital) ports
(Sensors sold separately)

Satellite System?
Iridium SBS (Short Burst Data) Network

Power?
Hard wired to vessel. 120mA draw

Over the air Programming capable?
Yes. Ability to remotely change ping rate frequency over the air as needed.
Additional Feature:
GeoFence Alert module included.