Proposed Rebuilding Plan for the American Samoa Bottomfish Fishery

Including a Draft Environmental Assessment and Regulatory Impact Review

(RTID 0648-XXXX)

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Abstract

The National Marine Fisheries Service (NMFS) proposes to implement a rebuilding plan for the bottomfish multi-species stock complex in American Samoa with an appropriate annual catch limit (ACL) and accountability measures (AMs) for the Guam bottomfish fishery. The rebuilding plan was developed by the Western Pacific Regional Fishery Management Council (Council) in coordination with the NMFS, the American Samoa Department of Marine and Wildlife Resources (DMWR), fishermen, and other interested and affected parties. The development of the rebuilding plan was initiated due to new information about bottomfish caught in the American bottomfish fishery that was unanticipated and significantly changed the understanding of the status of the stock complex.

When NMFS determines that a fishery is overfished or experiencing overfishing, section 304(e) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and implementing regulations at 50 CFR 600.310(j) require the Council to develop a long-term plan to end overfishing and rebuild the stock. The rebuilding plan must be implemented within two years of the determination that a fishery is in an overfished condition or experiencing overfishing. The rebuilding plan is required to be developed by the Council and submitted to NMFS within 15 months of the notification of overfishing or an overfished designation to allow sufficient time for NMFS to implement the plan. The rebuilding plan must specify a time for rebuilding that is as short as possible, considering the status of the biology of the affected stocks, the needs of the fishing communities, and the interaction of the stock with the marine ecosystem, and may not exceed 10 years.

In February 2020, NMFS notified the Council of its determination that the American Samoa bottomfish fishery, which is managed under the American Samoa Archipelago Fishery Ecosystem Plan (FEP), had a change in status based on the results of the most recent benchmark stock assessment for the fishery (Langseth et al., 2019). The stock assessment was produced by NMFS Pacific Islands Fisheries Science Center (PIFSC) using data through 2017 and showed that the American Samoa multi-species bottomfish complex, which harvests bottomfish management unit species (BMUS), is both overfished and experiencing overfishing. The Council began the process of developing a rebuilding plan immediately upon notification of the change in the stock status. On November 1, 2019, the Council requested that NMFS develop an interim management measure for the American Samoa bottomfish fishery due to concerns about the economic, social, and cultural impacts of immediately implementing a catch limit much lower than recent catch levels, and NMFS implemented an interim catch limit (ICL) of 13,000 lb for 2020 and 2021 to reduce overfishing in the fishery while minimizing socio-economic impacts to American Samoa fishing communities. The ICL under the interim measure was specified by NMFS on November 16, 2020 (85 FR 73003) and will be in place for 180 days until May 17, 2021; however, the ICL can be extended another 186 days while the rebuilding plan is finalized and implemented to immediately replace the interim measure on approximately November 17, 2021.

Catch projections from NMFS Pacific Islands Fisheries Science Center (PIFSC) indicate that 1,500 lb of annual bottomfish catch would result in a 50 percent probability that the American Samoa bottomfish stock complex rebuilds to its biomass at maximum sustainable yield (B_{MSY}) in nine years. In the complete absence of fishing mortality (i.e., 0 lb of annual catch), the stock

complex would have a 50 percent probability of rebuilding to its B_{MSY} in just eight years. With 12,571 lb of annual catch, which is the expected level of annual catch in the event of a closure of the fishery in Federal waters due to continued fishing in territorial waters, the stock complex would not be likely to rebuild within 40 years, which is the extent that biomass projections were generated. Consistent with this information, the Council proposes either the implementation of a 1,500 lb annual catch limit with in-season and post-season accountability measures or the maximum Federal action of closing of the American Samoa bottomfish fishery in Federal waters. There would be no accountability measures associated with fishery closure because catch would not need to be tracked towards a catch limit. Rebuilding timelines for these alternatives likely will not be maintained as projected due to displacement of bottomfish fishing to territorial waters, and NMFS does not have information to determine the level of displacement that may occur.

This rebuilding plan would be in effect starting approximately November 17, 2021 until such time that overfishing is no longer occurring and the stock complex is determined to have rebuilt to its B_{MSY}. Under existing management in accordance with the *Fishery Ecosystem Plan for the American Samoa Archipelago*, as amended (American Samoa FEP), the fishing year for bottomfish in American Samoa begins January 1 and ends December 31 and catch projections from PIFSC coincide with this cycle. Bottomfish catches from both territorial waters (generally from the shoreline to 3 nm offshore) and Federal waters (the Exclusive Economic Zone) around American Samoa would be counted towards the catch limit or continue to be monitored in the event of a complete Federal fishery closure. NMFS will provide the public an opportunity to provide input and comment on this draft environmental assessment (EA) and the proposed rule when the proposed rule is published in the *Federal Register*.

Two alternative management measures, consistent with Magnuson-Stevens Act requirements, were considered by NMFS and the Council to comprise the rebuilding plan, and this draft EA was prepared to evaluate the potential environmental effects of the proposed features of these management measures. The draft EA includes a description of the information and methods used by NMFS and the Council to develop the proposed management measures. The analysis in the draft EA indicates that the proposed management measures would not result in large beneficial or adverse effects on target, non-target, or bycatch species; protected species, marine habitats, or fishing communities relative to the environmental baseline. This result is expected is because the proposed Federal action would either adjust authorized catch levels or restrict fishing in Federal waters, but bottomfish fishing would still be allowed in territorial waters. Neither alternative would rebuild the stock complex in 10 years, and substantial short-term economic and social impacts to local fishing communities are not expected to occur.

Table of Contents

Table of Figures

Tables of Tables

List of Acronyms and Abbreviations

ABC – Acceptable Biological Catch
ACL – Annual Catch Limit
ACT – Annual Catch Target
AM – Accountability Measure
ASAC – American Samoa Administrative Code
B – Biomass
B_{MSY} – Biomass at Maximum Sustainable Yield
BMUS – Bottomfish Management Unit Species
BSIA – Best Scientific Information Available
CFR – Code of Federal Regulations
CNMI – Commonwealth of the Northern Mariana Islands
DMWR – American Samoa Department of Marine and Wildlife Resources
DPS – Distinct Population Segment
EA – Environmental Assessment
ECS – Ecosystem Component Species
EEZ – Exclusive Economic Zone
EFH – Essential Fish Habitat
ESA – Endangered Species Act
F – Fishing Mortality
F_{MSY} – Fishing Mortality at Maximum Sustainable Yield
FEP – Fishery Ecosystem Plan
fm – Fathoms
FMP – Fishery Management Plan
FONSI – Finding of No Significant Impact
FQ – FONSI Question
FR – Federal Register
GCA – Guam Code Annotated
GPS – Global Positioning System
H – Harvest Rate
H_{CR} – Harvest Rate associated with overfishing as determined by the Harvest Control Rule
HAPC – Habitats of Particular Concern
lb – Pounds
LOF – List of Fisheries
M – Natural Mortality
MFMT – Maximum Fishing Mortality Threshold
MMPA – Marine Mammal Protection Act
MPA – Marine Protected Area
Magnuson-Stevens Act – Magnuson-Stevens Fishery Conservation and Management Act
MSST – Minimum Stock Size Threshold
MSY – Maximum Sustainable Yield
MUS – Management Unit Species
NA – Not Applicable
NEPA – National Environmental Policy Act
nm – Nautical Miles

NMFS – National Marine Fisheries Service
NOAA – National Oceanic and Atmospheric Administration
OFL – Overfishing Limit
OLE – Office of Law Enforcement
P* – Probability or Risk of Overfishing
PIFSC – NMFS Pacific Islands Fisheries Science Center
PIRO – NMFS Pacific Islands Regional Office
RIN – Regulatory Identification Number
RIR – Regulatory Impact Review
SAFE report - Stock Assessment and Fishery Evaluation report
SDC – Status Determination Criteria
SEEM – Social, Economic, and Ecological Considerations, or Management Uncertainty
SSC – Scientific and Statistical Committee
USFWS – U.S. Fish and Wildlife Service
WPacFIN – Western Pacific Fisheries Information Network
WPRFMC (or Council) – Western Pacific Regional Fishery Management Council
WPSAR – Western Pacific Stock Assessment Review

1 INTRODUCTION

1.1 Background Information

The Western Pacific Fishery Management Council (Council) was established in 1976 under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) to develop management plans for fisheries within the United States Fishery Conservation Zone around Hawaii, U.S. Pacific territories, commonwealth, and possessions of the United States in the Pacific Ocean. From the late 1970's through 2009, the Council managed fisheries throughout the Western Pacific Region under separate taxonomic-based fishery management plans (FMPs), including the Bottomfish and Seamount Groundfish FMP (WPRFMC, 1986). These FMPs were reorganized into archipelagic fishery ecosystem plans (FEPs) in 2009, including the FEP for the American Samoa Archipelago (WPRFMC, 2009).

The bottomfish fishery in American Samoa (hereafter, the fishery) primarily harvests bottomfish management unit species (BMUS), an assemblage or complex of species that include emperors, snappers, groupers, and jacks (Table 1). As authorized by the Magnuson-Stevens Act, the National Marine Fisheries Service (NMFS) and the Council manage the BMUS fishery in Federal waters (i.e., the U.S. Exclusive Economic Zone, or EEZ) around American Samoa in accordance with the American Samoa FEP, as amended, and implementing regulations at Title 50 Code of Federal Regulations, Part 665 (50 CFR 665). The American Samoa FEP and amendments are available at the Council's website.

Table 1. List of BMUS in American Samoa.

Scientific Name	Common Name(s)	Family
Aphareus rutilans	Red snapper, silvermouth, lehi	Lutjanidae
Aprion virescens	Gray snapper, jobfish	Lutjanidae
Caranx lugubris	Black trevally, jack	Carangidae
Etelis carbunculus	Red snapper, ehu	Lutjanidae
Etelis coruscans	Red snapper, onaga	Lutjanidae
Lethrinus rubrioperculatus	Redgill emperor	Lethrinidae
Lutjanus kasmira	Blueline snapper	Lutjanidae
Pristipomoides filamentosus	Pink snapper, paka	Lutjanidae
Pristipomoides flavipinnis	Yelloweye snapper	Lutjanidae
Pristipomoides zonatus	Flower snapper, gindai	Lutjanidae
Variola louti	Lunartail grouper, lyretail grouper	Serranidae

The American Samoa bottomfish fishery has been managed by the Council since 1986, when the fishery had a significant commercial component with a maximum of 50 vessels landing over 100,000 pounds of bottomfish annually and accounting for nearly half of total catch of the territory's commercial fisheries (Levine and Allen, 2009; WPRFMC, 2020a). In 1988, bottomfish fishing in American Samoa began to decline as skilled commercial fishermen shifted focus from bottomfish fishing to trolling and small-scale longlining for pelagic species like albacore (WPRFMC, 2020a). Currently, the American Samoa bottomfish fishery is relatively

small and primarily non-commercial, but it is still of importance to the local economy as well as from socio-cultural and food security standpoints (WPRFMC, 2009; WPRFMC, 2020a).

Since 2012, the Council and NMFS have managed the American Samoa bottomfish fishery with annual catch limits (ACLs) and accountability measures (AMs) for the BMUS. The ACLs and AMs were designed to prevent overfishing and ensure the fishery was sustainably managed (see WPFMC, 2011). In no prior year has the American Samoa bottomfish fishery attained or exceeded the ACL, and up until the most recent stock assessment in 2019, the fishery was considered to be harvesting BMUS sustainably (Yau et al., 2016; NMFS, 2017).

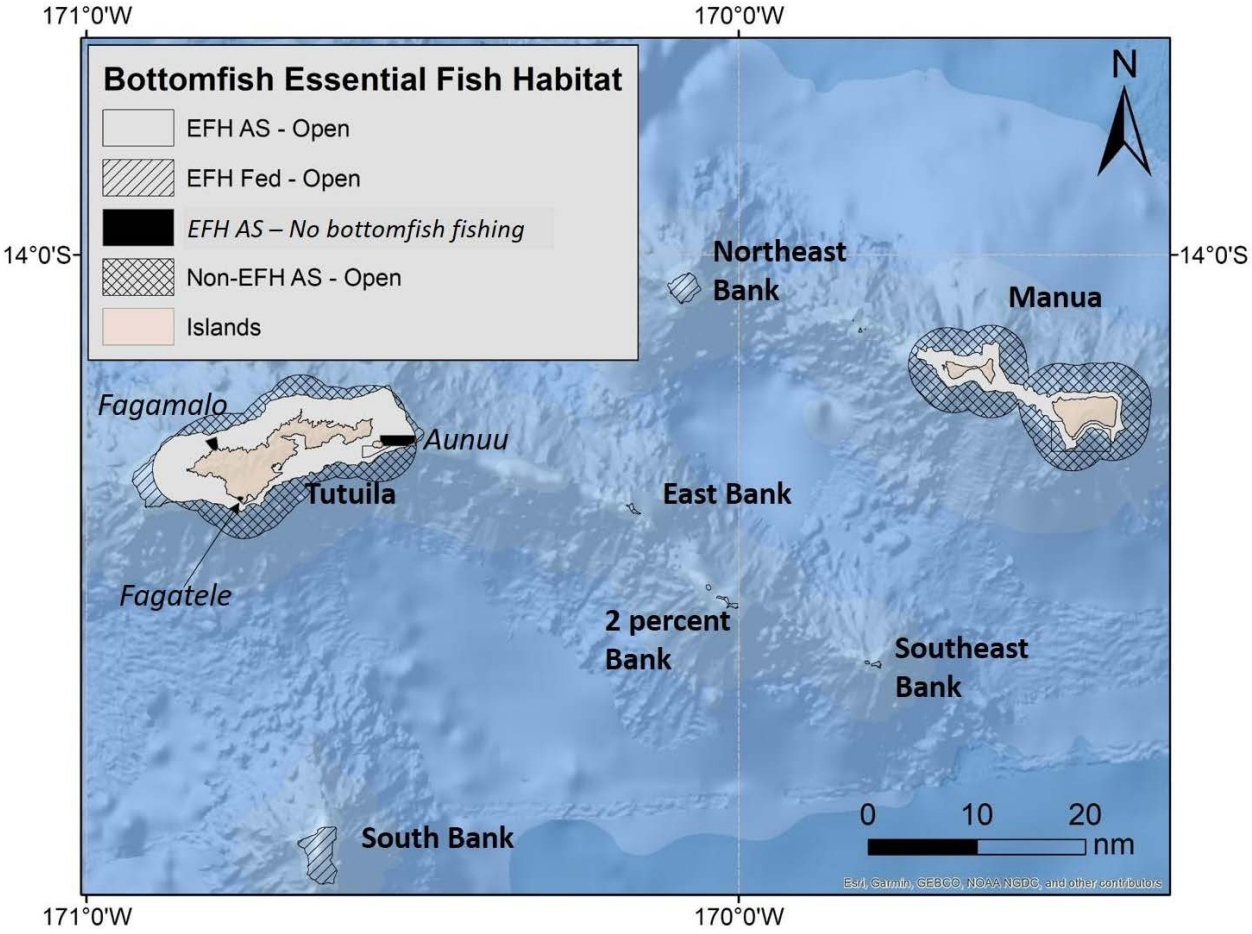

Figure 1. Map of Essential Fish Habitat (EFH) for bottomfish around American Samoa in Federal (Fed) and territorial (AS) waters.

Bottomfish habitat is found in both Federal and territorial waters (Figure 1), and while commercial and non-commercial fisheries for bottomfish occur primarily in nearshore waters, some fishermen make longer trips to specific offshore bank areas (Brodziak et al., 2012). Habitat in these banks is primarily deepwater habitat where red snappers (e.g., *Etelis* spp. and *Pristipomoides* spp.), rather than reef-associated bottomfish, are caught. Catch from both territorial waters (generally, 0–3 nm from shore) and Federal waters (the EEZ) is counted towards the ACL. As shown in Figure 1, the majority of bottomfish habitat is in territorial waters (85 percent), and the rest is in Federal waters (15 percent), primarily located west of Tutuila.

Existing data reporting systems do not provide quantitative estimates of how much bottomfish catch comes from territorial versus Federal waters, and it is not possible to estimate catch of individual species from specific banks or fishing grounds.

1.2 Stock Assessment Findings and Implications

In August 2019, NMFS Pacific Islands Fisheries Science Center (PIFSC) completed a new benchmark stock assessment for the bottomfish fisheries of Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and American Samoa (Langseth et al., 2019). The assessment was conducted as a benchmark, indicating that all components of the assessment analyses were re-evaluated by PIFSC and several changes were made relative to previous assessments of the bottomfish fisheries. The assessment results revealed that the bottomfish stock harvested in American Samoa is subject to overfishing and is overfished based on the stock status determination criteria (SDC) specified in the American Samoa FEP (WPRFMC, 2009). This is the first assessment that indicated the stock is overfished or subject to overfishing.

The new benchmark stock assessment differs from previous assessments in several ways. The assessment included additional years of fishing and catch data, used new species lists[1], filtered catch data based on gear, standardized the catch per unit effort for covariates that could affect the catch rate, and applied a Bayesian state space surplus production model[2] (Langseth et al. 2019). Based on information contained in the 2019 assessment (Table 2), the average catch of American Samoa BMUS for the most recent five year period of data included (2013–2017) was 21,139 lb. These numbers included catch of BMUS reported at the species level, plus an estimate of BMUS catch reported under more general categories (e.g., snapper, emperor, deep bottomfish). Estimated total catch data for 2018 and 2019 are available in the Council's Stock Assessment and Fishery Evaluation (SAFE) Report for the American Samoa Archipelago (WPRFMC, 2020a) but are not directly comparable. The assessment information estimated the long-term maximum sustainable yield (MSY) in the fishery at an annual catch of 28,800 lb (Table 3). However, overfishing probability projection values for 2020 through 2025 (i.e., through the terminal year of the assessment) show that the level of catch associated with a 50 percent probability of overfishing is only 8,000 lb of BMUS annually through 2025 (see Table 20 in Langseth et al., 2019). Therefore, to end overfishing in the fishery, the 2019 assessment projection results indicate total catch of BMUS in American Samoa must be limited to no more than 8,000 lb in each calendar year. This overfishing limit (OFL) is currently much lower than the MSY because the most recent biomass (B) estimates are substantially lower than the biomass needed to produce MSY (i.e., $B_{2017}/B_{MSY} = 0.38$; see Table 23 in Langseth et al., 2019).

The stock assessment findings were presented by PIFSC to the Council at its 180th meeting on October 22-24, 2019 in Pago Pago, American Samoa (84 FR 53685, October 8, 2019), and

[1] On February 8, 2019, NMFS implemented the Council's recommendation to modify the lists of species in American Samoa, the CNMI, Guam, and Hawaii that are included as BMUS (84 FR 2767). Some species were reclassified as ecosystem component species (ECS) because they were not targeted, were a minor component of the fishery, and were not in need of management. The 2019 stock assessment analyzed the revised stock complexes. In American Samoa, this reduced the number of species in the stock complex from 17 to 11 (Table 1).

[2] This type of fishery production model is used to assess the biomass and exploitation level of marine populations in situations where age and size information are unavailable. It assumes that population growth, which translates to yield or production, is greatest at an intermediate level of biomass. The excess production at this point is the maximum sustainable yield.

showed that BMUS in American Samoa are overfished and undergoing overfishing. As required under National Standard 2 of the Magnuson-Stevens Act (50 CFR 600.315), the 2019 assessment was subjected to an independent review by a panel of independent fishery science experts (i.e., a Western Pacific Stock Assessment Review, or WPSAR), who concurred that the changes to the assessment process were appropriate, improved on the previous assessments, and provided scientifically sound management advice (Martell et al., 2019). The WPSAR panel reports and the peer-reviewed benchmark stock assessment were received by the Council's Scientific and Statistical Committee (SSC) at its 134th meeting on October 15-17, 2019 in Honolulu, Hawaii. Though the SSC expressed its concerns regarding the impacts of the data used for the stock assessment of its results, it endorsed the stock assessment for management purposes.

Table 2. Catch of American Samoa BMUS from 2000 to 2017 used in the new benchmark stock assessment (Langseth et al., 2019).

Year	BMUS Catch (lb)
2000	23,913
2001	42,301
2002	31,657
2003	21,039
2004	17,622
2005	14,541
2006	15,569
2007	22,359
2008	32,965
2009	40,446
2010	11,978
2011	24,569
2012	7,688
2013	19,740
2014	20,532
2015	29,511
2016	20,181
2017	15,913
Recent (five-year) Average	**21,139**

(Source: Langseth et al., 2019)

On January 10, 2020, PIFSC sent a memorandum to the Council stating that NMFS determined the 2019 benchmark stock assessment to be the best scientific information available (BSIA) consistent with National Standard 2. On February 6, 2020, NMFS determined that the American Samoa bottomfish stock is overfished and subject to overfishing. On February 10, 2020, the NMFS Pacific Islands Regional Office (PIRO) issued a notification informing the Council of this determination, which included the basis for the change in stock status and outlined the obligations of the Council to take immediate action to end overfishing and to implement a plan to rebuild the stock within two years as stipulated by the Magnuson-Stevens Act.

In response to the assessment results and notification from NMFS, at its 180th meeting in Pago Pago, American Samoa, the Council requested that NMFS implement an interim measure to reduce overfishing consistent with provisions of section 304(e)(6) of the Magnuson-Stevens Act. The Council noted that immediately ending overfishing (i.e., limiting total BMUS catch to 8,000 lb) is expected to result in severe economic and cultural impacts to community members who use bottomfish resources for commercial, subsistence, religious, and cultural purposes. Therefore, the Council requested that the interim measure include a catch limit that reduces overfishing while increasing biomass in 2020. NMFS published a final rule for the interim measure on November 16, 2020 (85 FR 73003), with a preferred alternative for a 13,000 lb interim catch limit (ICL) and in-season AM to close the fishery in Federal waters if this ICL was exceeded (NMFS, 2020). The level of 13,000 lb for the ICL was selected by PIFSC using estimates of the maximum level of catch that would allow BMUS biomass to increase in calendar years 2020 and 2021 from the surplus production model in the 2019 benchmark stock assessment. The action to implement a rebuilding plan for the American Samoa bottomfish fishery would take the place of these interim measures once finalized.

At the Council's 134th SSC meeting from November 30 to December 1, 2020, the SSC recommended that the Council implement Alternative 2 for the rebuilding plan for the American Samoa bottomfish fishery, stating that a complete restriction of access to deepwater snappers at the offshore banks would result in cultural impacts to the local communities. Additionally, the SSC noted concerns that the substantially lower ACL associated with this rebuilding plan could discourage fishers to report their catch, as data collection systems in American Samoa for the non-commercial sector of its bottomfish fishery are currently voluntary. At the 184th Council meeting on December 2 to 4, 2020, the Council deferred taking initial action to identify a preferred alternative for the rebuilding plan to allow for the American Samoa Government to have additional time to complete its own territory bottomfish fishery management plan. Council members remarked on issues with data collection and its role in the rebuilding plan as well as future stock assessments, and they noted that data collection could be further hampered by the implementation of stricter regulations. The Council's American Samoa Advisory Panel and SSC both recommended Alternative 2, while another Council member advocated for Alternative 3, suggesting that it may provide the best opportunity to rebuild the stock. The Council will consider taking action on the rebuilding plan for the American Samoa bottomfish fishery again at its 185th meeting in March 2021.

1.3 Magnuson-Stevens Act Criteria for Rebuilding Overfished Fisheries

Pursuant to section 304(e)(2) of the Magnuson-Stevens Act and implementing regulations at 50 CFR 600.310(j)(1), if the Secretary of Commerce (Secretary) determines at any time that a fishery is overfished, overfishing is occurring, or a stock is approaching an overfished condition, the Secretary shall immediately notify the Council and request that action be taken to end overfishing in the fishery and to implement conservation and management measures to rebuild the impacted fish stocks. As required by Magnuson-Stevens Act section 304(e)(3) and implementing regulations at 50 CFR 600.310(j)(2), upon notification of a stock undergoing overfishing, the Council should immediately begin working with its SSC to ensure that the Acceptable Biological Catch (ABC) is set appropriately to end overfishing. The Council must prepare and implement a FMP, plan amendment, or proposed regulations for the fishery within two years to end overfishing and rebuild affected stocks, and Council actions should be

submitted to NMFS within 15 months of the initial notification to ensure there is sufficient time to enact the measures. If the Council does not submit one of these items to the Secretary within two years, the Secretary will prepare an FMP or plan amendment and any accompanying regulations to stop overfishing and rebuild affected stocks of fish within nine months as indicated by Magnuson-Stevens Act section 304(e)(5).

Section 304(e)(4) of the Magnuson-Stevens Act and implementing regulations at 50 CFR 600.310(j)(3) state that any FMP, plan amendment, or proposed regulation prepared by a Council pursuant to Magnuson-Stevens Act section 304(e)(3) or 304(e)(5) must specify a time period for rebuilding the fishery that is as short as possible and does not exceed 10 years, taking into account the status and biology of the overfished stocks, the needs of the fishing communities, and the interaction of the stock with the marine ecosystem. The minimum time for rebuilding a stock (T_{min}) is the amount of time the stock is expected to take to rebuild to its biomass at MSY (B_{MSY}) in the absence of any fishing mortality, where "expected" refers to a 50 percent chance of attaining B_{MSY} and T_{min} is calculated from the first year the rebuilding plan is likely to be implemented. If T_{min} is less than 10 years, then the maximum time for rebuilding a stock to its B_{MSY} (T_{max}) is 10 years. If T_{min} exceeds 10 years, then T_{max} can be calculated with one of the following methods:

i. T_{min} plus the length of time associated with one generation time for the stock, where "generation time" is the average length of time between when an individual is born and the birth of its offspring;
ii. The amount of time the stock is expected to take to rebuild to B_{MSY} if fished at 75 percent of the Maximum Fishing Mortality Threshold (MFMT); or
iii. T_{min} multiplied by two.

When T_{min} exceeds 10 years, T_{max} is the maximum time for rebuilding linked to the biology of the stock. A Council and its SSC should consider all relevant biological data and its uncertainties when selecting a method for determining T_{max}, and rationale must be provided for the decisions based on BSIA. The target time to rebuild a stock (T_{target}) is the specified time period for rebuilding the stock that is considered to be as short a time as possible and cannot exceed T_{max}, and the fishing mortality associated with achieving T_{target} is known as $F_{rebuild}$.

Additionally, pursuant to section 304(e)(4) of the Magnuson-Stevens Act and implementing regulations at 50 CFR 600.310(j)(3), the action prepared to end overfishing and rebuild a stock must allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery and, for a fishery managed under an international agreement, reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

As required by Magnuson-Stevens Act section 304(e)(7) and implementing regulations at 50 CFR 600.310(j)(3)(iv), the Secretary will review rebuilding plans at least every two years to determine whether the plan has resulted in adequate progress towards ending overfishing and rebuilding the affected fish stock. The Secretary may find that adequate progress is not being made if $F_{rebuild}$ or the associated ACL is exceeded and AMs are not correcting the operational issue that caused the overage nor addressing any biological consequences to the stock resulting from the overage. A lack of adequate progress may also be found when the rebuilding

expectations of a stock are significantly changed due to new and unexpected information about stock status, which will cause the Secretary to notify the Council to develop and implement a new or revised rebuilding plan within two years. Revising rebuilding timeframes or $F_{rebuild}$ is not necessary unless the Secretary determines adequate progress is not being made. If a stock is not rebuilt by T_{max}, then the fishing mortality rate should be maintained at its current $F_{rebuild}$ or 75 percent of the MFMT, whichever is less, until the stock is rebuilt or the fishing mortality rate is changed as a result of the Secretary finding that adequate progress is not being made.

1.4 Proposed Action

Under the proposed action, the Council would submit and NMFS would implement a rebuilding plan for the American Samoa bottomfish fishery consistent with Magnuson-Stevens Act section 304(e) and implementing regulations at 50 CFR 600.310(j). The proposed rebuilding plan would either close the fishery in Federal waters or set an ACL for American Samoa BMUS of 1,500 lb at the stock complex level starting in late 2021 until such time that the stock complex is determined to have attained its B_{MSY}. An annual catch level of 1,500 lb would prevent overfishing and be projected to rebuild the fishery from its overfished designation in nine years. If an ACL is implemented, NMFS would use catch data from local resource management agencies to estimate landings for the stock complex for the fishing year, which begins on January 1 and ends on December 31 each year. As an in-season AM, if NMFS projects that the ACL has been attained, then Federal waters would be closed to bottomfish fishing at that point or immediately if it is determined the ACL has already been attained. Given the average amount of catch in recent years for the American Samoa bottomfish fishery relative to the 1,500 lb ACL, it is likely that the fishery would be closed in Federal waters within one to three months after implementation of the ACL. As a post-season AM, if the ACL is exceeded relative to a three year running average of catch for the fishery, a downward adjustment would be applied and the ACL for the subsequent year would be reduced by the amount of overage. The application of an ACL and AMs would likely not result in rebuilding of the stock complex in nine years despite the projections due to continued fishing in territorial waters and displacement of fishing effort from Federal waters. Similarly, if a Federal closure of the fishery is implemented instead of an ACL and AMs, it is not likely that fishery would rebuild in eight years as projected, as the Federal action would also not prevent fishing in territorial waters. Without complementary territorial action to close fishing in these waters, fishing is expected to continue there and would potentially offset some of the conservation benefit of either management measure. Neither alternative for Federal action would be expected to result in the rebuilding of the fishery in 10 years as required by the Magnuson-Stevens Act. The public was given an opportunity to submit comments on the for the rebuilding plan at the 184th Council meeting in December 2020. The public will also be able to comment on the proposed rebuilding plan both at the 185th Council meeting in March 2021 and in response to the draft environmental assessment (EA) during its submission process. NMFS will consider public comments received when developing the final rule and evaluating whether to implement the rebuilding plan for the fishery.

1.5 Purpose and Need

The purpose of this proposed action is to establish a FEP amendment with management measures appropriate to end overfishing by the American Samoa bottomfish fishery and rebuild the bottomfish stock complex around American Samoa from its overfished designation as required by Magnuson-Stevens Act section 304(e)(3). Consistent with the provisions of the Magnuson-

Stevens Act and implementing regulations at 50 CFR 600.310(j)(2), the need for this action is to end overfishing as identified by the most recent stock assessment (Langseth et al., 2019) and rebuild the American Samoa bottomfish stock complex from the overfished condition also specified in the stock assessment. Because the Council was notified by NMFS that the American Samoa bottomfish stock complex is overfished and subject to overfishing on February 10, 2020, the action to rebuild the stock must be implemented within two years (i.e., by February 10, 2022) and, if approved, remain in effect until such time that the stock complex is determined to have reached its B_{MSY}.

1.6 Action Area

The fishery management area for the American Samoa FEP bottomfish fishery includes the EEZ around American Samoa. However, the action area also encompasses those areas in which fishing for BMUS occurs in territorial and Federal waters of American Samoa (Figure 1). Bottomfish fishing primarily occurs in waters from the surface to 230 m depth around the islands and offshore banks of American Samoa, including Tutuila, Aunuu, and the Manua Islands (i.e., Tau and Ofu-Olosega) approximately 54 nm east of Tutuila. As of June 3, 2013, commercial fishing is prohibited in Rose Atoll Marine National Monument (78 FR 32996), which is approximately 80 nm east of Tau. The fishery does not fish in areas closed to fishing around the islands of Tutuila and Aunuu, which include several community and territorial marine protected areas (MPAs), including at Fagamalo and several National Marine Sanctuary Management Areas (Figure 1). Including those designated by the American Samoa Community-Based Management Program (pursuant to the American Samoa Administrative Code, or ASAC, § 24.1001 through 24.1029), MPAs occupy approximately 35,203 km^2 of across 27 sites in the territory (Raynal et al., 2016), though many of them are nearshore.

1.7 List of Preparers

Western pacific Regional Fishery Management Council
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PIFSC Stock Assessment Program
Felipe Carvalho, Program Manager
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1.8 Public Review Process and Involvement

The Council convenes several meetings per year, including meetings for its SSC, all of which are open to the public. The Council notifies and invites the public to these meetings through notices published in the *Federal Register* and on its website. Public comment, including both oral and written statements, are accepted by the Council and SSC on its agenda items for the meeting.

At the Council's 134th SSC meeting on October 15-17, 2019 in Honolulu, Hawaii and the 180th Council meeting on October 22-24, 2019 in Pago Pago, American Samoa, NMFS presented the

results of the most recent benchmark stock assessment for the American Samoa bottomfish multi-species complex (Langseth et al., 2019). Both meetings were open to the public, which was notified through the *Federal Register* (84 FR 53685, October 8, 2019) and the Council's website. At the 180th Council meeting where the Council discussed issues associated with ACLs and AMs for American Samoa BMUS, public discussion focused on the implications of the findings of the 2019 benchmark stock assessment and their validity. Bottomfish fishermen from American Samoa expressed concerns that the data from creel surveys and the commercial receipt program collected by the American Samoa Department of Marine and Wildlife Resources (DMWR) in collaboration with PIFSC and used for the stock assessment are not representative of the fishery despite these being the only data available to use in stock assessments. Fishermen also noted that there are only a small number of fishermen active in the fishery (fewer than 30 according to the 2020 List of Fisheries, or LOF).

In addition to concerns about available catch data, bottomfish fishermen and Council members from American Samoa expressed concerns about the economic, social, and cultural effects of a implementing a catch limit much lower than recent catch levels and of a closure of the bottomfish fishery in Federal waters. Those concerns were reflected in the Council's request for an interim action, which was sent to NMFS on November 1, 2019. NMFS published a final rule for the interim measure on November 16, 2020 (85 FR 73003) with a preferred alternative (i.e., an ICL of 13,000 lb and an in-season AM) to provide balance between the regulatory requirements to reduce overfishing and the needs of the fishery and associated communities for continued access to bottomfish to the degree allowed by BSIA and Federal regulations regarding interim actions (NMFS, 2020). In a letter to NMFS on June 15, 2020, the American Samoa DMWR indicated that they opposed the proposed ICL and AM, and that they would not implement complementary management measures.

At the Council's 182nd meeting held virtually on June 23 to 25, 2020, there was a preliminary presentation on the development of the bottomfish rebuilding plan for American Samoa. The meeting was open to the public, which was notified through the *Federal Register* (85 FR 34420, June 4, 2020) and the Council's website. Discussion between PIFSC staff and the Council on this agenda item during the public comment period focused on addressing concerns from Council members regarding the improvement of American Samoa's bottomfish data and stock assessment prior to the next benchmark stock assessment scheduled for 2023. PIFSC staff emphasized that there may be new sources of data used for the next benchmark stock assessment.

At the Council's 138th SSC meeting on November 30 to December 1, 2020 and the 180th Council meeting on December 2 to 4, 2020, both of which were held virtually via web conference, Council staff presented preliminary alternatives for parameters to be recommended for implementation in the rebuilding plan for the American Samoa bottomfish fishery. Both meetings were open to the public, which was notified through the *Federal Register* (85 FR 73029, November 16, 2020) and the Council's website. At the 138th SSC meeting where the SSC deliberated alternatives for the rebuilding plan, discussion between PIFSC staff and the SSC during the public comment period was centered on efforts by the PIFSC Stock Assessment Program to enhance the utilization of available data, refine assessment methodologies, and potentially split the single BMUS stock complex into multiple stocks. At the 184th Council meeting where the Council discussed the potential alternatives for implementing a rebuilding plan for the American Samoa bottomfish fishery, discussion between PIFSC staff and the

Council during the public comment period similarly focused on efforts to improve the next benchmark stock assessment, and Council members were encouraged to discern between these efforts and the current action to implement a rebuilding plan. The Council deferred action on recommending rebuilding plan parameters for the American Samoa bottomfish fishery until its 185th meeting scheduled for March 22 to 25, 2021, which will also be open to the public, to allow for the American Samoa Government to have sufficient time to develop its own territory bottomfish fishery management plan.

NMFS and the Council will also seek public comment on the draft EA, Regulatory Impact Review (RIR), and proposed rebuilding plan. The reader may find instructions on how to comment and obtain a copy of this EA, RIR and proposed rule by searching for RIN 0648-xxxx at www.regulations.gov, or by contacting the responsible official or Council at the above address. NMFS will solicit comments on the action for a 60-day period when the proposed rule is published. Specific dates will be defined in the published rule. NMFS will consider comments received by the deadline listed in the rule when developing the final rule for the proposed rebuilding plan. Some of the language and structure used for this draft EA were based on the final EA on Interim Measures to Address Overfishing in the American Samoa Bottomfish Fishery in 2020 and 2021 (NMFS, 2020) due to the similarity of the proposed actions and action area.

2 ALTERNATIVES CONSIDERED

2.1 Development of the Alternatives

The alternatives considered in this document were developed by the Council, pursuant to Magnuson-Stevens Act requirements, in response to the notification by NMFS PIRO that the American Samoa bottomfish fishery is overfished and experiencing overfishing. Three alternatives were generated to evaluate a variety of management alternatives, ranging from the baseline of maintaining the status quo (Alternative 1) to implementing the maximum Federal action possible (i.e., closing the bottomfish fishery in Federal waters, Alternative 3). Alternative 2 would close the American Samoa bottomfish fishery in Federal waters when the annual catch reaches 1,500 lb in accordance with the in-season AM, which would end overfishing and rebuild the fishery within nine years if the fishery fully adheres to the authorized level of catch. To help correct overages to the ACL, Alternative 2 would also implement a post-season AM where a downward adjustment would be applied and the ACL for the subsequent year by the amount of overage if the current ACL is exceeded relative to the recent three year running average of catch. Conversely, Alternative 3 would have an authorized catch level of 0 lb that would end overfishing and rebuild the fishery in eight years with no AMs.

The initial phase of alternative development and consideration of their effects on the fishery is the comparison of stock status against measures of overfishing and overfished status, which is done in stock assessments performed by PIFSC. Under the Council's FEP for American Samoa (WPRFMC, 2009), overfishing of bottomfish occurs when the fishing mortality rate (F) exceeds the fishing mortality rate for maximum sustainable yield (F_{MSY}) for one year or more; this is the MFMT and is expressed as a ratio, $F/F_{MSY} = 1.0$. Thus, if the F/F_{MSY} ratio exceeds 1.0 for one year or more, overfishing is occurring. A stock is a considered to be overfished when its biomass (B) declines below the level necessary to produce MSY on a continuing basis (B_{MSY}), which is when $B \leq (1\text{-}M)*B_{MSY}$, where M is the natural mortality of the stock. The benchmark stock assessment defined M for Pacific Island bottomfish complexes as 0.3 (Langseth et al., 2019), so bottomfish stocks become overfished when $B \leq 0.7*B_{MSY}$; this value is known as the minimum stock size threshold (MSST) and may also be expressed as the ratio $B/B_{MSY} = 0.7$. Thus, if the B/B_{MSY} ratio falls below 0.7, the stock complex is considered overfished. If possible, SDC of MFMT and MSST are applied to individual species within the multi-species stock complex. Alternatively, when that is not possible, SDC are applied to indicator species for the multi-species stock complex. Current fishery data does not have the resolution to allow the use of either approach for bottomfish in American Samoa, therefore the Council and NMFS apply SDC to the entire bottomfish multi-species complex as prescribed in the American Samoa FEP (WPRFMC, 2009). Both the 2015 (Yau et al., 2016) and 2019 (Langseth et al., 2019) stock assessments used the same approach of evaluating bottomfish as a multi-species stock complex.

The complicated process of developing alternatives, generating rebuilding timelines, and analyzing potential impacts was exacerbated due to the existence of multiple sources from which utilize time series data could be utilized, including both the time series of catch presented in the stock assessment (Langseth et al., 2019) as well as the time series of catch included in the Council's annual SAFE report (WPRFMC, 2020a). Generally, the catch data from the stock assessment are considered to be more complete than the data in the annual SAFE report due to the consideration of information from multiple sources. However, the use of catch data from the

Council's annual SAFE report was heavily considered because it provides estimates through 2019 whereas the stock assessment time series ends in 2017. Additionally, the data presented in the SAFE report are the main source of information used for fishery monitoring under normal circumstances. During the development of this rebuilding plan, the PIFSC SAP appended the time series data available in the stock assessment with estimates of catch for 2018 and 2019. Ultimately, it was decided to utilize the data generated by the PIFSC SAP because the stock assessment and, by extension, the data included therein are BSIA, and these data were also used to generate the biomass projections and associated rebuilding timelines presented in this document. While catch estimates for 2020 are available at the time this document is finalized, the presented analyses only consider data through 2019.

The development of Alternative 2 began with estimation of the OFL for the American Samoa bottomfish fishery from the benchmark stock assessment (see Section 2.1.1.1). The Council's SSC accepted the benchmark stock assessment (Langseth et al., 2019) at its 134th meeting in October 2019 and recommended the Council convene its Risk of Overfishing Analysis (P*) and Social, Ecological, Economic, and Management (SEEM) Uncertainty working groups. The Council held a P* working group to quantify the scientific uncertainty associated with the stock assessment and lower the MSY-based OFL to specify the Acceptable Biological Catch (ABC). The P* working group determined a total reduction score of 20 percent from the OFL to account for scientific uncertainty, meaning that the American Samoa bottomfish fishery should be managed at a 30 percent risk of overfishing (WPRFMC, 2020b); this risk of overfishing, which is the ABC for the fishing years from 2021 to 2024 corresponds to a catch level of 2,000 lb. The Council did not hold a SEEM working group, which usually results in the implementation of a buffer to lower the ABC to an ACL, due to scheduling issues associated with COVID-19. The P* working group noted the social, economic, and ecological importance of the bottomfish fishery but also that a further reduction in the ABC is not warranted because the proposed ACL is so low that additional reduction would not retain sufficient catch for the fishery in Federal waters. Additionally, the Council's American Samoa Advisory Panel suggested setting the prospective ACL for the fishery to the ABC, as this would provide the highest level of catch without the fishery being subject to overfishing and allow the stock to rebuild incrementally. However, in order to develop an ACL that would allow for rebuilding within time frames denoted in statutory requirements, the ACL was determined to be 1,500 lb for Alternative 2. Thus, the suggestions of the P* working and advisory groups were taken into account combined with the analysis of recent catch averages and biomass projections for the American Samoa bottomfish fishery resulted in the provisions of Alternative 2, which are detailed in alongside additional information on this alternative in Section 2.4. Alternative 3 was developed as the maximum action that NMFS could take within its regulatory authority for the American Samoa bottomfish fishery and is further described in Section 2.5.

2.1.1 Summary of American Samoa Bottomfish Fishery Information

2.1.1.1 Estimation of the Overfishing Limit

The 2019 benchmark stock assessment for American Samoa bottomfish (Langseth et al., 2019) provided the estimate for the long-term MSY for the stock at 28,800 lb (95% confidence interval = 16,400-55,900 lb), which is lower than the estimate of MSY in the previous stock assessment update for American Samoa bottomfish (Yau et al., 2016). Results of projected probabilities of

overfishing for American Samoa bottomfish are presented within the assessment, which assumed that a six-year ACL set for the stock would be harvested in its entirety for its duration and indicated that an ACL set at 8,000 lb would result in a 50 percent probability of overfishing in 2020 through 2025 (Table 3). Therefore, 8,000 lb is considered to be the OFL proxy for this six-year period for the fishery despite the long-term MSY estimate of 28,800 lb. The average catch of American Samoa BMUS from 2017 to 2019 was 12,614 lb (Table 5), which exceeds the OFL by nearly 58 percent. There have been two years (i.e., 2012 and 2013) since ACLs were implemented in 2012 that annual catch did not exceed the OFL of 8,000 lb. The standing stock biomass in 2025 associated with this OFL is 122,400 lb with a harvest rate of 6 percent in 2025, and the probability that the stock would be overfished in that year is 64 percent (see Table 19 in Langseth et al., 2019).

Table 3. Projection results showing annual catch (1000 lb) applied across all years from 2020 to 2025 where the specified median probability of overfishing ($H/H_{CR}>1$) was reached in the terminal year for American Samoa BMUS.

Probability of overfishing ($H/H_{CR}>1$) in terminal year	2020	2021	2022	2023	2024	2025	Probability of overfishing ($H/H_{CR}>1$) in terminal year	2020	2021	2022	2023	2024	2025
0.01	0	0	0	0	0	0	0.26	1	1	1	1	2	2
0.02	0	0	0	0	0	0	0.27	1	1	1	1	2	2
0.03	0	0	0	0	0	0	0.28	1	1	1	2	2	2
0.04	0	0	0	0	0	0	0.29	1	1	1	2	2	2
0.05	0	0	0	0	0	0	0.30	1	1	2	2	2	3
0.06	0	0	0	0	0	0	0.31	1	1	2	2	2	3
0.07	0	0	0	0	0	0	0.32	1	1	2	2	3	3
0.08	0	0	0	0	0	0	0.33	1	2	2	2	3	3
0.09	0	0	0	0	0	0	0.34	1	2	2	3	3	3
0.10	0	0	0	0	0	0	0.35	1	2	2	3	3	4
0.11	0	0	0	0	0	0	0.36	1	2	2	3	3	4
0.12	0	0	0	0	0	0	0.37	2	2	3	3	4	4
0.13	0	0	0	0	0	0	0.38	2	2	3	3	4	4
0.14	0	0	0	0	0	0	0.39	2	2	3	3	4	4
0.15	0	0	0	0	0	0	0.40	2	3	3	4	4	5
0.16	0	0	0	0	0	0	0.41	2	3	3	4	4	5
0.17	0	0	0	0	0	1	0.42	2	3	3	4	5	5
0.18	0	0	0	0	1	1	0.43	2	3	4	4	5	6
0.19	0	0	0	0	1	1	0.44	3	3	4	5	5	6
0.20	0	0	0	1	1	1	0.45	3	3	4	5	6	6
0.21	0	0	1	1	1	1	0.46	3	4	4	5	6	6
0.22	0	0	1	1	1	1	0.47	3	4	5	5	6	7
0.23	0	0	1	1	1	1	0.48	3	4	5	6	6	7
0.24	0	1	1	1	1	2	0.49	3	4	5	6	7	7
0.25	0	1	1	1	1	2	0.50	4	5	5	6	7	8

(Source: Table 20 in Langseth et al. 2019)

2.1.1.2 Stock Status

In 2017, the most recent year that was taken into account in the stock assessment for American Samoa bottomfish, $H_{2017}/H_{CR} = 2.75$ where H is the harvest rate, indicating overfishing is occurring, while $B_{2017}/B_{MSY} = 0.38$, indicating that the stock is overfished (Langseth et al., 2019; Table 4). The results of the production model used in the assessment showed that there were several years from 1982 to 2017 where the American Samoa bottomfish fishery was not overfished nor experiencing overfishing, but in the terminal year of the analysis, the stock is both overfished and experiencing overfishing (Figure 2).

In 2019, the most recent year for which catch data are available for American Samoa BMUS through PIFSC SAP and the Council's annual SAFE report for the American Samoa Archipelago, the total estimated annual catch was 13,699 lb while the estimated commercial catch from DMWR commercial receipt invoices was 1,402 lb (Table 5). The difference between the total estimated catch and estimated commercial catch is assumed to be the non-commercial component of the fishery. The estimated three year average catch (2017 to 2019) from boat-based creel surveys was 14,789 lb, which exceeds the OFL determined by the stock assessment for the bottomfish fishery (see Section 2.1.1.1).

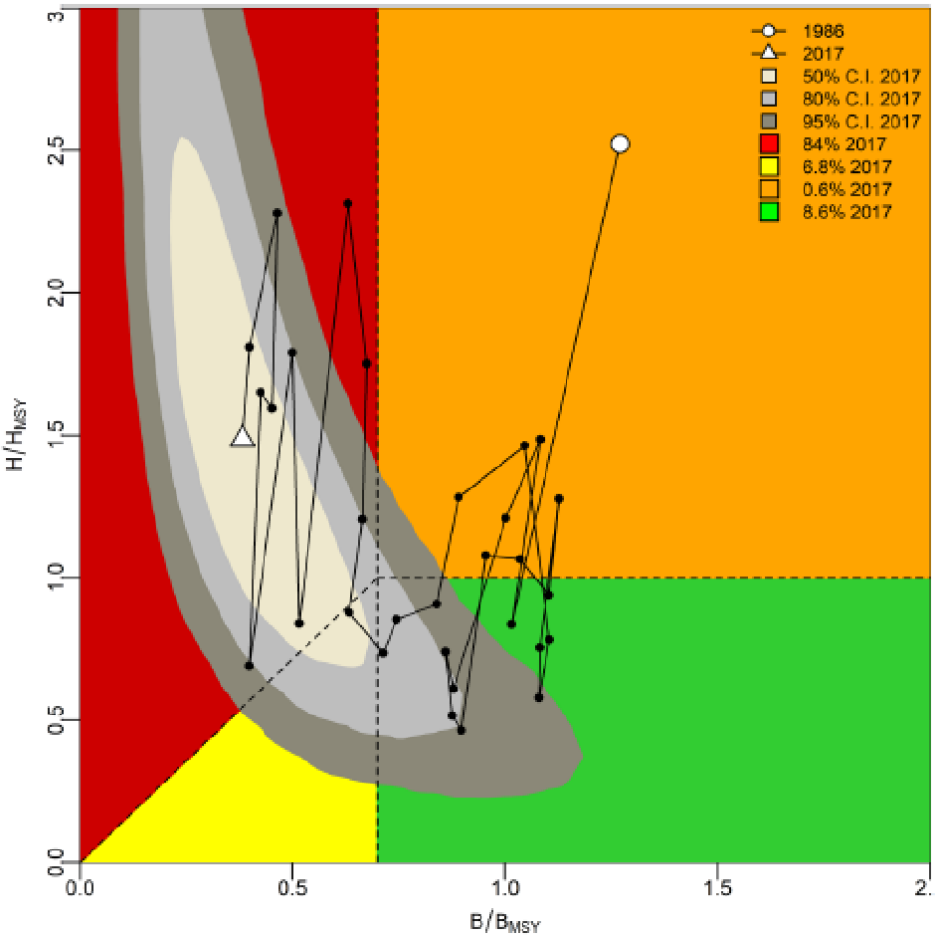

Figure 2. Kobe plot of relative biomass and relative exploitation rate from the best fitting production model for American Samoa bottomfish from 1982 to 2017.
(Source: Langseth et al., 2019)

Table 4. Stock assessment parameters for the American Samoa BMUS complex.

Parameter	Value	Notes	Status
MSY	28.8 (16.4-55.9)	Expressed in 1,000 lb (with 95% confidence interval)	
H_{2017}	0.15	Expressed in percentage	
H_{CR}	0.107 (0.044-0.228)	Expressed in percentage (with 95% confidence interval)	

Parameter	Value	Notes	Status
H_{2017}/H_{CR}	2.75		Overfishing occurring
B_{2017}	102.6	Expressed in 1,000 lb	
B_{MSY}	272.8 (120.8-687.4)	Expressed in 1,000 lb (with 95% confidence interval)	
B_{2017}/B_{MSY}	0.38		Overfished

(Source: Langseth et al., 2019)

Table 5. Annual estimated BMUS catch (lb) in American Samoa from 2000-2019.

Year	Estimated Total Catch (lb)	Estimated Commercial Catch (lb)
2000	23,913	3,693
2001	42,301	3,447
2002	31,657	1,448
2003	21,039	2,511
2004	17,622	3,233
2005	14,541	2,490
2006	15,569	2,203
2007	22,359	4,001
2008	32,965	3,171
2009	40,446	3,035
2010	11,978	1,084
2011	24,569	711
2012	7,688	1,161
2013	19,740	882
2014	20,352	3,140
2015	29,511	2,047
2016	20,181	1,131
2017	15,913	1,131
2018	14,756	838
2019	13,699	1,402
Three Year Average (2017-2019)	**14,789**	**1,124**

(Source: PIFSC SAP and WPRFMC, 2020a)

2.2 Features Common Among Alternatives

Each of the alternatives considered assumes that all existing Federal and local resource management regulations would continue alongside non-regulatory monitoring of catch through the creel survey expansions from the NMFS Western Pacific Fishery Information Network (WPacFIN) and the DMWR commercial receipt system. While the Council has two years to prepare and implement an FMP, FMP amendment, or proposed regulations to rebuild an overfished stock, if overfishing is still occurring for that stock, the Council should immediately

take appropriate steps to end overfishing (see Magnuson-Stevens Act section 304(e)(6) and 50 C.F.R. § 600.310(j)(2)(i)). NMFS finalized an interim measure for the fishery while the Council was developing this rebuilding to increase biomass for the stock in the meantime. If approved by the Secretary, the Council's rebuilding plan measures would replace the interim measure.

There is no Federal permit or reporting required to fish for BMUS in American Samoa, however, a commercial fishing license is required for all fishermen engaged in commercial fishing in American Samoa waters by the territorial government (ASCA § 24.0981). Additionally, the territory requires all entities that sell seafood products to report sales monthly to the American Samoa DMWR (ASAC § 24.0906), who reports commercial fishery sales information to NMFS through WPacFIN. Under each of the alternatives, NMFS would work with WPacFIN and DMWR to encourage timely processing of data to track catches toward the applicable catch limit if necessary, and the fishery would continue to be monitored in the event of a Federal closure.

The ability to coordinate a closure of both Federal and territorial waters would improve management measures associated with a designated catch limit or moratorium; however, American Samoa does not have regulations in place to close bottomfish fishing in territorial waters if a Federal catch limit is reached and there has been no indication that a complementary closure would be implemented for the complete Federal closure. For this reason, the following outcome analyses for each proposed alternative account only for actions that NMFS can take within its regulatory authority. Each action alternative assumes that only Federal waters could be closed as the result of the in-season AM when NMFS projects that the catch has exceeded the implemented ACL or due to the moratorium. However, it is expected that fishing would continue in territorial waters and the level of authorized catch would be exceeded, which would delay the rebuilding of the fishery. The initial descriptions of the alternatives assume an ideal scenario where catch remains within the authorized limit for the entirety of the fishery, but the reality of fishing continuing in territorial waters is reflected in the subsequent explanations and outcome analyses. In the American Samoa bottomfish fishery, the fishing year begins January 1 and ends on December 31. Although the rebuilding plan would be implemented on approximately November 17, 2021, the analyses are based on an effective date of January 1, 2022, to provide a baseline for comparison if the measures were enacted at the beginning of the fishing year. Fishery catches for the end of 2021 are considered negligible with respect to impacting the rebuilding plan projections and are not considered when establishing rebuilding timelines.

Under all alternatives, the cultural significance of bottomfish in American Samoa would remain unchanged. An important aspect of American Samoa is perpetuating *fa'a Samoa* (i.e., "The Samoan Way", custom and practice), which governs local social norms and practices. The foundation of *fa'a Samoa* is the title system at the village and higher levels, which is sustained and signified by the production and presentation of food and other goods, including deep and shallow water bottomfish at a variety of important cultural ceremonies. A letter from American Samoa DMWR to NMFS on June 15, 2020 noted that deepwater snappers are important for cultural ceremonies and *fa'alavelave* (e.g., funerals, weddings, births, special birthdays). This importance for subsistence and cultural use is evident during important community events, and demand for bottomfish varies depending on the need for fish at government and cultural events (WPRFMC, 2020a). Reducing access to bottomfish resources may harm the cultural practice of *fa'a Samoa* and its role in maintaining community stability.

The Council requested NMFS PIFSC to produce biomass projections for the American Samoa bottomfish fishery to help determine T_{min} and T_{target} for Alternatives 2 and 3 for the rebuilding plan (see Figure 3; Table 9), as the specification of a rebuilding time is required per Magnuson-Stevens Act section 304(e)(4) for any overfished fishery. The projections utilize the B_{MSY} for the American Samoa bottomfish multi-species stock complex estimated by the stock assessment (Langseth et al., 2019) of 272,800 lb (see Table 4). The biomass projections assume that the specified level of annual catch would be caught in its entirety for each year, and the $F_{rebuild}$ values were calculated by converting an estimated harvest rate (H) to F. Because the estimated biomass in the projections changes over time, the estimated F values at a given catch level notedly decrease as biomass increases.

2.3 Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

Alternative 1 would consist of the same provisions as the most recent management action taken for the fishery in lieu of implementing a rebuilding plan with a new catch limit, AMs, or other associated measures for BMUS in American Samoa to end overfishing and rebuild the bottomfish fishery from its overfished designation. On November 16, 2020, an interim management measure for the American Samoa bottomfish fishery was implemented with an ICL of 13,000 lb in 2020 and an in-season AM for 180 days, which is the largest catch that would allow biomass of the stock complex to increase and could be extended for another 186 days into late 2021 (85 FR 73003). Thus, Alternative 1 would implement an ACL of 13,000 lb with an in-season AM to prevent the catch limit from being exceeded but with no post-season AM to correct overages. Under the in-season AM, NMFS would track progress of catches in relation to the ACL based on reports of catches provided to NMFS by the American Samoa DMWR. NMFS would close Federal waters around American Samoa to bottomfish fishing at such time as the agency estimates the fishery would attain the ACL or immediately if the agency determines that the fishery has attained or exceeded the ACL. Because Alternative 1 would implement the same management for the fishery as seen in recent years, it would serve as the status quo and environmental baseline alternative against which effects on the human environment of action alternatives can be compared. Alternative 1 would be in compliance with the Magnuson-Stevens Act, implementing Federal regulations, or the provisions of the Council's FEP that require ACLs and AMs be implemented for fisheries managed under an FMP.

2.3.1 Expected Fishery Outcome (Alt. 1)

Although ACLs implemented in previous years were based on the American Samoa bottomfish complex prior to Amendment 5 to the FEP that reduced the number of MUS from 17 to 11, catches have not approached the ACL for American Samoa bottomfish since they were implemented in 2012 (Table 6). Additionally, catches in 2018 and 2019 (when no ACL or AMs were implemented) were similar to catches during previous years when ACLs were implemented (Table 6), indicating that fishery performance did not change dramatically whether or not ACLs and AMs are implemented. However, Alternative 1 would be expected to result in slight differences from fishery performance prior to the interim measure due to the implementation of an in-season AM to functionally constrain the fishery, but the conduct of the fishery is expected to remain consistent with how it operated under the interim measure.

Table 6. Comparison of American Samoa bottomfish catches to the ACLs from 2012 to 2019. ACLs were not implemented in 2018 and 2019.

Year	ACL (lb)	Catch (lb)	Percent of ACL
2012	99,000	7,688	7.77
2013	101,000	19,740	19.54
2014	101,000	20,352	20.15
2015	101,000	29,511	29.22
2016	106,000	20,181	19.04
2017	106,000	15,913	15.01
2018	NA	14,756	NA
2019	NA	13,699	NA

(Source: PIFSC SAP and the Council's annual SAFE reports

Under Alternative 1, the American Samoa bottomfish fishery is expected to continue fishing at slightly lower levels than recent years prior to the interim measure for which data are available and maintain levels of fishing activity observed under the interim measure. This is because bottomfish habitat occurs predominantly in territorial waters (Figure 1), and it is not anticipated that the American Samoa government would implement a complementary closure of territorial waters. Thus, when Federal waters are closed to bottomfish fishing in accordance with the in-season AM, it is expected that the fishery would continue to harvest BMUS in territorial waters. Alternative 1 is therefore expected to reduce bottomfish fishing primarily in Federal waters and slightly reduce overfishing relative to recent fishing activity prior to the interim measure; however, no change is expected in the conduct of the fishery through the implementation of the status quo.

Currently, NMFS does not have detailed spatial information to determine the amount of BMUS caught in territorial waters and Federal waters, and no assumptions can be made on the spatial productivity of bottomfish EFH in Federal waters relative to territorial waters. However, analysis of the spatial distribution of bottomfish EFH indicates that approximately 85 percent occurs in territorial waters, while the remaining 15 percent occurs in Federal waters under NMFS jurisdiction (Figure 1). If bottomfish catches are distributed equally across EFH, a simple calculation can be used to determine the reduction in catches stemming from the implementation of an in-season AM. Using the three year recent average catch of 14,789 lb, it can be assumed that 15 percent (or 2,218 lb) of the annual BMUS catch is caught in Federal waters and that the remaining 85 percent (or 12,571 lb) is caught in territorial waters. Given the level of recent average catch, it is expected that the American Samoa bottomfish fishery would catch more than 13,000 lb of BMUS and that there would be a closure of Federal waters in accordance with the in-season AM each fishing year. It is likely that there would continue to be fishing in territorial waters that would offset the potential benefits of closing Federal waters, and no definitive estimate can be made regarding the amount of catch that would occur in territorial waters from displaced fishing that normally would have occurred in Federal waters. However, it is expected that there would be no fishing for BMUS in Federal waters once the ACL has been attained.

A rough estimate of when the possible closure of Federal waters might occur can be calculated using recent average catch data available through February 17, 2020. While data on seasonality

of catch are not available to make a precise estimate of when this might occur, it can be assumed that catch is relatively constant throughout the year. If the average annual BMUS catch is 14,789 lb (1,232 lb/month), then the ACL would be attained by November and there would be another 1,789 lb of catch expected to be caught after this time. If catches are proportional to habitat extent, approximately 268 lb (15 percent of 1,789 lb) that might ordinarily have been caught in Federal waters would not be caught in a given fishing year. The total catch under this scenario, then, would be 14,521 lb, rather than the three year recent average catch of 14,789 lb, but this improvement may not be fully realized if fishermen displace fishing effort to territorial waters. Additionally, this level of catch would exceed the OFL identified in the stock assessment (Langseth et al., 2019), meaning that overfishing would not be prevented and the fishery would not be able to rebuild within 40 years based on projections for relatively a relatively lower catch level (see Table 9). All other applicable fishing regulations would remain in place and the bottomfish fishery would continue to be monitored by NMFS and the Council.

2.3.2 Estimated Conservation and Management Benefit (Alt. 1)

Under Alternative 1, overfishing would be reduced relative to recent average catch levels due to an expected reduction in catch of 268 lb annually from 14,789 lb to 14,521 lb. Thus, the status quo alternative would provide conservation and management benefits relative to an unconstrained fishery. In the absence of complementary closure of territorial waters, it is expected that fishermen would continue to catch BMUS in territorial waters, which would remain open to fishing, and any fishing effort that is displaced from Federal waters to territorial waters could offset the reduction in catch from the closure of Federal waters. However, NMFS is not able to predict the amount of displacement that may occur. Therefore, under the status quo, expected annual catches for the fishery would persist at 14,521 lb, which would slightly reduce overfishing but would not serve to rebuild the bottomfish stock complex in a reasonable time frame. Therefore, while Alternative 1 would provide some conservation and management benefit to the American Samoa bottomfish fishery relative to recent average activity, it would not be able to effectively eliminate overfishing or rebuild the fishery within statutory requirements.

2.3.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Effects of the Management Measure (Alt. 1)

This alternative would not have short-term cultural, economic, or social impacts to fishing communities in American Samoa compared to the action alternatives because the status quo would be maintained, but there may be a slight reduction in revenues than expected under an unconstrained fishery. Alternative 1 would slightly constrain bottomfish fishing activity in American Samoa relative to recent averages due to the implementation of in-season AM, but the revenues would be identical to those experienced in 2020 and 2021 under the interim measure. Alternative 1 would only slightly reduce overfishing of BMUS relative to recent levels and would not result in the rebuilding of the stock complex at least within 40 years. This could have longer-term cultural, economic, and social impacts for the American Samoa fishing community if the diminished health of the stock complex reduces available bottomfish resources and revenues in the future.

Since the fishery, and therefore, commercial sales are expected to remain consistent, the Council anticipates that an average of 7.7 percent of bottomfish catch to be sold in subsequent years

(Table 9). If there is 14,521 lb of catch on an annual basis, at the recent average price of $4.44 per lb, expected revenue would be $4,694. Using the estimated number of 30 fishery participants from the 2020 LOF (85 FR 21095, April 16, 2020), each fisher would earn approximately $165. The status quo would not constrain bottomfish fishing activity in American Samoa relative to the most recent management action, so it is not expected to adversely affect the commercial fishermen in American Samoa in the short-term. Non-commercial fishing (inclusive of recreational, sustenance, and cultural fishing) is expected to be similarly affected.

Table 7. Summary of American Samoa bottomfish commercial revenues from 2010 to 2019.

Year	Estimated total catch (lb)	Estimated pounds sold (lb)	Percent sold	Adjusted estimated revenue ($)	Adjusted average price per pound ($)
2010	11,978	1,084	9.0	4,008	3.70
2011	24,569	711	2.9	2,124	2.99
2012	7,688	1,162	15.1	3,987	3.43
2013	19,740	882	4.5	3,356	3.80
2014	20,352	3,140	15.4	11,383	3.63
2015	29,511	2,048	6.9	6,316	3.08
2016	20,181	1,131	5.6	4,053	3.58
2017	15,913	1,130	7.1	5,790	5.12
2018	14,756	838	5.7	3,558	4.25
2019	13,699	1,401	10.2	5,708	4.07
Three year avg.	**14,789**	**1,123**	**7.7**	**5,019**	**4.44**

(Source: PIFSC SAP and WPRFMC, 2020a)

2.4 Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under this alternative, the Council would implement an ACL of 1,500 lb for the American Samoa bottomfish fishery until it is determined that overfishing has ceased and the stock complex has rebuilt to its B_{MSY}. This level of authorized catch would effectively end overfishing in the fishery and would allow the stock complex to rebuild in nine years. As an in-season AM, in accordance with 50 CFR 665.4, NMFS would close Federal waters around American Samoa to bottomfish fishing at such time as the agency estimates the fishery would attain the ACL or immediately if the agency determines that the fishery has attained or exceeded the ACL. An in-season restriction has only been used once before for American Samoa in the preceding interim measure because catch statistics usually become available about six months after local management agencies collect the data. Implementing in-season monitoring would require close coordination between the American Samoa DMWR, who collect the data, and WPacFIN, who receive the data from the DMWR, to allow for timely transmitting and processing of data. As a post-season AM, NMFS would review the three year running average catch of the fishery relative to the ACL at the end of each fishing year and reduce the ACL for the subsequent fishing year by the amount of overage from the if the ACL is exceeded by the three year average (i.e., an overage adjustment). As an additional performance measure specified in the FEP, if catches

exceed any ACL more than once in a four-year period, the Council must re-evaluate the ACL process, and adjust the system to improve its effectiveness. Catches from both Federal and territorial waters would be counted towards the ACL. Due to the relatively low nature of the ACL and level of recent average annual catch in the fishery, Federal waters around American Samoa would likely be closed to bottomfish fishing within the first few months of the first fishing year. The post-season AM would likely reduce the ACL in all subsequent fishing years to 0 lb, effectively closing Federal waters around American Samoa to bottomfish fishing after the first year of the rebuilding plan. Future changes to the ACL would be subject to separate environmental review when such changes are proposed and are not part of the current proposed action.

Utilizing the biomass projections from PIFSC, T_{min} for the American Samoa bottomfish fishery would equal eight years in the absence of fishing (Table 9). Because T_{min} would be less than 10 years, pursuant to 50 CFR 600.310(j)(3)(i)(B)(1), T_{max} for the fishery would be 10 years. The projections show that the American Samoa bottomfish fishery has a 50 percent probability to be rebuilt to its B_{MSY} in nine years with an annual catch of 1,500 lb (Table 9), so nine years would be the T_{target} under this alternative. An annual catch level of 1,500 lb would generate biomass increases for the stock from 7.7 to 12.7 percent annually, with a total biomass increase of nearly 165 percent over nine years (Figure 3). The $F_{rebuild}$ associated with this T_{target} would range from 0.0055 to 0.0129 over the course of the rebuilding timeline (Table 9). However, because fishing in territorial waters is expected to continue, it would not be likely that the fishery rebuilds in the nine year timeline associated with an authorized annual catch level of 1,500. Continued fishing in territorial waters would cause the expected annual catch to be 12,571 lb to 12,796 lb annually, which would realistically result in the stock complex rebuilding over 40 years (Section 2.4.1). The parameters required by Magnuson-Stevens Act section 304(e) and implementing regulations at 50 CFR 600.310(j)(3) for a rebuilding plan for an overfished fishery are presented in Table 8.

There is little available information on the life history for American Samoa BMUS, and little is known on how the species of the stock complex interact with the surrounding marine ecosystem., The basis for the specification of an ACL of 1,500 lb coincides with Magnuson-Stevens Act requirements to implement a level of authorized annual catch that would end overfishing and rebuild the stock as while considering the needs of the fishing community by allowing access to a small amount of deepwater bottomfish resources at offshore banks in Federal waters. Additionally, the Council's P* working group, who met virtually on April 16, 2020, recommended a reduction score of 20 percent at a 30 percent risk of overfishing (WPRFMC, 2020b). The annual catch level of 1,500 lb is equivalent to a P* of 24 to 25 percent risk of overfishing, which is below the P* recommended level of 30 percent risk of overfishing (equivalent to an annual catch of 2,000 lb).

Table 8. Rebuilding plan parameters under Alternative 2 as required by National Standard 1 for an overfished fishery.

Parameter	Value
T_{min}	8 years
T_{target}	9 years
T_{max}	10 years
$F_{rebuild}$	0.0055 – 0.0129

Table 9. Projected biomass (B; 1,000 lb), probability that biomass is greater than or equal to B_{MSY}, and fishing mortality (F) for the American Samoa bottomfish stock complex from 2022 to 2062 under annual catches (lb) of 0 lb, 1,500 lb, 12,571 lb, and 14,789 lb. The highlights indicate the first year the probability that rebuilding has occurred is at least 50 percent. Values for each year represent projections at the beginning of the listed year.

Year	Annual Catch											
	0 lb			1,500 lb			12,571 lb			14,789 lb		
	Biomass	Probability $B > B_{MSY}$	F	Biomass	Probability $B > B_{MSY}$	F	Biomass	Probability $B > B_{MSY}$	F	Biomass	Probability $B > B_{MSY}$	F
2022	107.5	0.149	0	104.1	0.139	0.01451	108.2	0.142	0.1235	106.7	0.145	0.1493
2023	124.6	0.204	0	117.3	0.191	0.01287	111.6	0.172	0.1195	108.8	0.166	0.1461
2024	141.6	0.262	0	134.0	0.237	0.01126	114.3	0.202	0.1165	109.3	0.190	0.1453
2025	162.9	0.309	0	152.3	0.281	0.00990	118.2	0.228	0.1125	109.6	0.216	0.1449
2026	185.5	0.356	0	171.8	0.325	0.00877	123.0	0.255	0.1078	110.9	0.234	0.1432
2027	207.9	0.398	0	194.3	0.367	0.00775	126.6	0.274	0.1046	111.6	0.253	0.1421
2028	233.5	0.441	0	212.8	0.406	0.00707	129.9	0.295	0.1018	113.9	0.270	0.1391
2029	256.2	0.477	0	234.5	0.440	0.00642	135.3	0.315	0.0975	113.8	0.284	0.1392
2030	278.8	0.512	0	255.6	0.476	0.00589	140.4	0.330	0.0938	114.5	0.299	0.1383
2031	299.7	0.539	0	275.5	0.503	0.00546	147.0	0.343	0.0894	114.2	0.315	0.1387
2032	316.5	0.565	0	296.7	0.532	0.00507	153.9	0.358	0.0852	114.3	0.324	0.1386
2033	332.7	0.591	0	315.9	0.561	0.00476	160.4	0.368	0.0816	116.0	0.336	0.1363
2034	346.8	0.615	0	332.8	0.583	0.00452	166.8	0.381	0.0784	116.1	0.344	0.1363
2035	360.0	0.638	0	344.4	0.605	0.00436	174.3	0.389	0.0749	116.8	0.355	0.1354
2036	369.0	0.664	0	355.0	0.619	0.00423	176.3	0.401	0.0740	117.4	0.364	0.1347
2037	379.2	0.679	0	365.4	0.638	0.00411	183.0	0.413	0.0712	119.1	0.373	0.1326
2038	390.8	0.695	0	372.3	0.652	0.00404	187.8	0.419	0.0693	118.0	0.376	0.1339
2039	396.5	0.708	0	380.6	0.662	0.00395	193.7	0.423	0.0671	117.0	0.384	0.1352
2040	405.0	0.724	0	385.4	0.676	0.00390	200.2	0.431	0.0648	114.7	0.384	0.1381
2041	409.0	0.738	0	392.4	0.687	0.00383	206.8	0.438	0.0627	113.5	0.388	0.1396
2042	414.5	0.747	0	397.5	0.696	0.00378	211.8	0.444	0.0612	114.6	0.393	0.1381
2043	417.4	0.756	0	400.8	0.706	0.00375	218.5	0.449	0.0593	115.3	0.395	0.1373
2044	421.3	0.769	0	401.5	0.716	0.00374	221.9	0.453	0.0583	115.4	0.401	0.1371
2045	423.4	0.780	0	406.7	0.726	0.00370	228.5	0.457	0.0566	114.6	0.405	0.1381
2046	427.5	0.792	0	409.2	0.738	0.00367	233.3	0.459	0.0554	115.6	0.407	0.1369
2047	429.2	0.799	0	413.1	0.747	0.00364	235.7	0.461	0.0548	112.7	0.404	0.1407

Year	Annual Catch											
	0 lb			1,500 lb			12,571 lb			14,789 lb		
	Biomass	Probability $B > B_{MSY}$	F	Biomass	Probability $B > B_{MSY}$	F	Biomass	Probability $B > B_{MSY}$	F	Biomass	Probability $B > B_{MSY}$	F
2048	435.5	0.803	0	416.6	0.747	0.00361	238.0	0.466	0.0543	110.7	0.409	0.1434
2049	435.9	0.813	0	421.3	0.760	0.00357	240.5	0.470	0.0537	111.3	0.410	0.1426
2050	436.4	0.819	0	419.6	0.763	0.00358	242.2	0.468	0.0533	110.9	0.412	0.1431
2051	439.2	0.828	0	423.0	0.765	0.00355	245.4	0.474	0.0526	107.1	0.415	0.1487
2052	442.1	0.838	0	423.6	0.766	0.00355	248.5	0.476	0.0519	102.1	0.416	0.1565
2053	442.0	0.841	0	426.2	0.775	0.00353	249.7	0.477	0.0517	97.4	0.415	0.1646
2054	444.7	0.842	0	428.7	0.776	0.00351	251.4	0.477	0.0513	94.5	0.412	0.1702
2055	444.3	0.846	0	430.0	0.783	0.00349	253.1	0.479	0.0509	88.4	0.417	0.1830
2056	446.2	0.850	0	430.5	0.785	0.00349	254.3	0.482	0.0507	89.6	0.417	0.1805
2057	445.2	0.856	0	432.4	0.790	0.00348	254.7	0.481	0.0506	86.1	0.418	0.1884
2058	448.2	0.859	0	431.2	0.788	0.00349	256.2	0.483	0.0503	79.4	0.420	0.2061
2059	449.4	0.865	0	431.3	0.791	0.00348	256.7	0.485	0.0502	76.6	0.421	0.2146
2060	453.3	0.868	0	430.8	0.794	0.00349	257.1	0.484	0.0501	71.0	0.422	0.2334
2061	453.3	0.872	0	431.1	0.797	0.00349	255.3	0.483	0.0505	64.6	0.419	0.2598
2062	453.4	0.877	0	433.4	0.799	0.00347	256.4	0.483	0.0503	57.6	0.420	0.2970

(Source: PIFSC Stock Assessment Program)

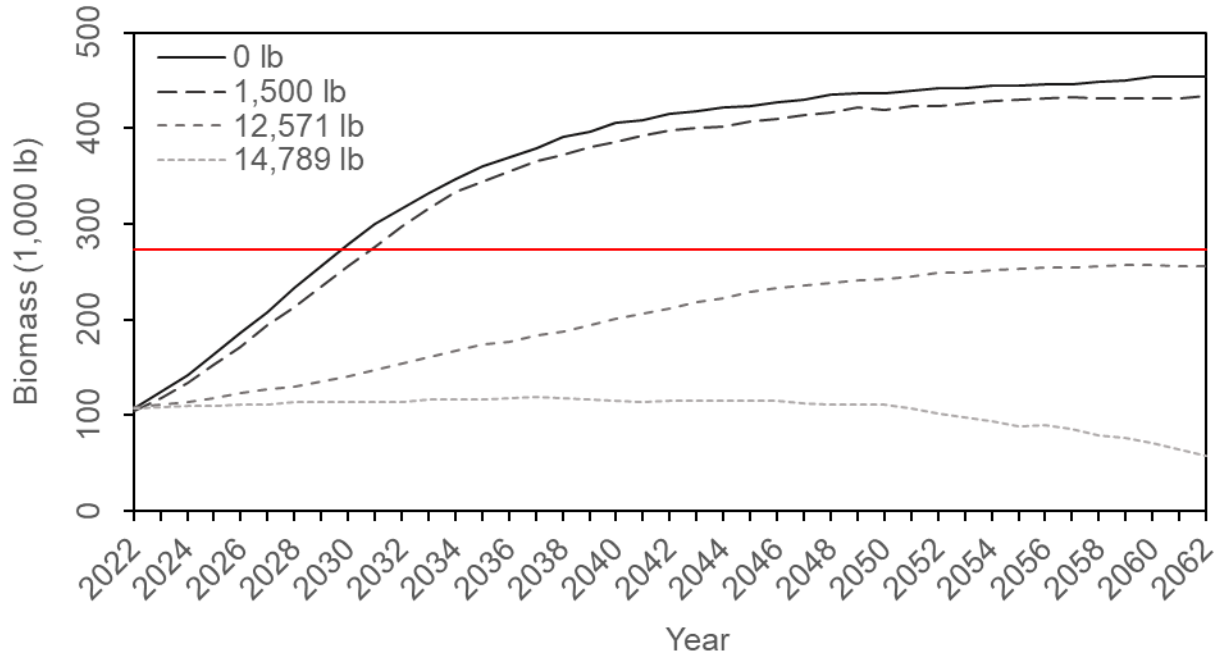

Figure 3. Projected biomass of the American Samoa bottomfish stock complex from 2022 to 2062 under annual catches of 0 lb, 1,500 lb, 12,571 lb, and 14,789 lb. The red line denotes B_{MSY} at 272,800 lb.
(Source: PIFSC Stock Assessment Program)

Under Alternative 2, NMFS would review progress of the catches relative to the implemented ACL based on data reports from the American Samoa DMWR, which monitors the bottomfish fishery through its creel survey program. However, because the ACL is expected to be closed early in the first fishing year of the rebuilding plan and subsequent years are expected to have an ACL of 0 lb due to the post-season AM (Section 2.4.1), this monitoring process may not be actualized to the full extent each year of the rebuilding plan. The in-season AM would require that NMFS close Federal waters around American Samoa to bottomfish fishing at such time as NMFS projects that the fishery would attain the ACL or immediately if it is determined that the fishery has exceeded the ACL. Because NMFS would not be able to track catches for the fishery in near-real time, Alternatives 2 would utilize a predetermined scheme to allow for in-season monitoring of the fishery over the course of each fishing year for the duration of the rebuilding plan. The in-season monitoring plan would rely on the use of expanded estimates from the creel survey program in American Samoa. Though these data are expected to be associated with high scientific uncertainties when expanded during the fishing year, the creel survey data represent the best scientific information available to NMFS for the purposes of in-season monitoring under this action. Additionally, this action would represent the second attempt to utilize in-season monitoring for the American Samoa bottomfish fishery (after the interim measure which immediately precedes this action). Previously, the Council and NMFS were not satisfied with the amount of scientific uncertainty in the data when used for in-season monitoring and did not feel that accepting the scientific uncertainties for in-season monitoring was prudent given the previously healthy status of the fishery. More recently, the fishery being identified as overfished and experiencing overfishing has prompted the Council and NMFS to reconsider the use of creel survey data for in-season monitoring despite the associated uncertainties because tracking the

fishery throughout the fishing year is necessary to ensure that the fishery is adhering to the proposed timelines of the rebuilding plan.

To allow for in-season review of the total running catches for the American bottomfish fishery, WPacFIN would periodically determine the number of catch interviews for which the American Samoa DMWR has provided data. WPacFIN would tally the number of available catch interviews at least twice per month, and when there is a sufficient number of interviews that would allow for appropriate expansion of the available data based on scientific uncertainty, the total catch for the fishing year up to that point would be estimated. The first expansion is expected to take place roughly halfway through the year; however, since total catch expansions are typically done on an annual basis, it is also expected that this semi-annual expansion would have high uncertainties associated with the data. Additionally, the fishery would be closed in the first few months of the year due to expected monthly catches when compared to the relatively low ACL. After the initial expansion, WPacFIN would then perform additional expansions for the entire year up to that point on a monthly basis or as the American Samoa DMWR is able to transmit catch interview data, whichever is more frequent. Performing monthly expansions of total catch for the fishery each month for the second half of the year would allow NMFS to appropriately review harvest relative, though the in-season AM is expected to be applied before these monthly estimates become available. Since Alternative 2 has an ACL that would be expected to be attained before the halfway point of the fishing year, NMFS may utilize expected monthly catches using average catch data from previous years to determine when the fishery might attain 1,500 lb of catch and close the fishery in Federal waters at that point in the fishing year.

2.4.1 Expected Fishery Outcome (Alt. 2)

Under Alternative 2, the American Samoa bottomfish fishery would be expected to continue fishing as it has in the past and harvest annual catch of American Samoa BMUS slightly less than recent years due to an expected closure of Federal waters to the fishery. Due to the relatively low nature of the ACL under Alternative 2, it is likely that the ACL would be exceeded and Federal waters would be closed to the fishery in accordance with the in-season AM, causing catch under Alternative 2 reduced from the status quo. It is likely that the ACL would be attained because the estimated annual catch for the fishery has surpassed the proposed ACL in all years from 2000 to 2019 (see Table 5), and the in-season AM would result in a Federal fishery closure early in the year. There are no territorial regulations in place in to limit catch alongside this Federal action, so it is also likely that fishing would continue in territorial waters and offset the potential conservation benefits of a Federal closure. The American Samoa DMWR may promulgate rules to complement the potential Federal closure; however, without the cooperation of the local government and communities, both the ACL specification and AMs under this alternative would likely be ineffective in ending overfishing and rebuilding the stock to B_{MSY}. NMFS does not currently anticipate that the American Samoa government would implement a complementary closure of territorial waters. In the event of complementary management, Alternative 2 provides a Federal action that would restrict overfishing and support rebuilding relative to the status quo by preventing overfishing of bottomfish while still allowing a small level of catch in Federal waters. All other applicable fishing regulations would remain in place and the bottomfish fishery would continue to be monitored by NMFS and the Council.

Given average annual catch in recent years (Table 5), assuming that catch is harvested in a consistent manner, it is likely that the American Samoa bottomfish fishery would exceed its ACL within the first few months of the year. The resulting closure of Federal waters would deny fishing access to some of the offshore banks where bottomfish fishing occurs, which may have implications on access to deepwater bottomfish resources for several fishing villages in American Samoa. However, a closure of Federal waters would likely have little impact on reducing overall fishing mortality due to the relatively small amount of bottomfish EFH around American Samoa that is situated in Federal waters. The Council and NMFS do not possess the spatial information or data to discern the amount of BMUS harvested in Federal versus territorial waters around American Samoa.

Considering monthly catch expansions for the fishery from 2016 to 2018 generated by WPacFIN from creel survey data (Figure 4), an ACL of 1,500 lb is expected to be exceeded by February after 2,224 lb of catch; however, this level of catch may be reached as early as January (based on 2017 fishery performance) or as late as March (based on 2018 fishery performance). If it is assumed that catch is proportional to the amount of bottomfish EFH in either Federal or territorial waters, a rough estimate can be made for the reduction in catch under an ACL of 1,500 lb. If the fishery continues operating as it has in recent years with an average annual catch of 14,789 lb, there would be another 13,289 lb of catch expected to be harvested in the fishery the remainder of the year. If catches are proportional to bottomfish habitat in Federal and territorial waters (15 and 85 percent, respectively; see Figure 1), 1,993 lb that might have ordinarily been caught in Federal waters would not be caught in the fishery. Therefore, the total catch for this scenario would be 12,796 lb rather than the recent average catch of 14,789 lb or 14,521 lb that would be expected under the status quo (Section 2.3.1), but this improvement may not be fully realized if fishing is displaced to territorial waters. This level of catch exceeds the OFL specified in the most recent stock assessment (Langseth et al., 2019). Additionally, due to the post-season AM, it is likely that the ACL would be reduced to 0 lb after the first year of the rebuilding plan, effectively closing Federal waters around American Samoa to the fishery for the remainder of the rebuilding plan. At this point, the fishery impacts of Alternative 2 would be identical to those under Alternative 3 (see Section 2.5.1), resulting in a reduction of catch by 15 percent to 12,571 lb. Thus, the rebuilding time of nine years designated by T_{target} would not be met under this alternative and rebuilding the stock complex to B_{MSY} would take over 40 years with an annual catch of 12,571 lb to 12,796 lb each year after the initial year of the plan (Table 9). Thus, Alternative 2 would slightly reduce fishing relative to the status quo, but adverse impacts to the American Samoa bottomfish stock would persist, the stock would continue to be subject to overfishing, and rebuilding would be substantially delayed.

Though fishing cannot necessarily be constrained in territorial waters, Alternative 2 would serve to slightly reduce catch in Federal waters and be in compliance with the Magnuson-Stevens Act, implementing Federal regulations, and the provisions of the Council's FEP that require ACLs and AMs to be implemented annually. Alternative 2, however, does not meet the stated purpose and need for Federal action to be implemented to end overfishing and rebuild the American Samoa bottomfish fishery within ten years, as overfishing would persist and rebuilding would not be allowed to occur for over four decades.

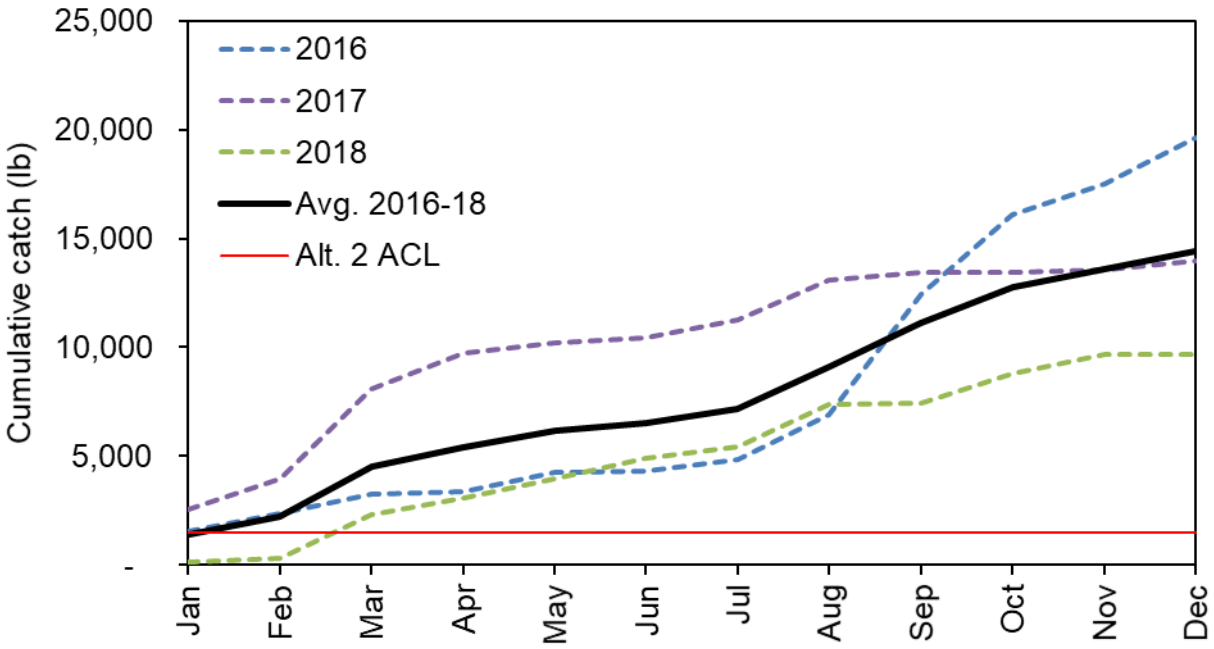

Figure 4. Cumulative monthly catch of American Samoa BMUS from 2016 to 2018 compared to the proposed ACL under Alternative 2.
(Source: WPacFIN)

2.4.2 Estimated Conservation and Management Benefit to MUS (Alt. 2)

The level of catch authorized under Alternative 2 is intended to end overfishing and rebuild the American Samoa bottomfish fishery in a time frame one year longer than T_{min} while still allowing some harvest to occur. However, continued fishing in territorial waters would reduce these intended conservation benefits of the proposed management measures. Thus, under Alternative 2, there would likely be minor conservation and management benefits to American Samoa BMUS relative to the baseline by reducing total catch approximately 1,993 lb to 2,218 lb in a given year due to the expected closure of Federal waters to the fishery in each fishing year. Any displacement of fishing effort from Federal waters to territorial waters could further offset this anticipated reduction in catch in the absence of the territory implementing a complementary fishery closure. It is expected that ACL of 1,500 lb would quickly be exceeded due to data on recent average annual catch for the fishery, and that the post-season AM would cause every ACL after the first year of the rebuilding plan to be reduced to 0 lb. In either case, fishing would be expected to continue to occur in territorial waters at a level that would surpass sustainability thresholds specified in the stock assessment (Langseth et al., 2019). Thus, adverse impacts to the American Samoa bottomfish stock from fishing would remain, the stock would continue to be subject to overfishing, and the rebuilding of the fishery would be substantially delayed, but the alternative would still supply minor conservation benefit to the American Samoa bottomfish stock complex relative to the status quo by reducing bottomfish catches in Federal waters earlier in the fishing year than expected under Alternative 1.

2.4.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Effects of the Management Measure (Alt. 2)

The authorized catch level under Alternative 2 is intended to end overfishing while mitigating cultural, economic, and social impacts to American Samoa communities by still allowing some level of fishing in Federal waters relative to Alternative 3. However, continued fishing in territorial waters would serve to drastically reduce potential conservation benefits of the management measure. Under Alternative 2, minor cultural, economic, and social effects are likely to impact fishermen who harvest bottomfish in Federal waters, as it is expected that the ACL would be exceeded in the first few months of the year and Federal waters would be closed in accordance with the in-season AM. This closure would likely result would in a minor reduction in the availability of locally caught bottomfish over the course of the rebuilding plan relative to the status quo. While the recent average annual catch of BMUS in American Samoa is 14,789 lb, an estimated 1,123 lb (i.e., nearly 8 percent) of that was sold (Table 7; WPRFMC, 2020a). Considering that generally less than 10 percent of bottomfish catch is sold, the fishery can be considered predominantly non-commercial, primarily providing fish for sustenance and cultural events. The estimated commercial value of the bottomfish fishery was $5,708 in 2019, with an average price per pound was $4.07 for BMUS species (Table 7; WPRFMC, 2020a). If total expected catch is 12,796 lb in the first year of the rebuilding plan and 7.7 percent of the catch is sold at $4.44 pound that means 985 lb would be sold for a revenue of $4,375. Using the number of fishery participants from the 2020 LOF, the 30 participants would earn an average of $146. Thus, if catch is reduced by an estimated 1,993 lb in the first year of the rebuilding plan, there would be an expected loss of revenue of $590 for the fishery, or nearly $20 per fisher (12 percent) relative to the status quo. However, after the first year of the rebuilding plan, the post-season AM is expected to reduce the ACL to 0 lb, which would result in impacts similar to Alternative 3 (see Section 2.5.3) with an expected loss of revenue of $667 for the fishery and over $22 per fisher relative to the status quo.

Larger impacts would occur if the American Samoa government implements complementary closures with the Federal action. If catch were to dramatically decrease from recent averages due to the fishing constraints or complementary closures of territorial waters associated with Alternative 2, fishery revenues could decrease by nearly 90 percent. However, it is expected that fishermen would compensate for a closure of Federal waters by catching BMUS in territorial waters that would likely remain open to fishing, and revenue would be closer to what is expected under the status quo. NMFS does not have information to estimate the magnitude of compensation that would occur. Thus, impacts associated with the sale of bottomfish would cause adverse effects to fishers if there were to be a complete moratorium on bottomfish fishing, but the effects to revenue would be relatively minor if fishing is constrained in Federal waters alone once the ACL is reached.

2.5 Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, the Council would recommend a fishing prohibition for and possession of BMUS in Federal waters around American Samoa until it is determined that the stock complex is no longer experiencing overfishing and has rebuilt to its B_{MSY}. This action would be equivalent to implementing a catch limit of 0 lb in Federal waters around American Samoa and is the maximum action that the Council could recommend to address the overfishing of and requirement to rebuild the bottomfish stock complex. There would be no AMs associated with this alternative because catch would not need to be monitored towards an ACL. It is expected that there would be displacement of bottomfish fishing in Federal waters around American Samoa to territorial waters since it is not anticipated that the American Samoa government would implement a complementary closure of territorial waters for the fishery if the moratorium under this alternative is enacted. Despite fishing for BMUS being likely to continue in territorial waters, Alternative 3 would likely result in less annual catch for the American Samoa bottomfish fishery than Alternative 1 and Alternative 2 in the first year of the rebuilding plan. All other applicable fishing regulations would remain and the bottomfish fishery would continue to be monitored by NMFS and the Council.

Using biomass projections produced by PIFSC for the American Samoa bottomfish fishery, the T_{min} for rebuilding the fishery would be eight years in the absence of fishing mortality (Table 9). This reflects the shortest amount of time to rebuild the American Samoa bottomfish stock to its B_{MSY}. Because T_{min} is less than 10 years, T_{max} for the fishery would be 10 years consistent with 50 CFR 600.310(j)(3)(i)(B)(1). Because T_{min} is eight years in the absence of fishing mortality, and the authorized catch under this alternative is 0 lb, the T_{target} under Alternative 3 would also be eight years. The $F_{rebuild}$ for this T_{target} would be 0 in the absence of fishing mortality. According to the projections for stock biomass, an annual catch level of 0 lb would generate biomass increases for the stock from approximately 8.8 to 15.9 percent annually, with a total biomass increase of approximately 159 percent over the course of eight years. Though T_{min} and T_{target} would be eight years with zero annual catch, because fishing activity is expected to continue in Federal waters, annual catch is anticipated to be approximately 12,571 lb (Section 2.5.1). Thus, the expected time to rebuild under this alternative, if adopted, would be greater than 40 years, which is the extent of time that the projections were generated (Section 2.5.1). The parameters under this alternative required for a rebuilding plan for an overfished fishery are presented in Table 10.

Table 10. Rebuilding plan parameters under Alternative 3 as required by National Standard 1 for an overfished fishery.

Parameter	Value
T_{min}	8 years
T_{target}	8 years
T_{max}	10 years
$F_{rebuild}$	0

Similar to Alternative 2, there is little available information on the life history for American Samoa BMUS to inform Alternative 3, and not much is known about how the stock complex interacts with the surrounding marine ecosystem. A closure of the fishery would coincide with

Magnuson-Stevens Act requirements to take action to end overfishing and rebuild the stock as quickly as possible, but it would grant slightly less consideration to mitigating impacts to the fishing community as Alternative 2.

2.5.1 Expected Fishery Outcome (Alt. 3)

Under Alternative 3, the Council expects that the catch of American Samoa bottomfish would be slightly less than the baseline and Alternative 2 for the first year and the same thereafter, but also that the fishery would continue fishing at levels relatively similar to recent years. Though the closure of Federal waters to the bottomfish fishery would effectively be the same as setting an ACL of 0 lb, it is expected that there would be displacement of fishing effort from Federal to territorial waters to compensate for the loss in fishing grounds. The Council does not anticipate that the American Samoa government would implement a complementary closure of territorial waters associated with this action, so it is expected that the American Samoa bottomfish fishery would continue operating in territorial waters. As described for Alternative 2, the Council and NMFS do not possess the spatial information or data to discern the amount of BMUS harvested in Federal versus territorial waters around American Samoa. However, if it is assumed that catch is proportional to the amount of bottomfish EFH in either Federal or territorial waters and 15 percent of bottomfish EFH around American Samoa occurs in Federal waters, a rough estimate can be made for the reduction in catch resulting from Alternative 3. Assuming the fishery continues to harvest bottomfish as it has in recent years, the recent average annual catch of 14,789 lb (Table 5) would be reduced by approximately 15 percent (2,218 lb) to 12,571 lb with a closure of Federal waters; however, this also assumes that there would be no displacement of fishing effort to territorial waters, which is unlikely. Additionally, like Alternative 2, the presented time frame for rebuilding in eight years assumes an annual catch level of 0 lb, which would not realistically occur due to anticipated harvest of bottomfish in territorial waters. Because annual catch is expected to be 12,571 lb, rebuilding to B_{MSY} would take more than 40 years, which is the extent that projections were able to be generated (Table 9). Thus, this alternative would result in a slight reduction in fishing, but it is expected the American Samoa bottomfish stock would continue to be subject to overfishing and the time necessary for it to rebuild would exceed the 10 year limit under statutory requirements.

Though fishing cannot necessarily be constrained in territorial waters, Alternative 3 would serve to reduce catch in Federal waters very slightly more than Alternative 2 (in the first year of the rebuilding plan) while being in compliance with the Magnuson-Stevens Act, implementing Federal regulations, and the provisions of the Council's FEP. However, this alternative does not necessarily consider the needs of the American Samoa fishing community, which is dependent on locally harvested bottomfish. Alternative 3 is estimated to result in reducing overfishing slightly more than Alternative 2 in addition to presumably rebuilding in a shorter time frame, though the projections are not able to depict the full rebuilding time. However, Alternative 2 allows more slightly more bottomfish catch in Federal waters in the first year and, thus, would have increased consideration for the needs of the fishing community.

2.5.2 Estimated Conservation and Management Benefit to MUS (Alt. 3)

Alternative 3 would reduce overfishing and rebuild the American Samoa bottomfish fishery as quickly as possible (i.e., in a marginally shorter same time frame than Alternative 2) by

prohibiting all bottomfish catch in Federal waters. Under Alternative 3, there would likely be minor conservation and management benefits to American Samoa BMUS relative to the status alternative by eliminating harvest in Federal waters, which would reduce total harvest by approximately 2,218 lb to a total of 12,571 lb. However, any displacement of fishing effort from Federal waters to territorial waters could offset the anticipated reduction in catch. If Federal waters are closed to the fishery under Alternative 3, it is expected that the fishery would continue to operate in territorial waters in the absence of the territory implementing a complementary fishery closure. Thus, adverse impacts to the American Samoa bottomfish stock from fishing would likely remain, the stock would continue to be subject to overfishing and the rebuilding of the fishery would be delayed past the eight-year rebuilding time to over 40 years. However, the alternative would supply some conservation benefit to the American Samoa bottomfish stock complex relative to the status quo by resulting in a lower expected annual catch. Additionally, there would be added management benefits under Alternative 3 relative to Alternative 2, as there would be no need to implement an ACL and monitor catch against it despite the two alternatives having similar fishery impacts after the first year of the rebuilding plan.

2.5.3 Degree to which this Alternative Mitigates Cultural, Economic, and Social Effects of the Management Measure (Alt. 3)

Under Alternative 3, the Council expects that the American Samoa bottomfish fishery would perform similarly to Alternative 2 in all years except the first year of the rebuilding plan. This alternative would close the fishery in Federal waters, and BMUS catch may be slightly reduced from the recent average. Catch is expected to be 12,571 lb (Section 2.5.1) due to the reduction of catch from Federal waters. If7.7 percent of the expected catch is sold commercially at $4.44 per pound (Table 7), the expected revenue would be $4,298. The estimated number of 30 fishery participants from the 2020 LOF would then earn $143 each if divided equally; this is a decrease of approximately $22, or 13 percent, per fisher from the status quo. If fishermen compensated for a closure of Federal waters by catching BMUS in territorial waters that remained open to fishing, revenue would be closer to that expected under the status quo alternative. NMFS does not have information to estimate the magnitude of compensation that may occur. Because this alternative is expected to result in less catch of bottomfish than Alternative 1 (and Alternative 2 in the first year) despite fishing for BMUS being likely to continue in territorial waters, Alternative 3 would also result in less catch available for subsistence, cultural, and religious purposes.

Alternative 3 does not provide for authorized catch in Federal waters, but territorial waters would remain open to fishing for bottomfish. This would allow for some availability of bottomfish resources to the American Samoa fishing community, however, bottomfish are expected to be available in slightly lower quantities than under the slightly. Thus, Alternative 3 would pose greater constraints to fishermen than Alternative 1 (and Alternative 2 in the first year) for a slight conservation gain. Additionally, Alternative 3 would likely provide a tangible conservation benefit in the first year of the rebuilding plan relative to Alternative 2 due to the restriction of catches in Federal waters. Thus, the fishery closure under Alternative 3 may decrease the amount of bottomfish available to the community for subsistence, cultural, and religious purposes as well as the amount of revenue available to fishermen. Revenue would be decreased relative to Alternative 1 (and Alternative 2 in the first year), but this decrease would be minimal and is not expected to result in any large social or economic effects to the American Samoa fishing community. Overall, this alternative does less than the status quo alternative and Alternative 2 to

mitigate adverse cultural, economic, and social effects by slightly reducing the amount of fish available to markets and for sustenance and cultural practices in American Samoa. Thus, Alternative 3 does not meet the need to mitigate socio-economic effects as well as the status quo alternative or, technically, Alternative 2.

2.6 Alternatives Considered but Not Analyzed

2.6.1 Implement Federal Permitting and Reporting Alongside Bag Limits

Under this alternative, annual bag limits would be implemented for bottomfish fishing in Federal waters in addition to the ACLs and AMs proposed in the presented action alternatives. Federal permitting and reporting would also be implemented to support the monitoring of the bag limits. This alternative was initially presented to the Council and its SSC at their meetings in November and December 2020 but was not heavily considered to be enacted. These provisions would require substantial additional administrative resources and effort relative to all other alternatives to enact the new limitations, establish a permitting scheme, and develop of consistent method of reporting for fishermen. These regulations could also result in additional costs to fishermen to obtain the permit and dedicate time to accurately reporting their catches under the bag limits in Federal waters. Fishermen would also need to learn about the bag limit regulations, comply with the new laws such that they do not harvest more than the limit that they are individually allocated, and report their catches in Federal waters to NMFS. NMFS would need to dedicate resources to developing a system to distribute permits to fishermen, receive their catch reports, and ensure that fishers are not exceeding their allocated bag limit. Additional resources would also be required by the NMFS Office of Law Enforcement (OLE) and U.S. Coast Guard to enforce legal fishing in Federal waters under the bag limits) The substantial additional costs and effort required under this alternative for both NMFS and Guam bottomfish fishermen would likely result in little perceivable conservation benefit relative to the action alternatives, so this alternative was removed from consideration for this rebuilding plan when presented to the Council for final action.

2.7 Comparison of Features of the Alternatives

Table 11 presents a summary of various features of the alternatives to allow for comparison among the alternatives.

Table 11. Comparison of the proposed fishery management features and expected outcomes for this action.

Topic	Alt. 1 – ACL of 13,000 lb w/ In-Season AM	Alt. 2 – ACL of 1,500 lb w/ In-Season and Post-Season AMs	Alt. 3 – Closure of Fishery in Federal Waters
Also referred to as:	Status quo, baseline.	N/A.	N/A.
Active fisheries affected	American Samoa bottomfish.	No change from status quo.	No change from status quo.
Active fisheries potentially affected indirectly	American Samoa troll.	No change from status quo.	No change from status quo.
General characteristics of alternative	ACL set consist with previous interim management measure; in-season fishery closure as the AM. Alt. 1 would have less adverse impact to the fishing community than the other alternatives.	ACL set to reduce overfishing and rebuild the fishery; in-season fishery closure and post-season overage adjustment as the AMs. Alt. 2 reduces adverse effects on fishing community relative to Alt. 3 but would have impacts to the fishing community relative to Alt. 1.	Moratorium on fishing for or possessing BMUS in Federal waters to reduce overfishing and rebuild the fishery. Alt. 3 has no reduction of adverse effects on fishing community during the period of effectiveness.
Time to rebuild under authorized annual catch	>40 years.	9 years.	8 years.
Time to rebuild under expected annual catch	>40 years.	>40 years.	>40 years.
Authorized annual catch (lb) of BMUS in American Samoa	13,000 lb.	1,500 lb.	0 lb.
Monitored by:	American Samoa DMWR Creel Surveys.	No change from status quo.	No change from status quo.
ACL likely to be	Yes, possible by November	Yes, likely by February in the first	N/A.

exceeded in a given year (based on recent average catch)	annually.	year of the rebuilding plan.	
Accountability Measures	In-season: If available data indicates the fishery would attain the ACL, NMFS would close the fishery in Federal waters.	In-season: No change from status quo. Post-season: If the ACL is exceeded based on a three year running average, the ACL for the following year would be reduced by the amount of overage.	No AMs implemented, as the fishery would be closed in Federal waters.
Complementary closure of territorial waters by American Samoa Government	Not anticipated. Not a part of the proposed action.	No change from status quo.	No change from status quo.
Possibility of fishery closure in Federal waters	None.	Likely by Feb in 2022 and for the full year each subsequent year.	Full year for duration of plan.
Expected annual catch of American Samoa BMUS (see text for detail)	14,521 lb.	2022: 12,796 lb. Each subsequent year: 12,571 lb.	12,571 lb.
Potential to rebuild during duration of management measure	No.	No, but greater chance than Alt. 1.	No, but greater chance that Alt. 1 and 2.
Reduces overfishing relative to previous years	No, not relative to the previous interim measure.	Yes, slight reduction of catch relative to status quo (less than Alt. 3 in the first year).	Yes, slight reduction of catch relative to status quo (more than Alt. 2 in the first year).
Authorized catch would allow stock biomass to increase	Potentially. The authorized level of annual catch would take over 40 years to allow rebuilding, if at all.	Yes, reduction in catch would allow biomass to increase; however, biomass increases may	Yes, strict reduction in catch would allow biomass to increase at the maximum rate; however,

during the specification period	Biomass increases under this level of catch would occur at a slower pace than Alt. 2 and 3, and any exceedance of this level would offset the increases and further inhibit rebuilding.	not be realized due to a shift of fishing effort from Federal to territorial waters.	biomass increases may not be realized due to a shift of fishing effort from Federal to territorial waters.
Mitigates effects of immediately ending overfishing on communities during time frame of rebuilding plan	Yes. Fishing in the fishery would be the same as it has been under the interim measure and closer to previous years than the action alternatives. This alternative lacks the long-term benefits of restricting overfishing and shortening the rebuilding time frame to the same extent that the action alternatives would provide.	Yes. More than Alt. 3 but less than Alt. 1, as more fishing would be expected than under Alt. 3 in the first year of the plan but less than would be expected under Alt. 1. The implementation of an ACL, despite being low, would help to mitigate impacts on the American Samoa fishing communities that depend on fishing in Federal waters for bottomfish. Long-term, there would likely be additional benefit to rebuilding the stock than under Alt. 1.	In the short term, not relative to Alt. 1 or 2, since a closure of Federal waters would be the most extreme action that the Council could recommend in implementing a rebuilding plan for the fishery. Long-term, there would likely be additional benefit to rebuilding the stock more quickly than under Alt. 1 and 2, which could improve the future outlook of the fishery.

3 AFFECTED ENVIRONMENT AND POTENTIAL EFFECTS OF THE ALTERNATIVES

This section describes the affected fishery, fishery resources, protected species, habitats, and the potential environmental effects of the proposed rebuilding plan on these resources. Climate change and environmental justice are considered, along with potential effects to fishing communities, species marine areas and other resources, and potential effects on fishery administration and enforcement.

3.1 Overview of Bottomfish Fisheries

Throughout the development of the American Samoa bottomfish fishery in the 1900s, indigenous people harvested many of the same bottomfish species and used some of the same gears and techniques utilized currently (WPRFMC, 2009). Bottomfish are typically harvested in deep waters, though some species are caught over reefs at shallower depths. The eteline snappers (e.g., *Etelis* and *Pristipomoides* spp.) are known to inhabit high-relief, deep slopes ranging from 80 to 400 m deep, and are primarily harvested using a vertical handline (see below). Other species, such as jacks, emperors, and lutjanid snappers are targeted by fishermen at shallower depths. Fishermen also catch the gray jobfish (*Aprion virescens*) by vertical handline, but this species is also harvested with drifting or slowly-moving vessels and trolling gear over relatively flat-bottom areas.

Bottomfish fishermen normally fish using a vertical hook-and-line method in which weighted and baited lines are lowered and raised with electric, hydraulic, or hand-powered reels. The main line is typically 400 to 450-pound test, with hook leaders of 80 to 120-pound test monofilament. The hooks are circle hooks, generally of the Mustad (conventional scale) sizes 11/0, 12/0, and 13/0, and a typical arrangement uses six to eight hooks branching off the main line. The terminal weight is typically 5 to 6 lb. The hook leaders are typically 2 to 3 feet long and separated by about 6 feet along the main line. Fishermen may bait hooks with fish such as the big-eye scad (*Selar crumenopthalmus*) or squid. Sometimes, fishermen supplement lines with a chum bag containing chopped fish or squid suspended above the highest hook. Federal regulations prohibit bottom trawls, bottom gillnets, explosives, and poisons (50 CFR Parts 665.104 and 665.406). Additionally, territorial regulations also prohibit the use of explosives, poisonous substances, and electrical devices, in addition to specifying requirements for which cast nets, gill nets, seines, surround nets, and drag nets may be used (ASCA § 24.0920 through 24.0933). Commercial and non-commercial fisheries for bottomfish occur primarily in nearshore waters from 0 to 3 nm, although some fishermen make longer trips to offshore banks in Federal waters (Brodziak et al., 2012).

3.1.1 Overview of the Fishery Data Collection System in American Samoa

In American Samoa, local resource management agencies, such as the DMWR, collect bottomfish fishery data with assistance from NMFS PIFSC WPacFIN through the boat-based creel survey program, the shore-based creel survey program, and the commercial receipt book system.

3.1.1.1 Boat-Based Creel Survey Program

The boat-based creel survey program collects data on catch, effort, and participation for offshore fishing activities conducted by commercial and non-commercial fishing vessels. Surveys are conducted at main docks and boat ramps using two separate phases of data collection: participation counts and fishermen interviews. Participation counts are done by counting the number of boats not at port, identifying the presence of boat trailers, and determining the type of gear used. The fishermen interviews document catch composition, catch-per-unit-effort (CPUE), length-weight information, catch disposition, and additional socioeconomic information. Survey days are randomly selected three to eight times per month. Surveys follow a random stratified design by survey area, weekday/weekend, and time of day (e.g., daytime and nighttime). The creel survey data are transcribed weekly into the WPacFIN database. WPacFIN applies catch expansion algorithms to the data, which also include port, time of day, and fishing method, at the stratum level on an annual scale to estimate total catch, effort, and CPUE in the fishery.

3.1.1.2 Shore-Based Creel Survey Program

The shore-based creel survey program collects data on catch, effort, and participation for inshore fishing activities. The surveys randomly sample shore-based fishing and consist of both participation counts and fishermen interviews. Participation counts are done using a "bus route" method, with data collectors using predefined stopping points and time constraints to count the number of fishermen along the shoreline while recording gear type and number of gears. The fishermen interviews document catch composition, CPUE, length-weight information, catch disposition, and additional socioeconomic information. Survey dates are randomly selected two to four times per week and the surveys take place over eight-hour periods. The creel survey data are transcribed weekly into the WPacFIN database. WPacFIN applies catch expansion algorithms to the data, which also include island region, weekday/weekend, and fishing method, at the stratum level on an annual scale to estimate total catch, effort, and CPUE in the fishery.

3.1.1.3 Commercial Receipt Book System

American Samoa has a mandatory requirement for entities that sell any seafood products (e.g., fish dealers, hotels, and restaurants) to submit invoice reports to the DMWR (ASCA § 24.0305). The commercial receipt book system collects information by the fifth day of every month. This system monitors fish sold locally and collects information by vendors who purchase fish directly from fishermen. The reported information typically includes the weight and number of each species purchased, the name of the fishermen providing the fish, the boat registration name and number as applicable, the name of the dealer, the date, the price paid, the type of fishing gear used, whether fish were taken in territorial or Federal waters, and other information as requested by DMWR. The submitted invoices usually compile daily trip landings.

3.1.2 Overview of Federal Permit and Reporting Requirements

Bottomfish fishermen in American Samoa are not required to obtain a Federal permit to fish for BMUS or report their BMUS catch to NMFS.

3.1.3 Overview of the In-Season AM for Alternatives 1 and 2

When evaluating catch, NMFS applies all catches of BMUS from both Federal and territorial waters toward the implemented ACL. If available catch data indicates that catch would reach or exceed the ACL, NMFS would close the fishery in Federal waters to constrain fishing mortality.

3.1.4 Overview of the Post-Season AM for Alternative 2

At the end of each fishing year, NMFS would immediately, or as soon as possible considering limitations in the data collection and processing methods, account for total annual catch relative to the implemented ACL using a three year running average. If the three year average of total annual catch exceeds the ACL for the year, NMFS would implement a downward adjustment to the ACL for the subsequent year by the amount of overage. Since a downward adjustment would not correct the operational issue that caused the ACL overage (i.e., continued bottomfish fishing in territorial waters), in accordance with 50 CFR 600.310(g), an additional performance standard would also be enacted such that if catches exceed the ACL more than once in a four-year period, the Council would re-evaluate the ACL process and adjust the system, as necessary, to improve its performance and effectiveness.

3.2 Potential Effects on Physical Resources

There are no known significant impacts to air quality, noise, water quality, view planes, or terrestrial resources from past or current bottomfish fishing activity in American Samoa. The fishery does not have adverse effects on unique features of the geographic environment, and fishing behavior and effort are not expected to change under any alternative in a manner that would result in effects on physical resources (see Sections 2.3 through 2.5). Given the characteristics of the fishing fleet and the offshore nature of the fishing activity, none of the alternatives would result in impacts to air quality, noise, water quality, view planes, or terrestrial resources.

3.3 American Samoa Bottomfish Fishery and Biological Resources

The Samoa Archipelago is located in the central South Pacific Ocean and consists of seven major volcanic islands, several small islets, and two coral atolls. The largest islands in this chain are Upolu and Savaii, which belong to the independent state of Samoa with a population of approximately 198,950 people (World Population Review, accessed November 11, 2020). In contrast, the Territory of American Samoa has a population of 55,191 (World Population Review, accessed November 11, 2020). The territory consists of five volcanic islands (i.e., Tutuila, Aunu'u, Ofu, Olosega, and Ta'ū) with steep, mountainous terrain and high sea cliffs in addition to two coral atolls (i.e., Swains Island and Rose Atoll). Tutuila is the largest and most populous island in the territory, inhabited by over 95 percent of the total population of American Samoa (World Population Review, accessed November 11, 2020). Tutuila is characterized by an extensive shelf area accompanied by offshore banks and barrier reefs. Tutuila is also the center of government and business for the territory, and Pago Pago Harbor on Tutuila is one of the most sheltered natural deepwater harbors in the Southern Pacific (WPRFMC, 2009).

3.3.1 Overview of American Samoa's Bottomfish Fishery

NMFS and the Council manage bottomfish fishing in Federal waters around American Samoa in accordance with the FEP for the American Samoa Archipelago (WPRFMC, 2009), which was developed by the Council and implemented by NMFS under the authority of the Magnuson-Stevens Act. The U.S. EEZ around American Samoa is approximately 156,246 km^2 and extends from 3 to 200 nm from the shore. Because of the steepness of the offshore slope around Tutuila and other islands, most of the benthic habitat is fringing coral reefs, a limited reef slope, and a few offshore banks (Craig et al., 2005). The American Samoa Archipelago FEP emphasizes community participation and increased consideration of the habitat and ecosystem in its management structure in addition to other elements that are not usually incorporated in fishery management decision making. The American Samoa DWMR manages bottomfish fishing from 0 to 3 nm from the shore. A joint Federal-territorial partnership enforces Federal fishery regulations, and the American Samoa Archipelago FEP requires the Council to produce an annual performance report for the fishery (e.g., WPRFMC, 2020a).

Currently, there are no Federal permit or reporting requirements for bottomfish fishing in Federal waters around American Samoa. The American Samoa bottomfish fishery is monitored using data voluntarily provided by fishermen to DMWR through the boat-based and shore-based creel survey programs. Additionally, DMWR receives commercial sales data from the mandatory commercial receipt book system in accordance with territory regulations.

The 2020 List of Fisheries (LOF) estimated that there were less than 30 participants in the American Samoa bottomfish fishery (85 FR 21095, April 16, 2020). Fishing for bottomfish primarily occurs using aluminum *alia* catamarans less than 32 feet in length that are outfitted with outboard engines and wooden hand reels that fishermen use for both trolling and bottomfish fishing. Fishermen typically fish less than 20 miles from shore because few vessels carry ice (WPRFMC, 2009). Since 2000, the boat-based segment of the fishery has landed between an estimated 7,688 and 42,301 lb of BMUS annually (Table 5). Over the last three years (2017 to 2019), approximately 7.7 percent of that catch has been commercially sold (Table 7; see Section 3.4.1), so the fishery is primarily non-commercial. Though the pelagic fisheries play a relatively larger role in American Samoa's economy, insular fisheries hold fundamental socioeconomic and dietary importance (Levine and Allen, 2009). The demand for bottomfish on American Samoa varies depending on the need for fish at government and cultural events, and *alia* fishermen may switch to bottomfish fishing during periods when longline catches or prices are low (WPRFMC, 2020a). Fishing grounds in Federal waters around American Samoa are also important for the harvest of deep-water snappers used for chiefly position entitlements and *fa'a lalave* ceremonies (e.g., funerals, weddings, births, and special birthdays).

3.3.1.1 Potential Effects of the Alternatives on the Bottomfish Fishery in American Samoa

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, management would mirror the provisions of the interim measure with an ACL of 13,000 lb and in-season AM to prevent the fishery from exceeding the catch limit. Under the in-season AM, the fishery would be closed in Federal waters if available information indicates that the ACL would be attained during the fishing year. During a closure of Federal waters, NMFS would prohibit fishing for and possession of BMUS in Federal waters. Catch data

to monitor the fishery would continue to come from the creel survey program and the commercial receipt book system administered by DMWR and reported to WPacFIN. NMFS would work with DMWR and WPacFIN to encourage timely processing of data and would track catches towards the limit when data are available.

This alternative would set the ACL at approximately 12 percent of the ACLs most recently implemented in 2016 and 2017 (ACLs were not implemented in 2018 and 2019) and 88 percent of the recent five-year average of 14,789 lb. NMFS expects that annual catch under this alternative would attain the ACL and trigger the in-season AM if catches are similar to those in recent years (Table 5). Data on seasonality of catch are not available to make a precise estimate of when this might occur, but if catch is proportional throughout the year, then the fishery could reach the ACL in November (Section 2.3.1). Territorial waters of American Samoa would not be affected by the Federal closure, and bottomfish habitat is predominantly found in territorial waters. NMFS expects that some fishing effort could be displaced from Federal waters to unrestricted territorial waters in response to a closure of Federal waters to bottomfish fishing. Displacement of fishing effort to territorial waters would limit the potential reduction in catch realized from the closure of Federal waters, so annual catch under this rebuilding plan is expected range between 14,521 lb and 14,789 lb. The fishery is therefore not expected to change the way it fishes with respect to fishing gear, fishing effort, participation, or intensity, and is expected to change slightly with respect to total catch and areas fished since bottomfish fishing is expected to be prohibited in Federal waters for a small portion of the year. Overall catch may be reduced only slightly (i.e., by 268 lb from recent averages) due to continued fishing in territorial waters beyond the jurisdiction of NMFS. However, fishery performance under this alternative is expected to be the same as under the interim measure in place in 2020 and 2021.

Since ACLs were first implemented in 2012, the lowest estimated catch of BMUS in American Samoa was in 2012 at 7,688 lb, and the greatest catch was in 2015 at 29,511 lb. The average annual catch from 2017 to 2019 was 14,789 lb (Table 5). The level of catch authorized under this alternative is nearly 157 percent of the six-year OFL of 8,000 lb estimated in the 2019 stock assessment (Langseth et al., 2019). Thus, the catch level authorized under this alternative would reduce overfishing relative to the recent annual average but would not end overfishing. Additionally, an annual catch of BMUS of 13,000 lb would not allow rebuilding of the stock complex to its B_{MSY} for over 40 years (Table 9). In summary, Alternative 1 has the potential to result in reduced fishery impacts on the bottomfish stock complex relative to the recent average, and would reduce adverse social, cultural, and economic effects on members of the American Samoa fishing community relative to acting to end overfishing immediately as required under the Magnuson-Stevens Act. However, implementing the status quo alternative is not consistent with the Purpose and Need to end overfishing and rebuild the fishery consistent with requirements under the Magnuson-Stevens Act.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, NMFS would implement an ACL of 1,500 lb and establish an in-season AM to constrain fishery catch if the ACL were to be exceeded where, if available information indicates that the ACL would be reached during the fishing year, NMFS would close fishing for BMUS in Federal waters for the remainder of the fishing year. During a closure of Federal

waters, NMFS would prohibit fishing for and possession of BMUS in Federal waters. Additionally, a post-season AM would be implemented to reduce the ACL in subsequent years when the three year running average of catch exceeds the ACL from the previous year. Similar to the status quo, data to monitor the fishery would come from both the creel survey program and commercial receipt book system administered by DMWR and reported to WPacFIN. NMFS would work with DMWR and WPacFIN to encourage timely processing of data and would track catches toward the ACL as data are made available.

This alternative would set the ACL at 1.4 percent of the ACLs most recently implemented in 2016 and 2017 (ACLs were not implemented in 2018 and 2019) and approximately 10.1 percent of the recent three year average catch of 14,789 lb. It is expected that the total catch during each year of this rebuilding plan would exceed the ACL and trigger the in-season AM, as this level of authorized catch is lower than any estimate of annual catch for the fishery (Table 5). Using monthly catch expansions provided by WPacFIN, the fishery would likely reach the ACL within the first few months of the year (Section 2.4.1). A closure of Federal waters to bottomfish fishing could result in a reduction of catch of 1,993 lb from the recent average if fishing occurs consistent with the proportion of bottomfish habitat in Federal waters versus territorial waters. However, it is anticipated that some fishing effort may be displaced from Federal waters to unrestricted territorial waters in response to a closure of Federal waters to bottomfish fishing without a complementary closure of territorial waters. Continued harvest in territorial waters would limit the potential reduction in catch realized from a closure of Federal waters, so catch in the first year under this alternative is expected to be 12,796 lb to 14,789 lb (Section 2.4.1); this reflects a potential reduction of 1,725 lb in expected catch relative to the status quo. Due to the post-season AM, the ACL for the fishery is expected to be reduced to 0 lb for each of the remaining years of the rebuilding plan. Thus, the expected annual catch would be 12,571 lb to 14,789 lb after the first year of the rebuilding plan, which would allow a potential reduction of catch of 1,950 lb from the status quo. The fishery is not expected to change the way it fishes with respect to fishing gear, effort, participation, or intensity, and it is expected to change slightly with respected to catch and areas fished since bottomfish fishing would likely be prohibited in Federal waters for a majority of the first fishing year and then for the remainder of the duration of the rebuilding plan. Despite the slight reduction in expected annual catch relative to the status quo alternative due to continued fishing in territorial waters, Alternative 2 does provide some conservation benefit to the stock complex by closing Federal waters when the ACL is exceeded to limit fishing mortality. Thus, under Alternative 2, the proposed rebuilding plan would provide a conservation benefit relative to the status quo alternative with respect to ending overfishing and rebuilding the fishery.

The catch level authorized under Alternative 2 would end overfishing and rebuild the bottomfish fishery in American Samoa from its overfished state in nine years, but rebuilding would likely take be delayed to over 40 years due to fishing continuing in territorial waters. Although catch is expected to exceed the level specified by the ACL because of continued fishing in territorial waters after a Federal fishery closure, catch and overfishing would still be reduced compared to the status quo alternative (Sections 2.3 and 2.4). Implementing the ACL and AMs for this alternative would not address concerns by the Council and its SSC associated with immediately ending overfishing, as this level of authorized catch would be a drastic reduction from the recent average levels of annual catch. While this alternative provides a small level of catch in Federal waters during the first year, continued fishing in territorial waters would not allow overfishing to

be prevented and rebuilding would be substantially delayed; however, it is expected that the relatively lower annual expected catch would allow rebuilding in a shorter period than the status quo despite biomass projections not extending this length in time. Alternative 2 has the potential to result in reduced fishery impacts on the bottomfish stock complex relative to Alternative 1 while limiting adverse social, cultural, and economic effects on the fishing community relative to Alternative 3 by allowing a small amount of catch in Federal waters in the first year of the plan.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, NMFS would prohibit fishing for and possession of BMUS in Federal waters around American Samoa. This alternative is functionally equivalent to an ACL of 0 lb in Federal waters and is the maximum action that the Council could recommend for NMFS to implement to address the overfishing and overfished state of American Samoa bottomfish. There would be no AMs associated with this alternative because catch would not need to be monitored against an ACL. As for all other alternatives, catch would continue to be summarized for the fishery by the Council in its annual SAFE report (e.g., WPRFMC, 2020a).

Because most of the bottomfish habitat around American Samoa is in territorial waters (Figure 1), closing Federal waters is expected to reduce catch moderately for the fishery relative to the status quo and only slightly relative to Alternative 2 in the first year of the rebuilding plan. If the fishery continues activity as it has in recent years at an annual average of 14,789 lb, catch of American Samoa BMUS may be reduced by 2,218 lb from the average to 12,571 lb due to the Federal fishery closure; this would be a reduction of 1,950 lb from the status quo and 225 lb from Alternative 2 in the first year of the rebuilding plan. However, it is expected that some fishing activity would be displaced from Federal waters to territorial waters if a closure were to be implemented and may offset some of the expected reduction in catch. Thus, catch under this alternative is expected to range from 12,571 lb to 14,789 lb for each year of the rebuilding plan. The fishery is not expected to make any significant changes to its fishing gear, effort, participation, or intensity over the course of the rebuilding plan as a result of this alternative, but slight changes are expected for the total amount of catch and areas fished since bottomfish fishing would be prohibited in Federal waters. Due to the slight reduction in catch expected under this alternative, it would provide some conservation benefit to the American Samoa bottomfish stock complex relative to the status quo alternative.

Although the catch level under this alternative would prohibit all BMUS fishing in Federal waters to end overfishing and rebuild the fishery in eight years, actual catch is expected to continue to exceed sustainable fishing levels identified in the 2019 stock assessment due to continued fishing in territorial waters (Langseth et al., 2019) and extend the rebuilding timeline to greater than 40 years (Table 9). However, it is expected that catch and overfishing would be reduced compared to the status quo (Section 2.5.1). Implementing Alternative 3 would not address concerns by the Council or its SSC that taking action to immediately end overfishing would negatively impact fishing communities in American Samoa because authorized catch levels would allow for no BMUS harvest, and authorized catch levels are lower than the level that would restrict overfishing and rebuild the fishery as presented under Alternative 2. Alternative 3 has the potential to reduce adverse effects to the American Samoa bottomfish stock relative to status quo and would also result in slightly less catch than Alternative 2 in the first

year of the rebuilding plan. However, Alternative 3 does not reduce adverse social, cultural, and economic effects on the American Samoa fishing community to the same extent as Alternative 2 in the first year of the plan since it would prohibit all bottomfish fishing in Federal waters, and, therefore, this alternative would do less than Alternatives 1 and 2 to address Council concerns regarding negative impacts to the American Samoa fishing community associated with restricting the fishery to immediately ending overfishing.

3.3.2 Target, Non-Target, and Bycatch Species

The bottomfish fishery in American Samoa primarily targets and harvests a complex of 11 species comprised of emperors, snappers, groupers, and jacks (Table 1). BMUS are typically monitored at the complex level, and the 2019 stock assessment (Langseth et al., 2019) and PIFSC SAP provided stock status and biomass projections at this level. Therefore, the proposed rebuilding plan under the action alternatives would be applied to the entire American Samoa bottomfish stock complex rather than to the 11 individual species comprising the group.

The primary sources of information on target, non-target, and bycatch species associated with American Samoa bottomfish are NMFS stock assessments by Brodziak et al. (2012), Yau et al. (2016), and Langseth et al. (2019), data provided by PIFSC SAP, as well as data provided by WPacFIN and summarized in the Council's annual SAFE report (e.g., WPRFMC, 2020a). Most recently, Langseth et al. (2019) estimated the long-term MSY for the stock complex to be 28,800 lb, and the six-year OFL proxy for the stock was estimated to be 8,000 lb for 2020 to 2025. The assessment also concluded that the American Samoa bottomfish stock complex is overfished and experiencing overfishing (Section 2.1.1). Between 2017 and 2019, the boat-based component of the fishery harvested an average of 14,789 lb (Table 5), which is 51 percent of the MSY and 185 percent of the OFL from the 2019 stock assessment.

The Magnuson-Stevens Act defines bycatch as finfish, mollusks, crustaceans, and all other forms of marine animal and plant life (other than marine mammals and seabirds) that are harvested in a fishery that are not sold or kept for personal use. Bycatch can be further described as either economic or regulatory discards. Economic discards are fish that are discarded because they are of undesirable size, sex, or quality, while regulatory discards are fish that are discarded because regulations do not allow fishermen to retain the fish. Discards in American Samoa usually occur due to regulatory requirements, cultural reasons, ciguatera poisoning, or shark depredation. Data on bycatch harvested in the American Samoa fishery is collected through the boat-based and shore-based creel survey programs run by the DMWR and is reported by the Council in its annual SAFE reports. Bottomfish fishing is target-specific, and all fish recorded in creel survey fishermen interviews for the American Samoa bottomfish fishery were kept in 2019 (see Table 12 in WPRFMC, 2020a). Thus, there is no current concern regarding non-target or bycatch species in the fishery.

3.3.2.1 Potential Effects of the Alternatives on American Samoa Bottomfish

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would implement management measures mirroring the same provisions as the interim measure in 2020 and 2021 for the fishery, including an ACL of 13,000 lb and an in-season AM to prevent the fishery from greatly

exceeding the catch limit. The ACL and AM under the status quo alternative would be expected to maintain the fishery outcomes observed under the interim measure, which include an expected reduction in overfishing despite continued harvests in territorial waters if the fishery attains the ACL and the in-season AM is applied to close Federal waters. Catch would be comparable to the levels observed under the interim measure, which are expected to be reduced by 268 lb relative to the recent three year average catch of 14,789 lb to 14,521 lb annually (Section 2.3.1). Thus, Alternative 1 would reduce overfishing relative to the recent average, consistent with the outcomes of the interim measure. Bottomfish populations resident at offshore banks in Federal waters (e.g., South Bank, Northeast Bank, see Figure 1) may benefit from a closure of these areas if implemented, though fish at inshore areas in territorial waters are expected to experience continued fishing effort. The annual catch level expected under this alternative would not allow for rebuilding of the stock complex for over 40 years. Overall, implementation of the status quo would slightly reduce overfishing compared to recent averages prior to the application of the interim measure in 2020 and is expected to be consistent with the outcomes of the interim measure but would not serve to end overfishing or rebuild the stock complex in accordance with Magnuson-Stevens Act requirements.

The ACL and AM under the status quo are expected to result in catches by the fishery similar to the interim measure, and catch levels are expected to be slightly less than the recent annual average from 2017 to 2019. Therefore, the fishery is expected to continue operating as it has in recent years under the status quo alternative with respect to species targeted, effort, participation, and intensity, with slightly changes to catch and areas fished (Section 2.3.1). Fishing would still occur in waters outside NMFS control if a closure is enacted, so overfishing would be reduced but not ended. Because this alternative provides for the closure of offshore fishing grounds under Federal jurisdiction, there would the same benefit to the stock complex as under the interim measure. However, since overfishing would not be prevented and rebuilding of the fishery would not occur within 10 years, this alternative is not consistent with the Purpose and Need for this proposed action.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, the catch authorized is intended to prevent overfishing while rebuilding the American Samoa bottomfish fishery to its B_{MSY} in nine years. However, it is expected that the fishery would exceed this level of catch due to the displacement of fishing effort to territorial waters, where the majority of bottomfish EFH around American Samoa is situated, in the event of a Federal fishery closure after the ACL is reached. Thus, the rebuilding timeline is expected to be substantially delayed to over 40 years. It is anticipated, even with fishery operations continuing in territorial waters after a closure of Federal waters, that Alternative 2 would reduce catch by 1,993 lb from the recent annual average of 14,789 lb and by 1,725 lb relative to the status quo. The post-season AM would cause catches to be reduced to 12,571 lb annually due to a complete Federal closure, which would be a reduction of 1,950 lb from the status quo. While bottomfish harvested in territorial waters are expected to continue experiencing consistent fishing effort, there may be beneficial effects for fish populations at offshore banks in Federal waters (see Figure 1) if a Federal closure is implemented. In summary, Alternative 2 is expected to slightly reduce overfishing relative to the status quo alternative, so fishery impacts on

bottomfish populations around American Samoa would be slightly diminished relative to the baseline.

While the implementation of the proposed ACL and AMs is not expected to cause large changes in fishery operations relative to recent years, catch levels may be slightly reduced compared to the recent annual average and those expected under the status quo alternative. Fishing would likely persist in territorial waters if a Federal closure is implemented, overfishing may not be ended, and rebuilding would be delayed, inconsistent with the Purpose and Need for this action, but overfishing would still likely be reduced relative to the status quo. The expected closure of Federal waters a few months into the first fishing year and for the full year for the remainder of the rebuilding plan would likely provide some conservation benefit to the American Samoa bottomfish stock complex. However, the provisions of the proposed alternative that are intended to rebuild the fishery in nine years would not be actualized due to the displacement of fishing effort to territorial waters if the ACL is exceeded. The maximum possible action that the Council could recommend for NMFS to implement under Alternative 3 (Section 3.3.2.1.3) would also not achieve rebuilding of the fishery in the proposed eight years, but Alternative 2 would allow a small level of catch in Federal waters in the first year in consideration of mitigating social, cultural, and economic impacts to the American Samoa fishing community while providing more conservation benefit than the status quo alternative.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, the closure of Federal waters around American Samoa to bottomfish fishing is expected to result in slightly less catch than the status quo alternative and Alternative 2 in the first year of the plan. The expected reduction in catch from a Federal closure would be 1,950 lb from the expected catch under the status quo of 14,521 lb to 12,571 lb (Section 2.5.1). Therefore, it is expected that overfishing would also be reduced relative to the status quo alternative. Bottomfish populations at the offshore banks in Federal waters would likely have some conservation benefit from a Federal closure if implemented, but fish harvested in territorial waters would likely experience continued fishing effort consistent with the baseline. Thus, the provisions of Alternative 3 are expected to slightly reduce catch and overfishing relative to Alternatives 1 and 2, so fishery impacts to American Samoa bottomfish would also be relatively less. Under Alternative 3, annual catch would also likely be 333 lb less than Alternative 2 in the first year of the rebuilding plan but would be comparable in subsequent years.

Overall, the closure of Federal waters around American Samoa to bottomfish fishing under Alternative 3 is expected to result in the largest reduction to annual catches for the fishery among the action alternatives. Fishing is still likely to occur in territorial waters and overfishing would not be prevented consistent with the Purpose and Need for this action, but overfishing would be reduced to the greatest possible extent. Rebuilding would not take place consistent with Magnuson-Stevens Act requirements, but it would be promoted to occur in the shortest possible time. There would also be some conservation benefit to the stock complex due to the reduction in catch from the complete closure of Federal waters to the fishery. Thus, Alternative 3 would provide a greater conservation benefit than the status quo as well as Alternative 2 in the first year.

3.3.2.2 Potential Effects of the Alternatives on Non-Target Species and Bycatch

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

With the same management provisions as the previous interim measure under Alternative 1, it is expected that the American Samoa bottomfish fishery would continue to operate as under the interim measure with respect to catch, species targeted, effort, participation, intensity, and areas fished (Section 2.3). Catch and areas fished may be slightly changed from previous years due to the potential Federal closure and associated reduction in catch, but most of bottomfish habitat is situated in territorial waters and no substantial changes are expected. Since there is currently no bycatch in the fishery (WPRFMC, 2020a), shifts in bottomfish fishing due to a Federal closure are not likely to change the relative impact of the fishery on non-target species and bycatch. Any catch of non-target species and bycatch would continue to be reported by the creel survey program and commercial receipt book system and summarized in the Council's annual SAFE report, which would allow for any changes in the fishery to be monitored. Any notable changes in the catch of non-target species and bycatch can be monitored and addressed by fisheries scientists and managers in future management measures. However, it is expected that the American Samoa bottomfish fishery would continue to be target-specific for BMUS under Alternative 1, and, thus, no increases in catches of non-target species and bycatch are expected. Therefore, there are no impacts expected in the absence of ACLs and AMs under Alternative 1 on non-target species and bycatch if fishery operations are with recent years.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, bottomfish fishing in Federal waters would be prohibited after the cumulative catch for the year reaches 1,500 lb, likely within the first few months of the fist fishing year. Subsequent years would likely have an ACL of 0 lb due to the application of the post-season AM after the first year of the rebuilding plan. Because the majority of bottomfish habitat around American Samoa is found in territorial waters (approximately 85 percent, see Figure 1), it is not expected that the area fished by the fishery would substantially change in the event of a Federal closure. Thus, since there is currently no bycatch in the fishery (WPRFMC, 2020a), shifts in bottomfish fishing due to a Federal closure are not likely to change the relative impact of the fishery on non-target species and bycatch. Additionally, species targeted, effort, participation, and intensity are not anticipated to change drastically under Alternative 2 (Section 2.4). Because the fishery would not substantially change under Alternative 2 relative to the status quo alternative, catch of non-target species and bycatch are expected to remain low or non-existent. NMFS and the Council would continue to monitor catches of all species harvested in the fishery through the creel survey program and the commercial receipt book system, and these data would continue to be summarized by the Council in its annual SAFE report. If relative impacts to non-target species and bycatch are noted to change at some point in the future, fishery scientists and managers would be able to address these changes in future management measures.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, NMFS would prohibit bottomfish fishing in the Federal waters around American Samoa. Similar to Alternative 2, because there is currently no recorded catch of non-target species and bycatch in the American Samoa bottomfish fishery and large changes in the

area fished by the fishery are not expected due to bottomfish habitat primarily occurring in territorial waters, large changes in the catch of non-target species and bycatch are not expected under this alternative. Similarly, drastic changes are not expected for species targeted, effort, participation, and intensity due to the implementation of a Federal closure. NMFS and the Council would continue to monitor the catches of all species in the fishery, which would be summarized and reported in the Council's annual SAFE reports. Fishery scientists and mangers would be able to detect any change in impacts to non-target species and bycatch using these data and would address these changes in future management measure if they occur.

3.3.3 Protected Resources in American Samoa

There are several protected species known to occur in the waters around American Samoa, and thus, there exists potential for the American Samoa bottomfish fishery to interact with these protected species. NMFS has evaluated potential impacts on protected species by the American Samoa bottomfish fishery such that they can be managed in compliance with the Magnuson-Stevens Act, the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and other laws as applicable. More detailed descriptions of protected species around American Samoa are available in Section 3.3.4 of the FEP for the American Samoa Archipelago (WPRMFC, 2009) and online on the NMFS website.

3.3.3.1 Applicable ESA Coordination for American Samoa Bottomfish Fisheries

In a biological opinion submitted on March 8, 2002, for the FMP for Bottomfish and Seamount Groundfish Fisheries of the Western Pacific, NMFS determined that bottomfish and seamount groundfish fisheries of the western Pacific region (including the bottomfish fishery of American Samoa) that operate in accordance with regulations implementing the FMP were not likely to adversely affect ESA-listed sea turtle and marine mammal species. Critical habitat is not designated for any species in American Samoa, so bottomfish fishery does not adversely modify critical habitat of any ESA-listed species. Bottomfish fishing vessels are anchored or moving slowly while fishing, and there have been no reports of observations of substantial interactions between the American Samoa bottomfish fishery and ESA-listed protected species.

In 2009, the Council recommended and NMFS approved the development of five archipelagic-based FEPs, including the FEP for the American Samoa Archipelago. The FEP incorporated and reorganized elements of the Council's species-based FMPs, including the Bottomfish and Seamount Groundfish Fisheries FMP into a spatially-oriented management plan (75 FR 2198, January 14, 2010). The Council retained all applicable regulations pertaining to bottomfish fishing in the development and implementation of the FEP for the American Samoa Archipelago.

There have been several new species added to the list of threatened and endangered species since the 2002 biological opinion by NMFS. On July 3, 2014, NMFS published a final rule that listed four distinct population segments (DPSs) of scalloped hammerhead sharks under the ESA (79 FR 38213), and it was shown that the threatened Indo-West Pacific DPS occurs around American Samoa. On September 10, 2014, NMFS published a final rule that listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852), and six of those species may occur around American Samoa. On April 9, 2015, NMFS determined that the continued authorization of the coral reef, bottomfish, crustacean, and precious coral fisheries under the FEP

for the American Samoa Archipelago is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead sharks or ESA-listed reef building corals.

On January 22, 2018, NMFS issued a final rule to list the giant manta ray as a threatened species under the ESA (83 FR 2916). On January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as a threatened species under the ESA (83 FR 4153). On September 28, 2018, NMFS issued a final rule to list the chambered nautilus as a threatened species under the ESA (83 FR 48976). In response to these listings, NMFS reinitiated consultation under the ESA on June 5, 2019, as required by 50 CFR 402.16, to seek concurrence that the American Samoa bottomfish fishery is not likely to adversely affect the oceanic whitetip shark, giant manta ray, or chambered nautilus. Based on the information in the biological evaluation prepared to support this consultation (NMFS, 2019a), NMFS concluded that the bottomfish fishery in American Samoa (1) may affect, but is not likely to adversely affect, the oceanic whitetip shark in American Samoa; (2) may affect, but is not likely to adversely affect, the giant manta ray in American Samoa; and (3) may affect, but is not likely to adversely affect, the chambered nautilus in American Samoa. On June 6, 2019, and subsequently on August 11, 2020, NMFS determined that during the period of consultation, the continued operation of the bottomfish fishery in American Samoa is not likely to jeopardize the oceanic whitetip shark, giant manta ray, or chambered nautilus, would not violate ESA section 7(a)(2), and would not result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives (NMFS, 2019b).

Additional information is provided on sea turtles, marine mammals, seabirds, corals, giant manta rays, sharks, and chambered nautilus in American Samoa in the following sections.

3.3.3.2 Sea Turtles in American Samoa

All sea turtles are subject to protection under the ESA in American Samoa. Direct harvest, direct harm, and indirect harm are prohibited unless otherwise authorized. NMFS has coordinated the continued authorization of the American Samoa bottomfish fishery under Section 7 of the ESA. All six sea turtle species occurring in U.S. waters are listed under the ESA. The range of five of these species overlaps with the EEZ around American Samoa, and they may be encountered by fishermen. Territorial regulations prohibit the take, possession, and sale of green, hawksbill, and leatherback sea turtles (ASCA § 24.0959). Table 12 lists the sea turtle species reasonably likely to occur around American Samoa. No critical habitat has been established for any sea turtle species in American Samoa.

Table 12. ESA-listed sea turtles known to occur or reasonably expected to occur in waters around the American Samoa Archipelago.

Common names/ DPS if applicable	Scientific Name	ESA listing status in American Samoa	Occurrence in American Samoa	Interactions with the American Samoa bottomfish fishery through 2019
Green sea turtle (laumei enaena	*Chelonia mydas*	Endangered DPS	Frequently seen. Nest at Rose Atoll. Known to migrate	No interactions observed or reported.

and fonu) Central South Pacific DPS			to feeding grounds.	
Hawksbill sea turtle (laumei uga)	*Eretmochelys imbricata*	Endangered	Frequently seen. Nest at Rose Atoll and Swain's Island.	No interactions observed or reported.
Leatherback sea turtle	*Dermochelys coriacea*	Endangered	Rare in American Samoa. One recovered dead in experimental longline fishing.	No interactions observed or reported.
Olive ridley sea turtle	*Lepidocheylys olivacea*	Threatened	Uncommon in American Samoa. Three sightings.	No interactions observed or reported.
Loggerhead sea turtle South Pacific DPS	*Caretta*	Endangered DPS	American Samoa is within the species nesting range, but the species has not been observed in the territory.	No interactions observed or reported.

On September 22, 2011, NMFS published a final rule determining that the world loggerhead turtle population was comprised of nine DPSs, five of which are an endangered and four that are threatened. The distribution of the South Pacific Loggerhead turtle DPS overlaps with the EEZ around American Samoa. Though this DPS is known to nest on beaches several hundred nautical miles north of the islands of the Samoa Archipelago, loggerheads may travel to and reside in habitats in the central and southeastern Pacific Ocean for several years before returning to the western Pacific for reproduction (Conant et al., 2009). There are no records of this species nesting in American Samoa, but loggerheads are known to transit the EEZ around the territory (Maison et al., 2010; Seminoff et al., 2015). The presence of green turtles, hawksbill turtles, and olive ridley turtles in the EEZ around American Samoa is well-documented (Seminoff et al., 2015).

Sea turtles currently face many threats, including (1) direct harvest of animals and eggs or predation; (2) incidental interactions with fisheries; (3) collisions with vessels and automobiles; (4) urban development / loss of habitat; (5) pollution (e.g., plastics); and (6) climate change. Sea turtle conservation initiatives are also in place, including restoration of habitats, laws to protect turtles, and management of threats to help provide for recovery. More information on the conservation of sea turtles is available on the NMFS website.

Both commercial and non-commercial fisheries have the potential to cause adverse effects to sea turtles, including injuries and mortalities that occur incidental to fishing, such as fishing gear or

vessel interactions. The most likely impacts of the bottomfish fishery in American Samoa on sea turtles is the potential for vessel collisions causing injuries and mortalities. The frequency of this type of effect is unknown in American Samoa. However, given the limited number of bottomfish fishing vessels in American Samoa (an estimated six vessels; WPRFMC, 2020a), and the fact that bottomfish fishing occurs while either at anchor or slowly drifting over fishing grounds, sea turtle collisions with vessels in this fishery are expected to be rare. As Table 12 indicates, no records exist of interactions between the American Samoa bottomfish fishery and sea turtles.

A 2002 NMFS Biological Opinion on the FMP for Bottomfish and Seamount Groundfish Fisheries in the Western Pacific Region found that,

Although hawksbill, leatherback, loggerhead, and olive ridley turtles may be found within the action area and could interact with the FMP bottomfish fishery, there have been no reported or observed incidental takes of these species in the history of the bottomfish fisheries. In addition, hawksbill, leatherback, and olive ridley turtle species are likely to occur only very rarely in the action area. Therefore, NMFS concludes that the proposed action is not likely to adversely affect hawksbill, leatherback, loggerhead, and olive ridley turtles.

Similarly, the Biological Opinion found that,

> Prior biological opinions discussed the potential for adverse effects from vessel lighting and activity near and around nesting beaches utilized by the green turtle. There are no documented green turtle takes resulting from past fishery operations near nesting beaches. There are also no documented takes of green turtles from past fishing operations. Therefore, NMFS concludes that the proposed action is not likely to adversely affect green turtles.

On March 13, 2015, NMFS reinitiated consultation in response to ESA listing of several reef-building corals and the Indo-West Pacific DPS of scalloped hammerhead shark. The supporting biological evaluation found no new information to indicate that the American Samoa bottomfish fishery may affect ESA-listed marine mammals and turtles or critical habitat in a manner or to an extent not previously considered in prior consultations (NMFS, 2015). On June 5, 2019, NMFS reinitiated consultation with respect to the fishery's impacts on the oceanic whitetip shark, giant manta ray, and chambered nautilus, and requested confirmation that the previous determinations that the fishery is not likely to adversely affect turtles remain valid. Methods, locations, and target species of fishery operations have not changed substantially since 2002. Also, the fishery has not had any known interactions with sea turtles. Based on this information, it is reasonably concluded that the analysis in the 2002 consultation and the conclusion that the fishery is not likely to adversely affect turtles remain valid.

Potential Effects of the Alternatives on Sea Turtles in American Samoa

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the same management measures as implemented under the previous interim measure would be applied to the American Samoa bottomfish fishery. The 2002 ESA consultation evaluated the potential impact of the bottomfish fishery prior to the implementation of management measures such as ACLs, but the implementation of a catch limit under this

alternative is not expected to change the conduct of the fishery relative to operations considered under this consultation. The fishery is expected to continue catching bottomfish as it has in recent years under this alternative (Section 2.3.1). Because Alternative 1 is not expected to result in substantial changes to fishing activity relative to years considered in previous consultations, this alternative would not increase the potential for, or severity of, interactions between the fishery and ESA-listed sea turtles. The fishery is not likely to adversely affect any ESA-listed sea turtle species under this alternative, and vessel collisions are expected to be rare. In summary, previous consultations found that the American Samoa bottomfish fishery is not likely to adversely affect sea turtles, and because fishing activity under Alternative 1 is not expected to change, this alternative is not likely to cause any adverse effects to ESA-listed sea turtle species.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, BMUS catch in future years may be slightly less than the status quo due to the closure of Federal waters when the relatively lower ACL is reached in accordance with the in-season AM or as a result of an ACL reduction to 0 lb from the post-season AM, which may result in the displacement of fishing activity to unrestricted territorial waters (Section 2.4.1). Because there have been no reported interactions with any species of sea turtles for this fishery in territorial or Federal waters, this change is not expected to affect the number of interactions. Additionally, fishing activity under Alternative 2 is expected to be slightly less than the Alternative 1, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed sea turtles. Thus, implementation of Alternative 2 is not expected to change or increase interactions with listed sea turtles in any way not already considered in prior consultations. Under this alternative, the fishery is not likely to adversely affect any listed sea turtle species, vessel collisions would be rare, and there is no anticipated change to the number, severity, or types of interactions with sea turtles.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch is expected to be slightly reduced from the status quo due to the closure of Federal waters around American Samoa to bottomfish fishing, and some fishing may be displaced into territorial waters (Section 2.5.1). Since this fishery has no reported interactions with any species of sea turtle in territorial or Federal waters, this change is not expected to affect the number of interactions in the fishery. It is expected that fishing activity under Alternative 3 would be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed sea turtles in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with listed sea turtles. Under this alternative, the fishery is not likely to adversely affect any listed sea turtle species, vessel collisions would be rare, and there is no anticipated change to the number, severity, or types of interactions with sea turtles.

All Alternatives

Overall, no alternative considered would substantially change fishing activity in the American Samoa bottomfish fishery such that there would be adverse effects to listed sea turtles that have not already been considered in prior consultations of the fishery under the ESA. On June 5, 2019,

NMFS reinitiated consultation in response to the listing of the oceanic whitetip shark, giant manta ray, and chambered nautilus to seek concurrence that the American Samoa bottomfish fishery may affect, but is not likely to affect, any sea turtle.

3.3.3.3 Marine Mammals in American Samoa

Marine mammal species that are reasonably likely to occur in American Samoa are listed in Table 13. In accordance with ESA Section 7(a)(2), NMFS previously evaluated the potential impacts of the American Samoa bottomfish fishery to ESA-listed marine mammals and determined that the fishery is not likely to adversely affect any species or critical habitat in the action area. NMFS documented its determinations in a Biological Opinion for bottomfish fisheries on March 8, 2002 and a Letter of Concurrence for bottomfish fisheries on June 3, 2008. The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S. and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). Territorial regulations prohibit the take, possession, and sale any marine mammal (ASCA § 24.0960). Additionally, the ESA lists five whale species known to occur in the EEZ around American Samoa (see note under Table 13).

Table 13. Marine mammals known to occur or reasonably expected to occur in waters around American Samoa.

Common Name	Scientific Name	Interactions with the American Samoa bottomfish Fishery through 2019
Humpback whale* (tafola or ia manu)	*Megaptera novaeangliae*	No interactions observed or reported.
Sperm whale*	*Physeter macrocephalus*	No interactions observed or reported.
Blue whale*	*Balaenoptera musculus*	No interactions observed or reported.
Fin Whale*	*Balaenoptera physalus*	No interactions observed or reported.
Sei whale*	*Balaenoptera borealis*	No interactions observed or reported.
Blainville's beaked whale	*Mesoplodon densirostris*	No interactions observed or reported.
Bottlenose dolphin	*Tursiops truncatus*	No interactions observed or reported.
Bryde's whale	*Balaenoptera edeni*	No interactions observed or reported.
Common dolphin	*Delphinus delphis*	No interactions observed or reported.
Cuvier's beaked whale	*Ziphius cavirostris*	No interactions observed or reported.
Dwarf sperm whale	*Kogia sima*	No interactions observed or reported.

False killer whale	*Pseudorca crassidens*	No interactions observed or reported.
Fraser's dolphin	*Lagenodelphis hosei*	No interactions observed or reported.
Killer whale	*Orcinus orca*	No interactions observed or reported.
Melon-headed whale	*Peponocephala electra*	No interactions observed or reported.
Minke whale	*Balaenoptera acutorostrata*	No interactions observed or reported.
Pygmy killer whale	*Feresa attenuata*	No interactions observed or reported.
Pygmy sperm whale	*Kogia breviceps*	No interactions observed or reported.
Risso's dolphin	*Grampus griseus*	No interactions observed or reported.
Rough-toothed dolphin	*Steno bredanensis*	No interactions observed or reported.
Short-finned pilot whale	*Globicephala macrorhynchus*	No interactions observed or reported.
Spinner dolphin	*Stenella longirostris*	No interactions observed or reported.
Spotted dolphin (Pantropical spotted dolphin)	*Stenella attenuata*	No interactions observed or reported.
Striped dolphin	*Stenella coeruleoalba*	No interactions observed or reported.
Longman's beaked whale	*Indopacetus pacificus*	No interactions observed or reported.

(Source: NMFS PIRO and PIFSC unpublished data)
* Species is also listed under the Endangered Species Act.

Marine Mammal Protection Act Coordination

The MMPA prohibits, with certain exceptions, taking of marine mammals in the U.S. and by persons aboard U.S. flagged vessels (i.e., persons and vessels subject to U.S. jurisdiction). NMFS classifies the American Samoa bottomfish fishery as a Category III fishery under Section 118 of the MMPA (85 FR 21079, April 16, 2020). A Category III fishery is one with a low likelihood or no known incidental takings of marine mammals.

Potential Effects of the Alternatives on Marine Mammals in American Samoa

None of the alternatives considered are expected to impact marine mammals because the American Samoa bottomfish fishery is not known to affect marine mammals through gear interactions or through disruptions in or adverse effects on prey, and no alternative would change the conduct of the bottomfish fishery in a manner that would alter the type or frequency of marine mammal interactions with the fishery.

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would implement the same management provisions as the interim measure with an ACL of 13,000 lb and an in-season AM to close the fishery when the ACL is attained. ACL. The bottomfish fishery is not known to adversely affect marine mammals in terms of noise, water pollution, accidental entanglement, or competition for food resources. No interactions have been reported between the fishery and marine mammals (Table 13). There have been no comprehensive diet studies of piscivorous marine mammals in American Samoa and their relationship to the fishery to date. However, evaluation of the bottomfish fishery in Hawaii did not find that it would adversely modify prey populations important to the insular false killer whale (NMFS, 2018). Inshore dolphins, such as spinner dolphins, feed on shrimp, squid, and small fish (e.g., Myctophidae) in the mid-water (Benoit-Bird 2004). The bottomfish fishery in American Samoa is similar in terms of gear, methods, and species targeted, so it can be reasonably concluded that the fishery is not adversely affecting prey available to marine mammals. Under Alternative 1, the fishery would continue to catch bottomfish similar to or slightly less than recent years (Section 2.3.1), and catches would continue to be monitored through the fisheries monitoring programs administered by the DMWR with assistance from WPacFIN. In recent years, the fishery has not interacted with or affected marine mammals, and the fishery is not expected to change under status quo, so interactions with marine mammals are not anticipated under this alternative.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, the Council would recommend and NMFS would implement an ACL of 1,500 lb, an in-season AM to close fishing for BMUS in Federal waters for the remainder of the fishing year if available information indicates that the ACL would be reached, and a post-season AM to reduce the ACL by the amount of overage based on a three year running average of catch if the ACL is exceeded. Under this alternative, it is expected that BMUS catch may be slightly reduced from the status quo and some fishing activity may move into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.4.1). However, since this fishery has no reported interactions with any species of marine mammal in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and marine mammals in any way, implementation of Alternative 2 is not expected to change or increase interactions with marine mammals. In summary, this alternative is not expected to change the conduct of the fishery in any way that would affect marine mammals, so interactions with marine mammals are not anticipated and a change to the number, severity, or type of interactions with marine mammals is not expected.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, fishing for and possession of bottomfish in Federal waters around American Samoa would be prohibited. Under this alternative, it is expected that BMUS catch may be slightly reduced from the status quo and some fishing activity may move into territorial waters due to the closure of Federal waters (Section 2.5.1). However, since this fishery has no reported

interactions with any species of marine mammal in territorial or Federal waters, this change is not expected to affect the number of interactions. Additionally, since it is expected that fishing activity under Alternative 3 would be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and marine mammals in any way, implementation of Alternative 3 is not expected to change or increase interactions with marine mammals. Overall, this alternative is not expected to change the conduct of the fishery in any way that would affect marine mammals, so interactions with marine mammals are not anticipated and a change to the number, severity, or type of interactions with marine mammals is not expected.

All Alternatives

In summary, there is no new information that indicates that the American Samoa bottomfish fishery may affect ESA-listed marine mammals in a manner or to an extent not previously considered in past consultations. All prior consultations for ESA-listed marine mammals species remain valid and effective. Because the fishery has had no known interactions with marine mammals, because interactions with marine mammals are expected to remain rare under any of the alternatives under consideration, and because none of the alternatives would substantially change the conduct of the fishery, the fishery is not expected to interact with marine mammals under any of the considered alternatives.

3.3.3.4 Seabirds in American Samoa

Table 14 lists seabird species that are considered residents or visitors of American Samoa. Of the presented species, only the Newell's shearwater is listed as threatened under the ESA.

Table 14. Seabirds occurring in American Samoa.

Samoan name	English name	Scientific name
Residents (i.e., breeding)		
Taio	Wedge-tailed shearwater	*Puffinus pacificus*
Taio	Audubon's shearwater	*Puffinus lherminieri*
Taio	Christmas shearwater	*Puffinus nativitatis*
Taio	Tahiti petrel	*Pterodroma rostrata*
Taio	Herald petrel	*Pterodroma heraldica*
Taio	Collared petrel	*Pterodroma brevipes*
Fuao	Red-footed booby	*Sula sula*
Fuao	Brown booby	*Sula leucogaster*
Fuao	Masked booby	*Sula dactylatra*
Tavaesina	White-tailed tropicbird	*Phaethon lepturus*
Tavaeula	Red-tailed tropicbird	*Phaethon rubricauda*
Atafa	Great frigatebird	*Fregata minor*
Atafa	Lesser frigatebird	*Fregata ariel*
Gogouli	Sooty tern	*Onychoprion fuscatus*
Gogo	Brown noddy	*Anous stolidus*
Gogo	Black noddy	*Anous minutus*
Laia	Blue-gray noddy	*Procelsterna cerulea*

manu sina	Common fairy-tern (white tern)	*Gygis alba*
Visitors/vagrants/accidental visitors		
Taio	Short-tailed shearwater	*Puffinus tenuirostris*
Taio	Newell's shearwater (ESA threatened)	*Puffinus auricularis newelli*
Taio	Mottled petrel	*Pterodroma inexpectata*
Taio	Phoenix petrel	*Pterodroma alba*
Taio	White-bellied storm petrel	*Fregetta grallaria*
Taio	Polynesian storm petrel	*Nesofregetta fuliginosa*
-----	Laughing gull	*Larus atricilla*
Gogosina	Black-naped tern	*Sterna sumatrana*

(Source: WPRFMC, 2009; online sources).

There has only been one confirmed sighting of the threatened Newell's shearwater in American Samoa (Grant et al.,1994), and it appears to be an uncommon visitor to the archipelago. There have been no reports of interactions between the American Samoa bottomfish fishery and seabirds (WPRFMC, 2009).

Potential Effects of the Alternatives on Seabirds in American Samoa

None of the alternatives under consideration are expected to affect seabirds, as the American Samoa bottomfish fishery is not known to affect seabirds through gear interactions or through disruptions in or adverse effects on seabird prey since seabirds are not known to prey on bottomfish. No alternative considered would change the bottomfish fishery in a manner that would change the type or frequency of interactions with seabirds.

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. Under the status quo alternative, it is expected that the fishery would continue to catch bottomfish in the same way as under the interim measure and possibly slightly less than previous years (Section 2.3.1). Because this alternative is not expected to change fishing activity relative to previous years, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed seabirds. Under this alternative, the fishery is not likely to adversely affect any listed seabird species. In summary, the bottomfish fishery is not known to affect seabirds, and under Alternative 1 the fishery is not expected to change, so the fishery is not likely to adversely affect any seabird species under this alternative.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb alongside In-Season and Post-Season Accountability Measures

Under Alternative 2, catch of BMUS may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.4.1). However, since this fishery has no reported interactions with any species of seabird in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to

increase the potential for or severity of interactions between the fishery and seabirds, implementation of Alternative 2 is not expected to change or increase interactions with listed seabirds in any way. Under this alternative, the fishery is not likely to adversely affect any listed seabird species, and there is no anticipated change to the number, severity, or type of interactions with seabirds.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the complete closure of Federal waters (Section 2.5.1). However, since this fishery has no reported interactions with any species of seabirds in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and seabirds, implementation of Alternative 3 is not expected to change or increase interactions with listed seabirds. Under this alternative, the fishery is not likely to adversely affect any listed seabird species, and there is no anticipated change to the number, severity, or type of interactions with seabirds.

All Alternatives

No alternative under consideration would substantially change the conduct of the fishery in a manner that would affect seabirds, and there are no expected adverse effects to these species.

3.3.3.5 ESA-Listed Reef Building Corals in American Samoa

On September 10, 2014, NMFS listed 20 species of reef-building corals as threatened under the ESA (79 FR 53852). Six species of listed corals are known to occur in waters around American Samoa from 0–50 m deep. None of the species have common names.

Table 15 lists the ESA-listed coral species found in American Samoa. Corals usually live in colonies and form “heads” or “shelves.” Generally, thousands of individual coral organisms (polyps) live together in a single structure that grows over time. Recently, many nearshore coral reefs have died through a process called bleaching when coral expel algae that live within them. Bleaching often leads to death for coral colonies by causing malnutrition and increasing the colony’s susceptibility to disease. Some coral species populations have suffered declines because of bleaching.

Table 15. ESA-listed corals in American Samoa.

Common name	Scientific Name	ESA listing status in American Samoa	Occurrence in American Samoa	Interactions with the American Samoa bottomfish fishery
None	*Acropora globiceps*	Threatened	Present	No interactions observed or reported
None	*A. jacquelineae*	Threatened	Present	No interactions observed or reported

None	*A. retusa*	Threatened	Present	No interactions observed or reported
None	*A. speciosa*	Threatened	Present	No interactions observed or reported
None	*Euphyllia paradivisa*	Threatened	Present	No interactions observed or reported
None	*Isopora crateriformis*	Threatened	Present	No interactions observed or reported

Potential Effects of the Alternatives on ESA-Listed Corals

Some damage to corals and the bottom is possible via anchoring, or entanglement of bottomfish fishing tackle on the bottom, but studies in Hawaii where methods are similar found that bottomfish fishing generally has minimal impact on benthic habitat (Kelley and Moffit, 2004; Kelley and Ikehara, 2006). The bottomfish fishery is a hook-and-line fishery, and fishermen have an interest in minimizing both of these interactions, not only for the conservation benefit, but also because they do not want to lose their gear. The FEP also protects corals and habitat through prohibitions on the use of bottom-set nets, bottom trawls, explosives, and poisons. Territory regulations prohibit the use of explosives and poisons (ASCA § 24.0921 through 24.0923) and specify requirements for the use of gillnets and drag nets (ASCA § 24.0930 through 24.0931). It is unlawful for any person to fish for, take, or retain any wild live rock or live hard coral except under a valid special permit for scientific research, aquaculture seed stock collection or traditional and ceremonial purposes by indigenous people (50 CFR 665.125(c)). Additionally, territory regulations pursuant to ASCA § 24.0951 through 24.0964 prohibit the take of certain species of fish and invertebrates, including coral and live rock. On April 9, 2015, NMFS documented its determination in a Letter of Concurrence that the continued authorization of the bottomfish fishery is not likely to adversely affect reef-building corals. Methods, locations, and target species of fishery operations have not changed substantially since 2015. Also, the fishery has not had any known interactions with listed corals. Based on this information, NMFS reasonably concludes that the analysis in that 2015 consultation and its conclusion that the fishery is not likely to adversely affect listed corals, remains valid today. On June 5, 2019, NMFS reinitiated consultation in response to listing of the oceanic whitetip shark, giant manta ray, and chambered nautilus, and to seek concurrence with the conclusion that the American Samoa bottomfish fishery may affect, but is not likely to affect, any listed coral.

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. While the 2015 consultation evaluated the potential impact of the bottomfish fishery on ESA-listed corals under a higher ACL and post-season AM, it is expected that the fishery would continue to catch bottomfish under the status quo alternative slightly less than previous years because the fishery in 2015 was not functionally constrained by an in-season AM (Section 2.3.1). Because this alternative is not expected to change fishing activity relative to years considered the 2015 consultation, this alternative would not increase the potential for, or severity of, interactions between the fishery and listed corals, and the fishery is not likely to adversely affect listed coral species. In summary, the previous consultation found that the bottomfish fishery is not likely to

adversely affect corals, and the fishery is expected to have less activity under Alternative 1, so this alternative is not likely to cause the fishery to adversely affect any listed coral species.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb alongside In-Season and Post-Season Accountability Measures

Under this alternative, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.4.1). However, since this fishery has no reported interactions with any species of listed coral in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed corals in any way not already considered in prior consultations, implementation of Alternative 2 is not expected to change or increase interactions with listed corals. There is no anticipated change to the number, severity, or type of interactions with listed corals under this alternative.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch is expected to be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the closure of Federal waters (Section 2.5.1). However, since this fishery has no reported interactions with any listed species of coral in territorial or Federal waters, this change is not expected to affect the number of interactions. Further, since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and listed corals in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with listed corals. There is no anticipated change to the number, severity, or type of interactions with listed corals under this alternative.

All Alternatives

In summary, the bottomfish fishery has no recorded interactions with listed corals, and no alternative under consideration would substantially change the conduct of the fishery, so it is not expected there would be effects on listed coral species that have not already been considered in prior consultations of the fishery under the ESA. Under all alternatives considered, the proposed action is not expected to have a substantial effect on the overall population size of ESA-listed corals in American Samoa and is not likely to appreciably reduce the likelihood of both survival and recovery of the species in the wild.

3.3.3.6 Scalloped Hammerhead Sharks in American Samoa

On July 3, 2014, NMFS listed the Indo-West Pacific scalloped hammerhead shark DPS under the ESA (79 FR 38213). The Indo-West Pacific scalloped hammerhead shark DPS occurs in all U.S. Pacific Island territories. Scalloped hammerhead sharks range widely from nearshore to pelagic environments and from the surface to 500 meters (m) deep. Because the shark is listed in American Samoa, it is illegal to target or retain the shark.

As noted in the final rule (79 FR 38213, July 3, 2014), the significant operative threats to the listed scalloped hammerhead DPSs are overutilization by foreign industrial, commercial, and artisanal fisheries as well as inadequate regulatory mechanisms in foreign nations to protect these sharks from the heavy fishing pressure and related mortality, with illegal fishing identified as a significant problem in areas outside of U.S. jurisdiction. Some fishermen target sharks, including the scalloped hammerhead, to harvest their fins. Incidental capture in fisheries also contributes to increased mortality in this species (79 FR 38213, July 3, 2014).

Conservation initiatives for scalloped hammerhead sharks are in place and include, in addition to the Federal prohibition on retention of the scalloped hammerhead DPS, territorial prohibitions on the retention or transport of any sharks. The territorial government passed a law in 2012 (ASAC § 24.0961) stating that no person shall:

> (1) Possess, deliver, carry, transport or ship by any means whatsoever any shark species or the body parts of any such species;
> (2) Import, export, sell or offer for sale any such species or body parts of such species; or
> (3) Take or kill any such species in American Samoa.

Potential Effects of the Alternatives on Scalloped Hammerhead Sharks in American Samoa

NMFS conducted Section 7 consultation under the ESA to evaluate the potential effects of the American Samoa bottomfish fisheries on the Indo-West Pacific DPS of scalloped hammerhead shark. This consultation found that American Samoa bottomfish fisheries did not have any recorded or observed catches of scalloped hammerhead sharks based on boat-based creel surveys conducted from 2002 to 2013 (NMFS, 2015). On April 9, 2015, NMFS concluded that the continued authorization of the bottomfish fishery under the FEP for American Samoa is not likely to adversely affect the Indo-west Pacific scalloped hammerhead shark DPS. Their conclusion was based on the finding that the effects of reauthorizing the fishery were expected to be insignificant and discountable because fishery participants are very unlikely interact with Indo-West Pacific scalloped hammerhead sharks because of limited distribution, selective fishing techniques, and the small scale and scope of these fisheries. Methods, locations, and target species of fishery operations have not changed substantially since 2015. Also, the fishery has not had any known interactions with scalloped hammerhead sharks. Based on this information, NMFS reasonably concludes that the analysis in that 2015 consultation, and the conclusion that the fishery is not likely to adversely affect this species, remain valid today. On June 5, 2019, NMFS reinitiated consultation in response to listing of the oceanic whitetip shark, giant manta ray, and chambered nautilus, and to seek concurrence with the conclusion that the American Samoa bottomfish fishery may affect but is not likely to affect the Indo-West Pacific DPS of scalloped hammerhead shark.

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. While the 2015 consultation evaluated the potential impact of the bottomfish fishery on scalloped hammerheads under a higher ACL and post-season AM, it is expected that the fishery would continue to catch bottomfish under the status quo alternative slightly less than previous years because the fishery in 2015 was not functionally constrained by an in-season AM (Section 2.3.1). Because the 2015

consultation found that effects of the fishery on the Indo-West Pacific scalloped hammerhead shark DPS would be insignificant and discountable and this alternative is not expected to change fishing activity relative to years considered in the 2015 consultation, Alternative 1 would not increase the potential for, or severity of, interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark such that the fishery is not likely to adversely affect this DPS. In summary, the previous consultation found that the bottomfish fishery is not likely to adversely affect the Indo-West Pacific DPS of scalloped hammerhead shark, and under Alternative 1 the fishery is expected to have less activity, so the fishery is not likely to adversely affect this DPS.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb alongside In-Season and Post-Season Accountability Measures

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an in-season AM (Section 2.4.1). However, since this fishery has no reported interactions with scalloped hammerhead sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark in any way not already considered in prior consultations, implementation of Alternative 2 is not expected to change or increase interactions with this DPS. There is no anticipated change to the number, severity, or type of interactions with this DPS.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the complete closure of Federal waters (Section 2.5.1). However, since this fishery has no reported interactions with scalloped hammerhead sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the Indo-West Pacific scalloped hammerhead shark in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase interactions with this DPS. There is no anticipated change to the number, severity, or type of interactions with this DPS.

All Alternatives

There are no targeted shark fisheries in American Samoa, and regulations prohibit take or killing of any shark species as well as possession and sale of shark fins and shark products. The likelihood of interactions is low, and the 2015 consultation found that American Samoa fisheries did not have any recorded or observed catches of scalloped hammerhead sharks (NMFS, 2015). No alternative under consideration would substantially change the way the fishery is conducted or result in effects on scalloped hammerhead sharks that have not already been considered in the 2015 consultation. Under all alternatives considered, the proposed action is not expected to have a substantial effect on the overall population size of the Indo-West Pacific scalloped

hammerhead shark DPS and is not likely to appreciably reduce the likelihood of both survival and recovery of the species in the wild.

3.3.3.7 Oceanic Whitetip Sharks in American Samoa

On January 30, 2018, NMFS issued a final rule to list the oceanic whitetip shark as threatened under the ESA (83 FR 4153). The oceanic whitetip shark is found in tropical and subtropical seas between 30º N. and 35º S. latitudes worldwide. The oceanic whitetip shark experiences high encounter and mortality rates in some commercial fisheries (e.g., pelagic longline, purse seine, and gillnet fisheries) throughout its range because of its tropical distribution and tendency to remain in surface waters (NMFS, 2019a).

As noted in the final rule, the greatest threat to the oceanic whitetip shark is overutilization from fishing pressure and inadequate regulatory mechanisms to protect the species. However, American Samoa has territorial conservation measures that prohibit retention or transport of any shark (ASAC § 24.0961). The best available information to estimate interactions with oceanic white tip sharks are boat-based creel surveys, and review of 33 years of creel survey data did not find evidence of interactions with oceanic whitetip sharks and the American Samoa bottomfish fishery (NMFS, 2019a). On June 5, 2019, NMFS reinitiated informal consultation under ESA to seek concurrence that bottomfish fishing activities are not likely to adversely affect this species, as required by 50 CFR 402.16. On June 6, 2019, and subsequently on August 11, 2020, NMFS determined that that pending that concurrence, the continued operation of the bottomfish fishery in American Samoa during the period of consultation is not likely to jeopardize the continued existence of the oceanic whitetip shark, would not violate ESA section 7(a)(2), or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives, and would not violate ESA section 7(d) (NMFS, 2019b).

Potential Effects of the Alternatives on Oceanic Whitetip Sharks in American Samoa

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. The American Samoa bottomfish fishery is expected to continue to catch bottomfish in a manner consistent with, if not slightly less than, recent years, and catches would continue to be monitored through the fisheries monitoring program administered by the DMWR with assistance from WPacFIN. The management provisions under this alternative would not substantially change the conduct of the fishery relative to recent years (Section 2.3.1). Therefore, this alternative is not expected to increase the potential for interactions between the fishery and oceanic whitetip shark in any way.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.4.1). However, since this fishery has no reported interactions with oceanic whitetip sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the

status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the oceanic whitetip shark in any way, implementation of Alternative 2 is not expected to change or increase interactions with this species. There is no anticipated change to the number, severity, or type of interactions with oceanic whitetip sharks.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the closure of Federal waters (Section 2.5.1). However, since this fishery has no reported interactions with oceanic whitetip sharks in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the oceanic whitetip shark in any way, implementation of Alternative 3 is not expected to change or increase interactions with this species. There is no anticipated change to the number, severity, or type of interactions with oceanic whitetip sharks.

All Alternatives

There are no targeted shark fisheries in American Samoa, and regulations prohibit take or killing of any shark species, along with possession and sale of shark fins and shark products. The alternatives under consideration would not change the way the fishery operates with respect to areas fished, gear used, or methods employed in a manner that would alter the likelihood of interactions with oceanic whitetip sharks, so interactions with this shark are not anticipated. Based on the lack of expected interactions with oceanic whitetip sharks, the proposed action is not expected to have a substantial effect on the overall population size of oceanic whitetip sharks under all alternatives considered and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild.

3.3.3.8 Giant Manta Ray in American Samoa

On January 22, 2018, NMFS issued a final rule to list the giant manta ray as a threatened species under the ESA (83 FR 2916). The giant manta ray is found worldwide in tropical, subtropical, and temperate bodies of water. It is commonly found offshore, in oceanic waters, and near productive coastlines. As noted in the final rule (83 FR 2916, January 22, 2018), the giant manta ray appears to be most at risk of overutilization in the Indo-Pacific and eastern Pacific portions of its range. Targeted fishing and incidental capture of the species in Indonesia, Philippines, Sri Lanka, India, and throughout the eastern Pacific, has led to observed declines in populations.

There are no targeted giant manta ray fisheries in American Samoa. Manta rays are filter feeders who forage near the surface and do not interact with bottomfish fishing gear (Miller and Klimovich, 2016). The rate at which the American Samoa bottomfish fishery interacts with giant manta rays in other ways is unknown; however, there are no reported or observed collisions with giant manta rays and bottomfish fishing vessels in any island area. Over the last ten years, there have been less than 100 trips per year on average (WPRFMC, 2020a). Due to the small number of bottomfish trips in American Samoa and the fact that there have been no reported or observed collisions between giant manta rays and bottomfish fishing vessels, interactions between the

bottomfish vessels and giant manta ray are not expected. On June 5, 2019, NMFS reinitiated informal consultation under ESA to seek concurrence that fishing activities are not likely to adversely affect this species, as required by 50 CFR 402.16. On June 6, 2019, and subsequently on August 11, 2020, NMFS determined that that pending that concurrence, the continued operation of the bottomfish fishery in American Samoa during the period of consultation is not likely to jeopardize the continued existence of the giant manta ray, would not violate ESA section 7(a)(2), or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives, and would not violate ESA section 7(d) (NMFS, 2019b).

Potential Effects of the Alternatives on Giant Manta Rays in American Samoa

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. The fishery is expected to continue to catch bottomfish in a manner similar to recent years, and catches would continue to be monitored through the fisheries monitoring program administered by the DMWR with assistance from WPacFIN. The management provisions under this alternative would not substantially change the conduct of the fishery relative to recent years (Section 2.3.1). Therefore, this alternative would not increase the potential for interactions between the fishery and giant manta ray in any way.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.4.1). However, since this fishery has no reported interactions with giant manta rays in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the giant manta ray in any way, implementation of Alternative 2 is not expected to change or increase interactions with this species. There is no anticipated change to the number, severity, or type of interactions with giant manta rays.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters due to the closure of Federal waters (Section 2.5.1). However, since this fishery has no reported interactions with giant manta rays in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 3 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the giant manta ray in any way not already considered in prior consultations, implementation of Alternative 3 is not expected to change or increase

interactions with this species. There is no anticipated change to the number, severity, or type of interactions with giant manta rays.

All Alternatives

The alternatives under consideration are not expected to change the way the fishery operates with respect to areas fished, gear used, or methods employed in a manner that would alter the likelihood of interactions with giant manta ray, so interactions with this species are not anticipated. Based on the lack of expected interactions with giant manta rays, the proposed action is not expected to have a substantial effect on the overall population size of the giant manta ray under all alternatives considered and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild.

3.3.3.9 Chambered Nautilus in American Samoa

On September 28, 2018, NMFS issued a final rule to list the chambered nautilus as threatened under the ESA (83 FR 48976). The chambered nautilus is found in tropical, coastal reef, deep-water habitats native to tropical reef habitats of the Indo-Pacific, and its known range includes waters off American Samoa. As noted in the final rule (83 FR 48976, September 28, 2018), the most significant threat to the chambered nautilus is overutilization through commercial harvest to meet the demand for the international nautilus shell trade. Targeted fishing of, and trade in, the species is thought to primarily occur in Philippines, Indonesia, India, and China, despite prohibitions (Miller, 2018). Commercial harvest of the species is also thought to occur in Papua New Guinea, East Asia, Thailand, Vanuatu, and Vietnam (Miller, 2018).

There is no known local utilization or commercial harvest of chambered nautilus in American Samoa (CITES, 2016). Additionally, there are no records of any interaction between the American Samoa bottomfish fishery and chambered nautilus, and it is highly unlikely that they would be caught while bottomfish fishing. Research suggests that chambered nautilus may be strict or obligate bottom-dwelling scavengers (Barord, 2015; Barord et al., 2014; Miller, 2018). Further, chambered nautilus have an estimated average swimming speed of 0.10 m/s (Barord et al., 2014). To catch them, targeted fisheries use traps that are deployed for several hours or left overnight (Freitas and Krishnasamy, 2016). Given the limited mobility and feeding behavior of the species, they would not be able to approach and take bait in the short time it is deployed by hook and line while bottomfish fishing.

On June 5, 2019, NMFS reinitiated informal consultation under ESA to seek concurrence that fishing activities are not likely to adversely affect this species, as required by 50 CFR 402.16. On June 6, 2019, and subsequently on August 11, 2020, NMFS determined that that pending that concurrence, the continued operation of the bottomfish fishery in American Samoa during the period of consultation is not likely to jeopardize the continued existence of the chambered nautilus, would not violate ESA section 7(a)(2), or result in an irreversible or irretrievable commitment of resources precluding implementation of any reasonable and prudent alternatives, and would not violate ESA section 7(d) (NMFS, 2019b).

Potential Effects of the Alternatives on Chambered Nautiluses in American Samoa

Alternative 1: 13,000 lb ACL with In-Season Accountability Measure (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal waters when the ACL is attained for the bottomfish fishery in American Samoa. The fishery is expected to continue to catch bottomfish in a manner consistent with recent years, and catches would continue to be monitored through the fisheries monitoring program administered by the DMWR with assistance from WPacFIN. The management provisions under this alternative would not substantially change the conduct of the fishery relative to recent years (Section 2.3.1). Therefore, this alternative would not increase the potential for interactions between the fishery and the chambered nautilus in any way.

Alternative 2: Implement an Annual Catch Limit of 1,500 lb with In-Season and Post-Season Accountability Measures

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and some fishing activity may be displaced into territorial waters if a closure of Federal waters is implemented as an AM (Section 2.4.1). However, since this fishery has no reported interactions with chambered nautilus in territorial or Federal waters, this change is not expected to affect the number of interactions. Since fishing activity under Alternative 2 is expected to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the chambered nautilus in any way, implementation of Alternative 2 is not expected to change or increase interactions with this species. There is no anticipated change to the number, severity, or type of interactions with chambered nautilus.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and some fishing activity may move into territorial waters due to the closure of Federal waters (Section 2.2.5). However, since this fishery has no reported interactions with chambered nautilus in territorial or Federal waters, this change is not expected to affect the number of interactions. Since NMFS expects fishing activity under Alternative 3 to be slightly less than the status quo alternative, and the status quo alternative is not expected to increase the potential for or severity of interactions between the fishery and the chambered nautilus in any way, implementation of Alternative 3 is not expected to change or increase interactions with this species. There is no anticipated change to the number, severity, or type of interactions with chambered nautilus.

All Alternatives

The alternatives under consideration would not change the way the fishery operates with respect to areas fished, gear used, or methods employed in a manner that would alter the likelihood of interactions with chambered nautilus, so interactions with this species are not anticipated. Based on the lack of expected interactions with chambered nautilus, under all alternatives considered the proposed action is not expected to have a substantial effect on the overall population size of

chambered nautilus and is not likely to reduce appreciably the likelihood of both survival and recovery of the species in the wild.

3.3.4 Habitats and Vulnerable Ecosystems

3.3.4.1 Potential Effects on Essential Fish Habitat and Habitat Areas of Particular Concern

The Magnuson-Stevens Act defines essential fish habitat (EFH) as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (Magnuson-Stevens Act § 3(10)). This includes the marine areas and their chemical and biological properties that organisms use. Substrate includes sediment, hard bottom, and other structural relief underlying the water column along with their associated biological communities. In 1999, the Council developed and NMFS approved EFH definitions for management unit species (MUS) of the Bottomfish and Seamount Groundfish FMP (Amendment 6), Crustacean FMP (Amendment 10), Pelagic FMP (Amendment 8), and Precious Corals FMP (Amendment 4) (64 FR 19067, April 19, 1999). NMFS approved additional EFH definitions for coral reef ecosystem species in 2004 as part of the implementation of the Coral Reef Ecosystem FMP (69 FR 8336, February 24, 2004). NMFS approved EFH definitions for deepwater shrimp through an amendment to the Crustaceans FMP in 2008 (73 FR 70603, November 21, 2008).

In addition to, and as a subset of EFH, the Council described habitat areas of particular concern (HAPC) based on the following criteria: ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are or would stress the habitat, and/or the habitat type is rare. The FMPs defined HAPC for bottomfish, crustaceans, pelagic, and coral reef species in Guam, CNMI, and American Samoa and for bottomfish, pelagic, and coral reef species in the Pacific Remote Island Areas.

Ten years later, in 2009, the Council developed and NMFS approved five new archipelagic-based FEPs. The FEPs incorporated and reorganized elements of the Councils' species-based FMPs into a spatially-oriented management plan (75 FR 2198, January 14, 2010). The Council subsequently carried forward EFH definitions and related provisions for all FMP fishery resources into the respective FEPs. In 2019, Amendment 4 to the American Samoa FEP, and Amendment 5 to the Marianas FEP reclassified some bottomfish, pelagic, crustacean, precious coral and coral reef ecosystem species as ecosystem component species (84 FR 2767, February 8, 2019). These species do not have EFH or HAPC under the Magnuson-Stevens Act, as these habitat categories only apply to MUS. The following discussion and analysis of potential effects on EFH and HAPC will only consider these habitat designations for species remaining as BMUS.

Table 16 summarizes the designated areas of EFH and HAPC for American Samoa FEP bottomfish by life stage. To analyze the potential effects of a proposed fishery management action on EFH, one must consider all designated EFH.

According to the most recent bottomfish fishery ESA consultations for American Samoa (April 9, 2015), the current bottomfish fishery does not have an adverse effect on listed corals in American Samoa. The findings were based on the fact that the fishery is a targeted fishery with little bycatch, or gear contact with the bottom (i.e., no trawling, nets, traps, etc. and only a few

weighted hooks and lines deployed at a time). However, this fishery is not known to adversely affect habitat. Similar methods are used to fish for bottomfish in American Samoa and Hawaii, and studies of bottomfish habitat in Hawaii have not found adverse impacts to habitat from bottomfish fishing activities (Kelley and Moffit, 2004; Kelley and Ikehara, 2006). Also, to prevent and minimize adverse bottomfish fishing impacts to EFH, each western Pacific FEP prohibits the use of explosives, poisons, bottom trawl, and other non-selective and destructive fishing gear. No alternative under consideration would result in substantial changes to the way fishermen conduct the bottomfish fishery in American Samoa; therefore, the alternatives are not expected to result in adverse effects on bottomfish EFH or HAPC.

Table 16. Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) for American Samoa bottomfish management unit species (BMUS).

American Samoa BMUS	EFH	HAPC
Lehi (*Aphareus rutilans*) uku (*Aprion virescens*), black trevally (*Caranx lugubris*), Lunartail grouper *(Variola louti)*, ehu (*Etelis carbunculus*), onaga (*Etelis coruscans*), redgill emperor *(Lethrinus rubrioperculatus)*, blueline snapper (*Lutjanus kasmira*), opakapaka (*P. filamentosus*), yelloweye snapper (*P. flavipinnis*), and gindai (*P. zonatus*).	**Eggs and larvae:** the water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm). **Juvenile/adults:** the water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm)	All slopes and escarpments between 40–280 m (20 and 140 fm)

3.3.4.2 Marine Protected Areas (MPAs)

Bottomfish fishing is prohibited through Federal management in the Rose Atoll Marine National Monument, the National Marine Sanctuary of American Samoa in the Fagatele Bay unit, and the research zone of the Aunuu Island units. It is also prohibited in the territorial MPAs where and/or when fishing is prohibited, such as the no-take Fagamalo Village Marine Protected Area. These MPAs would not be affected by the proposed action, so adverse effects to them would be unlikely under all alternatives under consideration. None of the proposed alternatives would change the way bottomfish fishing is conducted with respect to these MPAs, so continued operation of the fishery under the baseline or action alternatives would not result in adverse impacts to the Monument, Sanctuary, or other MPAs.

3.3.4.3 Vulnerable Marine or Coastal Ecosystems

Although precious coral species occur in American Samoa, there are no known precious coral beds in waters around American Samoa (WPRFMC, 2009). All precious coral species in American Samoa are classified as ecosystem component species. Although little is known about the distribution and abundance of precious corals in American Samoa, bottomfish fishing is unlikely to affect these species. Exposure of precious corals to damage from bottomfish fishing activities is limited due to existing Federal regulations (e.g., use of trawls, poisons, explosives)

that are not subject to change due to the proposed action. In addition to overlapping potential deepwater precious coral habitat, the fishery operates in areas that include coral reef ecosystem habitat (e.g., areas shallower than 50 m). As discussed above, the fishery is not known to adversely affect benthic habitats (Section 3.3.3.5 and Section 3.3.4.1).

Fishing activity under the status quo alternative is not expected to change from 2020 and 2021 and only slightly from previous years; therefore, it is unlikely that the fishery would affect vulnerable marine ecosystems such as deep or shallow coral ecosystems under this alternative. Fishing activity under any of the action alternatives is not expected to increase or change substantially relative to the status quo, and none of the alternatives under consideration would fundamentally change the way the fishery is conducted. Considering that the fishery is not expected to change in a way that would impact vulnerable marine ecosystems under any alternative, the fishery is not expected to affect vulnerable marine ecosystems under any alternative, and no adverse impacts are expected to these areas as a result of implementing any alternative.

In summary, none of the alternatives are expected to change the way in which this fishery is conducted or the magnitude of impacts on habitats. Also, the alternatives under consideration would not change regulations that are in place to prevent and minimize adverse effects from bottomfish fishing on fish habitat. For these reasons, none of the alternatives considered are expected to lead to substantial physical, chemical, or biological alterations to ocean, coral, or coastal habitats or result in impacts to the marine habitat, including areas designated as EFH, HAPC, or unique areas such as MPAs or deep coral ecosystems.

3.4 Potential Effects on the Socio-Economic Setting

3.4.1 Fishing Communities

The Magnuson-Stevens Act defines a fishing community as “a community that is substantially dependent upon or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities” (16 U.S.C. § 1802(16)). NMFS further specifies in the National Standard guidelines that a fishing community is “a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries dependent services and industries (for example, boatyards, ice suppliers, tackle shops)”.

National Standard 8 of the Magnuson-Stevens Act requires that conservation and management measures shall, consistent with the conservation requirements of the Act (including the prevention of overfishing and the rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (a) provide for the sustained participation of such communities and (b) to the extent practicable, minimize adverse economic effects on such communities. The request from the Council for interim action accounts for this consideration, in that it seeks a catch limit the reduces rather than immediately ends overfishing, which would mitigate effects of more stringent management measure on the American Samoa Fishing community.

The Council, in 1998, identified American Samoa as a fishing community and requested the Secretary of Commerce concur with this determination. American Samoa was recognized in regulation as a fishing community under the Magnuson-Stevens Act on April 19, 1999 (64 FR 19067). The community continues to participate in the Council decision-making process through its representatives on the Council, its Advisory Panel members, and through opportunities for public input during the Council's deliberations and through public comment periods during NMFSs rulemaking process.

The most recent SAFE report (WPRFMC, 2020a) was the first iteration of the report to present included sales data after the ecosystem component amendment that revised the list of BMUS in American Samoa from seventeen to eleven species, so estimates of commercial sales of just the eleven species that remain classified as BMUS only recently became available. The species that remain BMUS were selected in part because of their importance to the fishery, and likely comprised the majority of reported sales prior to the ecosystem component species amendment.

Table 7 in Section 2.3.3 shows that between 2017 and 2019, American Samoa bottomfish fishermen caught an average of 14,789 lb of BMUS annually and sold an average of 1,123 lb of BMUS (i.e., 7.7 percent of the recent average catch). Based on the 2019 commercial estimate of pounds sold (1,401 lb) and the commercial value of the fishery in 2019 ($5,708), the average adjusted price per pound was $4.07. The 2020 LOF estimated there were less than 30 participants in the fishery (85 FR 21095, April 16, 2020). If participation and effort were equal in 2019, each of the 30 fishermen would have sold approximately 47 lb of BMUS valued at $190.

"Cultural fishing" is a relatively new term and is not readily defined (Kleiber and Leong, 2018). As with other studies of culture, cultural fishing is context dependent; definitions from other areas may not be suitable for American Samoa. As noted in Section 2.2, American Samoa culture is often framed in terms of *fa'a Samoa*, or the "Samoan Way", which govern local social norms and practices. This includes core values and practices such as *tautua*, or "service", which involves the broad collective sharing of labor, resources, income, and social and political support to strengthen the *aiga* (family groups), the village, and the role of chiefs in perpetuating *fa'a Samoa*. In a fisheries context, this may mean the distribution of catch within the *aiga*, or the use of fish as specific ceremonial events. In a letter to NMFS on June 15, 2020, the DMWR highlighted that deep-water snappers are critical for cultural ceremonies and *fa'alavelave* (e.g., funerals, weddings, births, special birthdays). Cultural fishing would also encompass day-to-day practices of subsistence, and coral reef fisheries are particularly important from a dietary and socio-cultural standpoint (Kilarski et al., 2006; Levine and Allen, 2009). Considering that generally less than eight percent of bottomfish catch is sold (Table 7), this fishery can be considered predominantly non-commercial, providing fish for sustenance and cultural events. This importance for subsistence and cultural use is evident during important community events, and demand for bottomfish varies depending on the need for fish at government and cultural events (WPRFMC, 2020a).

3.4.1.1 Potential Effects of the Alternatives on the American Samoa Fishing Community

Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

Under Alternative 1, the Council would recommend and NMFS would establish management identical to the interim measure, with an ACL of 13,000 lb and an in-season AM to close Federal

waters when the ACL is attained for the bottomfish fishery in American Samoa. As described in Section 2.3.1, the level of bottomfish catch under this alternative is expected to be identical to catch under the interim measure and slightly less (14,521 lb) than the average annual catch in recent years (14,789 lb from 2017 to 2019). No available information indicates that commercial sales would change, so NMFS anticipates that an average of 7.7 percent of bottomfish would be sold in subsequent years based on the recent average (Table 17). Using the recent average price of $4.44 per lb for 1,118 lb expected to be sold under Alternative 1, this would generate approximately $4,964 in revenue. Using the upper estimate of the number of fishery participants from the 2020 LOF, the 30 participants would earn approximately $166 each (Table 17). This alternative would not further restrict bottomfish fishing activity in American Samoa relative to the interim measure and only slightly constrain catch relative to previous years, so the status quo is not expected to substantially impact the fishing communities in American Samoa. Non-commercial fishing (inclusive of recreational, sustenance, and cultural fishing) would be similarly affected under the status quo.

Table 17. Estimated revenues in American Samoa bottomfish fishery under each of the alternatives. All estimates assume a price per lb of $4.44, and 30 participants in the fishery.

Years	Alt.	Expected catch (lb)	Expected lb sold	Total revenue ($)	Revenue per participant ($)	Difference from Alt. 1 ($)	Percent difference from Alt. 1
Annually	1	14,521	1,118	4,964	165.48	0.00	0.0
2022	2	12,796	985	4,375	145.82	19.66	11.9
Following years	2	12,571	968	4,298	143.26	22.22	13.4
Annually	3	12,571	968	4,298	143.26	22.22	13.4

Alternative 2: Implement an Annual Catch Limit of 1,500 lb alongside In-Season and Post-Season Accountability Measures

Under Alternative 2, BMUS catch may be slightly reduced from the status quo, and catch is expected to be between 12,796 lb and 14,789 lb in the first year of the plan. If total bottomfish catch is 12,796 lb in the first year and 7.7 percent of the catch is sold commercially at $4.44 pound, that means 985 lb would be sold for $4,375. Using the number of fishery participants from the 2020 LOF, the 30 participants would earn $146 each. This is a decrease of approximately $20 (11.9 percent) from the status quo alternative (Table 17). If fishermen compensated for a closure of Federal waters by catching BMUS in territorial waters that remained open to fishing, revenue would be closer to that expected under the status quo alternative. There is no information available to estimate the magnitude of compensation that would occur. For the remainder of the plan, socioeconomic impacts would be similar to Alternative 3. If total catch is 12,571 lb and 7.7 percent of the catch is sold commercially at $4.44 pound that means 968 lb would be sold for $4,298. Using the number of fishery participants from the 2020 LOF, the 30 participants would earn an average of $143 each. This is a decrease of $22, or 13.4 percent from the status quo alternative (Table 17).

Offshore banks in Federal waters do not have shallow coral reef habitat, so these areas may produce more deepwater snappers for the fishery. However, there is not detailed information on whether catch for commercial or non-commercial purposes comes disproportionately from

territorial or Federal waters or the proportions of species that are caught in these waters. Overall, it is expected that the amount of fish caught for sustenance and cultural purposes would be affected similarly to fish caught for commercial purposes. Specifically, there may be a decrease in available fish of 11.9 to 13.4 percent under Alternative 2 relative to the status quo alternative.

The proposed ACL under this alternative is intended to provide for continued availability of bottomfish resources to the American Samoa fishing community while ending overfishing and rebuilding the fishery, though these objectives are not expected to be achieved since fishing is likely to continue in territorial waters. Under Alternative 2, fish would be available in slightly lower quantities than under the status quo alternative. The decrease under Alternative 2 is less than would be expected under Alternative 3 for the first year of the rebuilding plan, but the two alternatives would be comparable after the first year. The decrease in revenue and fish available for cultural and subsistence purposes under Alternative 3 would be 13.4 percent from the status quo. This decrease is roughly 12.3 percent larger under Alternative 3 compared to the first year of Alternative 2.

Overall, implementation of Alternative 2 is expected to change the American Samoa bottomfish fishery slightly relative to the status quo during the time frame of the rebuilding plan. These changes may decrease the amount of fish available to the community and the amount of revenue available to fishermen by 11.9 percent in the first year of the rebuilding plan and by 13.4 percent for the remainder of the rebuilding plan. Thus, fish available for sustenance and cultural purposes, and revenue would be slightly decreased relative to the status quo, but a disruption to the fishery that would result in any substantial social or economic effects to the American Samoa fishing community is not expected.

Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, BMUS catch may be slightly reduced from the status quo, and catch is expected to be between 12,571 lb and 14,789 lb (Section 2.5.1). If total catch is 12,571 lb and 7.7 percent of the catch is sold commercially at $4.44 pound that means 968 lb would be sold for $4,418. Using the number of fishery participants from the 2020 LOF, the 30 participants would earn an average of $143 each. This is a decrease of $22, or 13.9 percent from the status quo alternative (Table 17). If fishermen compensated for a closure of Federal waters by catching BMUS in territorial waters that remained open to fishing, revenue would be closer to that expected under the status quo alternative. There is no information available to estimate the magnitude of compensation that would occur.

Detailed information on whether catch for commercial or non-commercial purposes comes disproportionately from territorial or Federal waters or the proportions of species that are caught in these waters is not available. Overall, it is expected that the amount of fish caught for sustenance and cultural purposes would be affected similarly to fish caught for commercial purposes. Specifically, there may be a decrease in available fish of 13.4 percent relative to the status quo alternative.

The action under Alternative 3 does not provide for authorized catch in Federal waters, but territorial waters would remain open to fishing for bottomfish, which would allow for some availability of bottomfish resources to the American Samoa fishing community through the

duration of the rebuilding plan. Fish are expected to be available in slightly lower quantities than under the status quo alternative and Alternative 2 in the first year. The Federal fishery closure under Alternative 3 may decrease the amount of bottomfish available to the community and the amount of revenue available to fishermen by as much as 13.4 percent from the status quo alternative and would also result in a 12.3 percent larger decrease than Alternative 2 in the first year of the rebuilding plan. Implementation of Alternative 3 is therefore expected to affect the fishery and associated communities more than the status quo alternative as well as Alternative 2 in the first year. Revenue would be decreased relative to the status quo, but a disruption to the fishery that would result in any large or substantial social or economic effects to the American Samoa fishing community is not expected due to the relatively small nature of the decrease. Overall, this alternative does less than the status quo alternative to mitigate effects on fish available to markets and for sustenance and cultural practices in American Samoa and does not meet the need to mitigate socio-economic effects as well as the Alternative 2.

3.4.1.2 Public Health and Safety at Sea

Considering the past and current operation of the American Samoa bottomfish fishery, there have been no noted adverse effects on public health and no significant concerns with safety at sea. The fishery has not typically fostered a "race to fish". This is expected to remain consistent under the status quo alternative as fishing would be able to continue in territorial waters. Similarly, under Alternative 2, the fishery would likely exceed the implemented ACL each of the fishing years for the duration of the rebuilding plan. However, fishing is expected to continue in territorial waters where the majority of bottomfish habitat occurs (85 percent, see Figure 1), so a race to fish is not expected. Alternative 3, which would implement a closure of Federal waters to bottomfish fishing, is also not expected to result in a race to fish since territorial waters would remain open and unrestricted to bottomfish fishing. Because none of the proposed alternatives are expected to result in drastic changes to fishery operations as they are currently and the majority of bottomfish habitat would remain unrestricted with respect to the harvest of BMUS, none of the proposed alternatives are expected to result in an increased likelihood for impacts to public health, issues associated with safety at sea, or a race to fish for bottomfish fishermen in American Samoa.

3.4.1.3 Potential for Controversy

The Council developed the proposed action for implementation by NMFS via a public process in accordance with the Magnuson-Stevens Act, implementing regulations, the American Samoa Archipelago FEP, and other applicable statutes. NMFS and the Council's SSC determined the results of the 2019 stock assessment (Langseth et al., 2019) to be BSIA (Section 1.2), which allows the stock assessment to be used in the setting of ACLs for the American Samoa bottomfish stock complex consistent with National Standard 2 and the American Samoa Archipelago FEP. The Council immediately began work towards this proposed rebuilding plan, as required by the Magnuson-Stevens Act, in consultation with its advisory bodies, NMFS PIFSC fishery scientists and managers, and the American Samoa DMWR. The Council used BSIA in the development of this proposed action alongside input from the public during publicly noticed Council meetings. This public coordination has not revealed significant controversy regarding impacts to the quality of the human environment from this action (Section 3.4.1). However, American Samoa bottomfish fishermen, members of the Council, and members of the Council's SSC have all expressed concerns at SSC and Council meetings regarding the social, cultural, and economic effects of taking action to immediately end overfishing and rebuild the

American Samoa bottomfish fishery using a relatively low catch limit or closure of Federal waters. Fishermen have expressed concerns about the data used in the stock assessment, which produced results leading to the proposed action, and regarding the implementation of a much higher catch limit than the one offered in this action in the interim measure developed by NMFS (i.e., the status quo). A letter to NMFS from the American Samoa DWMR on June 15, 2020 also indicated that the DMWR opposed the relatively higher catch limit implemented by the interim measure, and they would not implement complementary management measures. The negative reaction to a relatively higher interim catch limit indicates that the catch limit and closure presented under the action alternatives would likely illicit similar responses.

The concerns regarding the negative effects of immediately overfishing were reflected in the Council's request for NMFS to implement an interim measure while a rebuilding plan was developed. The interim measure recommended a catch limit during the interim measure of 13,000 lb, which is the largest catch level that would allow stock biomass to increase as required by 50 CFR 600.310(j)(4) but does not end overfishing. The proposed action presents an ACL of 1,500 lb, which is intended to both prevent overfishing and promote rebuilding of the bottomfish stock complex in accordance with Magnuson-Stevens Act requirements, as well as a Federal fishery closure, which is the maximum action that could be taken by NMFS to end overfishing and promote rebuilding. Alternative 2 for this action addresses impacts to the fishery and associated fishing communities (inclusive of cultural fishing practices) to the greatest extent permitted by the requirements of the Magnuson-Stevens Act and implementing regulations. The proposed action alternatives would reduce overfishing relative to the status quo and Alternative 2 would mitigate socioeconomic impacts to the fishing community relative to the maximum action that the Council could recommend. The presented alternatives satisfy regulatory requirements to set an authorized catch level that would end overfishing and rebuild the fishery in a reasonable time frame. The Council and NMFS will solicit additional public comments on the potential effects of the proposed action over a 60-day public comment period associated with this rulemaking.

3.4.2 Scientific, Historic, Archaeological, or Cultural Resources

Historical and archaeological resources may be found in Federal waters of American Samoa in the future, but there are no known districts, sites, highways, structures, or objects that are listed in or eligible for listing in the National Register of Historic Places in the areas that the Federal bottomfish fishery operates. Shipwrecks may exist in areas where the fishery operates, but the fishery is not known to adversely affect shipwrecks. Bottomfish fishermen tend to avoid fishing in, anchoring on, and anchoring near known shipwrecks to avoid losing gear.

Sites with unique scientific resources have not been identified in American Samoa, apart from those protected as MPAs (Section 3.3.4.2). Fishing is generally restricted in these areas, including fishing for bottomfish, so this fishery would not affect MPAs. NMFS does not expect the proposed rebuilding plan to have an effect on objects or places listed in the National Register of Historical Places as no such areas exist in the U.S. EEZ around American Samoa. While fishing may occur in areas of potential scientific, cultural, or historical interest, the fishery is not currently known to cause loss or destruction to any such resources, and fishing operations are not expected to significantly change under the implementation any of the alternatives for the proposed rebuilding plan. Because management under the action alternatives is not expected to

result in significant changes to the conduct of the fishery (Sections 2.4 and 2.5), none of the action alternatives are expected to result in large adverse impacts to resources of scientific, historic, cultural, or archaeological importance.

3.5 Potential Effects on the Fishery Management Setting

Under the authority of the Magnuson-Stevens Act, the Council is responsible for developing management plans and NMFS is responsible for implementing regulations to manage the BMUS fishery in Federal waters surrounding American Samoa. The NOAA OLE and the U.S. Coast Guard enforce Federal fisheries rules. They may conduct enforcement activities through patrols both on and off the water, and they also conduct criminal and civil investigations. The Enforcement Section of the NOAA Office of General Counsel provides legal support to the NOAA OLE and other NOAA offices, and prosecutes cases.

To prevent and minimize adverse bottomfish fishing impacts to EFH, each western Pacific FEP prohibits the use of explosives, poisons, bottom trawl, and other non-selective and destructive fishing gear. Federal law also requires the Council-appointed American Samoa FEP plan team to prepare an annual report on the performance of all Federal fisheries, including American Samoa bottomfish fishery, by June 30 of each year (e.g., WPRFMC, 2020a). These activities and responsibilities would continue under all alternatives, and catches would continue to be monitored through the territorial fishery monitoring program under DMWR with assistance from WPacFIN.

3.5.1 Federal Agencies and the Council

3.5.1.1 Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

Under Alternative 1, the Council would submit and NMFS would implement the same ACL and AM for the fishery as the interim measure. The fishery is expected to perform similarly as under the interim measure, slightly less than recent averages, and no substantial changes are expected relative to recent catches or fishing activity (Section 2.3.1). Administrative efforts would be required to track the fishery catches in-season relative to the ACL, and while the closure of Federal waters would not require an additional rule, it would require more administrative resources to close the fishery and enforce the closure. Although this would be the just the second time an in-season AM would be used in American Samoa, NMFS has utilized an in-season closure as an AM in the Hawaii Deep 7 bottomfish fishery since 2007. The Deep 7 fishery reached the catch limit each year from 2007 to 2010, so NMFS has experience with this type of action. If the fishery were closed in American Samoa, NMFS OLE and the U.S. Coast Guard would be responsible for enforcing the closure. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is easily determined using GPS. Overall, administrative and enforcement efforts would be required under the status, but activities and costs would not be expected to change relative the preceding management action because this alternative would apply the same management measures as previously implemented.

3.5.1.2 Alternative 2: Implement an Annual Catch Limit of 1,500 lb alongside In-Season and Post-Season Accountability Measures

Under Alternative 2, it is expected that the fishery would perform similarly to the status quo alternative, though BMUS catch may be slightly reduced from the recent average, and catch is

expected to be between 12,571 lb and 14,789 lb (Section 2.4.1). The fishery is expected to reach the authorized catch of 1,500 lb early in the fishing year, which would require that NMFS close the fishery in Federal waters. This would not require an additional rule but would require more administrative resources to close the fishery and enforce the closure, similar to the status quo. Although this would be the just the second time an in-season AM would be used in American Samoa, NMFS has utilized an in-season closure as an AM in the Hawaii Deep 7 bottomfish fishery since 2007. The Deep 7 fishery reached the catch limit each year from 2007 to 2010, so NMFS has experience with this type of action. If the fishery was closed in American Samoa, NMFS OLE and the U.S. Coast Guard would be responsible for enforcing the closure. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is fairly easily determined using GPS. The application of the post-season AM to reduce the ACL would require an additional rule as well as administrative resources to produce that rule, but no additional enforcement capacity would be required. The new regulations would not cause substantial costs to fishermen. Fishermen would continue to comply with existing laws, and they would need to learn about the potential for an in-season closure under the new ACL and comply with the no-retention regulation for BMUS caught in Federal waters if a closure is implemented.

3.5.1.3 Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

Under Alternative 3, the fishery would be closed in Federal waters over the course of the rebuilding plan, so it would not be necessary to evaluate catch relative to an ACL and a subsequent administrative action by NMFS would not be necessary to close the fishery. This alternative would not require more administrative resources than the status quo, but resources from NOAA OLE and the U.S. Coast Guard would be needed to enforce a closure of Federal waters to bottomfish fishing. Enforcement of the bottomfish fishing closure in Federal waters would not be difficult because the 3-mile limit is easily determined using GPS. Fishermen would continue to comply with existing laws, and they would need to learn about the complete closure and comply with the no-retention regulation for BMUS caught in Federal waters. Compliance would be easier for fishermen under Alternative 3 compared to Alternative 2 because the closure of Federal waters would not change over the course of the rebuilding plan.

3.5.1.4 All Alternatives

None of the alternatives would establish a precedent for future actions with significant effects or represent a decision in principle about future actions with potentially significant environmental effects. NMFS has specified ACLs and post-season AMs for American Samoa bottomfish from 2012 through 2017 as required by the Magnuson-Stevens Act, and the recent interim measure implemented a catch limit with an in-season AM. The proposed action is a long-term management action that consists of an ACL and AMs for Alternative 2 and a complete closure for Alternative 3. ACLs have been implemented in the fishery since 2012 and would not generate substantial impacts to administrative efforts. The proposed action is a long-term action but is of limited duration, and each of the action alternatives would reduce fishery effects on bottomfish compared to the status quo. The action alternatives are also intended to mitigate effects of a new fishery management need (i.e., ending overfishing and rebuilding the stock) on the American Samoa fishing community. Because of the limited nature of the management, none of the actions would have large effects in terms of increasing or decreasing future management options

available to NMFS and the Council after the duration of the rebuilding plan is complete. However, in accordance with the Magnuson-Stevens Act, if rebuilding plan is not making adequate progress towards ending overfishing and rebuilding the stock within its duration, different or additional management measures may be implemented as necessary to ensure rebuilding is achieved.

3.5.2 Territorial Management Agency

3.5.2.1 Alternative 1: 13,000 lb ACL with In-Season AM (Status Quo)

The implementation of the status quo alternative with an ACL and in-season AM for the fishery would not change responsibilities for DMWR, as it would continue to collect catch data through the creel survey program and commercial receipt system and provide this information to NMFS through WPacFIN. Because of the need for timely data to support an in-season AM, NMFS WPacFIN would coordinate with DMWR to provide timely and effective monitoring. Implementation of a 13,000 lb ACL and potential Federal closure would not affect fishing in territorial waters and therefore not lead to added burden on territorial management agencies.

3.5.2.2 Alternative 2: Implement an Annual Catch Limit of 1,500 lb alongside In-Season and Post-Season Accountability Measures

The use of an ACL and AMs for the bottomfish fishery of American Samoa is not expected to change fishery monitoring by the local resource management agencies. PIFSC would continue to monitor catch data as it becomes available in collaboration with local resource management agencies and the Council. Because of the need for timely data to support an in-season AM, NMFS WPacFIN would coordinate with DMWR to provide timely and effective monitoring. Implementation of a 1,500 lb ACL and potential Federal closure would not affect fishing in territorial waters and therefore not lead to added burden on territorial management agencies.

3.5.2.3 Alternative 3: Establish a Temporary Moratorium on Bottomfish Fishing in Federal Waters around American Samoa

The effects of Alternative 3 on DMWR are expected to be the same as Alternative 2. Although an in-season AM is not part of Alternative 3, the DMWR would continue to monitor catch in collaboration with NMFS and the Council. Similar to the other action alternatives, the DMWR would not be required to implement a complementary closure in territorial waters.

3.5.3 Implementation of ACLs and AMs for other Pacific Island Fisheries

The proposed implementation of a rebuilding plan for American Samoa would not conflict with or reduce the efficacy of existing bottomfish resource management by any local resource management agency, NMFS, or the Council. Additionally, the proposed management measures would also not conflict with ACL and AM implementations for the other Western Pacific bottomfish fisheries in the CNMI, Guam, or Hawaii because these fisheries are geographically separated and bottomfish fishery participants do not fish in different territories such that management in one island area (e.g., American Samoa) would adversely affect the stock status of bottomfish in another island area (e.g., Guam, CNMI, or Hawaii).

3.6 Other Potential Effects

3.6.1 Biodiversity and Ecosystem Function

To date, there have been no identified effects to marine biodiversity and/or ecosystem function from the American Samoa bottomfish fishery. Bottomfish species are not known to have critical ecosystem roles, such as other tropical species such as parrotfishes or reef-building corals (Bozec et al., 2013; Wild et al., 2011), and the fishery is not known to have large effects on biodiversity or ecosystem function. None of the alternatives under consideration would result in substantial changes to the fishery with respect to gear, effort, participation, or areas fished (Sections 2.3 through 2.5); therefore, implementation of the proposed rebuilding plan would not affect marine biodiversity and/or ecosystem function.

Bottomfish fishing is not known to be a potential vector for spreading alien species as none of the bottomfish vessels fish outside of their respective archipelagic waters. Because fishing would not change in this regard under any of the alternatives (Sections 2.3 through 2.5), the proposed rebuilding plan would not have the potential to spread invasive species into or within the waters of American Samoa.

3.6.2 Highly Uncertain Effects, Unique or Unknown Risks

As authorized by the Magnuson-Stevens Act, the Council and NMFS have managed the bottomfish fishery in American Samoa since 1986 (WPRFMC, 1986), and fishery managers and scientists involved in developing the proposed action are highly experienced in terms of understanding the way the fishery operates and the likely outcomes of the proposed measure. No catch limits were specified in 2018 and 2019, so fishery performance is known under a status quo scenario. The proposed action under is part of continued management of the fishery under a system of catch limits and AMs that was first used in 2012. Effects on the human environment of operation and management of the fishery under a catch limit and AM are generally known and have been considered in the development and recommendation of management alternatives.

Analysis of the proposed management action includes consideration of BSIA and authorized and expected levels of catch. Some uncertainty exists in the potential response of fishermen to a closure of Federal waters. But because a small proportion of bottomfish habitat in American Samoa lies in Federal waters, the difference between the maximum possible effect (i.e., proportional reduction in catch), and minimum possible effect (i.e., no reduction in catch) is relatively small. However, neither outcome is expected to comply with the statutory requirement to end overfishing, as it is expected there would be only a slight reduction in catch under the action alternatives compared to the status quo alternative. Similarly, neither outcome is expected to comply with the statutory requirement rebuild the fishery. The effects of continued fishing for BMUS within these limited constraints for the duration of the rebuilding plan are understood based on the stock assessment and are not highly risky. Risks associated with proposed management are therefore not unique or unknown, and potential outcomes are informed by available scientific information.

3.6.3 Environmental Justice

The effect of the alternatives on environmental justice communities that include members of minority and low-income groups was considered. Overall, the fishery is not having a large adverse effect on subsistence harvests of marine resources or on the environment or human health in a way that disproportionately affects members of environmental justice communities. The fishery does not pollute marine waters and thus does not have adverse effects to human health or on marine life. The ACL or Federal closure would apply to everyone that catches bottomfish, so it would not disproportionately affect any particular subset of the bottomfish fishery. The environmental review in this EA shows that the fishery would continue to be conducted similar to recent years under the status quo alternative and that Alternatives 2 and 3 may slightly decrease catch compared to the status quo. These alternatives could decrease the amount of bottomfish available to fishing communities, though none of the effects are expected to be substantial (Section 3.4.1). The ACL and AMs under Alternative 2, closure under Alternative 3, monitoring, and other fishery management measures are intended to end overfishing, rebuild the fishery, and mitigate impacts to fishing communities, including minority and low-income groups such that communities that rely on their harvest can continue to benefit from the fishery. Because the fishery is not expected to change its conduct substantially under any alternative, implementation of these management measures is not anticipated to result in substantial changes to the fishery, regardless of which alternative is being considered. As a result, no adverse effects to the environment were found that could have disproportionately high or adverse effects on members of environmental justice communities in American Samoa.

3.7 Additional Considerations

3.7.1 Climate Change

Although there are no specific studies examining the potential effects of climate change on Pacific Island bottomfish, changes in the environment from global climate change have the potential to affect bottomfish fisheries. Effects of climate change may include sea level rise, increased intensity or frequency of coastal storms and storm surges, changes in rainfall (more or less) that can affect salinity nearshore or increase storm runoff and pollutant discharges into the marine environment, increased temperatures resulting in coral bleaching, and temperature mediated responses in some marine species (IPCC, 2007). The effects from climate change may occur slowly and be difficult to discern from other effects. Climate change has the potential to adversely affect some organisms, while others could benefit from changes in the environment. Increased carbon dioxide uptake can increase ocean acidity which can disrupt calcium uptake processes in corals, crustaceans, mollusks, reef-building algae, and plankton, among other organisms (Houghton et al., 2001; The Royal Society, 2005; Caldeira and Wickett, 2005; Doney 2006; Kleypas et al., 2006). Climate change can also lead to changes in ocean circulation patterns, which can affect the availability of prey, migration, survival, and dispersal (Buddemeier et al. 2004). Damage to coastal areas due to storm surge or sea level rises as well as changes to catch rates, migratory patterns, or visible changes to habitats are among the most likely changes.

The efficacy of the proposed alternatives for the rebuilding plan in providing for sustainable levels of fishing for bottomfish is not expected to be adversely affected by climate change. Recent catches and biological status of the species complex informed the development of the

alternatives, and climate change effects, if any, would be indirectly reflected in those statistics. Monitoring of bottomfish catches and stocks would continue, regardless of which alternative is selected, and if environmental factors were found to be affecting the stocks, management could be adjusted in the future.

3.7.1.1 Consideration of Greenhouse Gas Emissions

The fishery relies on vessels that are powered by fossil fuels and emit greenhouse gases from fossil fuel combustion. Management under the alternatives considered would not result in a change in fishing in any way that would have large effects on vessel use or fuel consumption or greenhouse gas emissions. If the fishery were to be subject to a closure of Federal waters to bottomfish fishing, some fishing activity may move from offshore banks in Federal waters to closer habitats in territorial waters that require less transit (Figure 1). However, NMFS does not have detailed information on the current level of fishing effort in Federal versus territorial waters. The closure would affect a small proportion of bottomfish habitat, so fishing activity is not expected to change substantially relative to the status quo, and any potential decreases in fossil fuel consumption are expected to be minor. For these reasons, none of the action alternatives is expected to result in substantial changes to the way vessels are used, so there would be no change in greenhouse gas emissions.

Table 18. Environmental effects of the alternatives.

Topic	Alt. 1 – ACL of 13,000 lb with In-Season AM (Status Quo)	Alt. 2 – ACL of 1,500 lb with In-Season and Post-Season AMs	Alt. 3 – Closure of Fishery in Federal Waters
Overview of the alternatives	Existing fishery under interim measure in 2020 and 2021. ACL of 13,000 lb with an in-season AM to close the fishery in Federal waters once the ACL is attained. Rebuilding would likely take more than 40 years.	For each fishing year, fishery operating under proposed ACL of 1,500 lb of BMUS and in-season and post-season AMs. Authorized catch level would rebuild fishery in nine years, but rebuilding would be more likely to occur in over 40 years due to continued catch in territorial waters. Likely subject to an in-season closure each fishing year for the duration of the rebuilding plan.	Federal waters closed for the duration of the rebuilding. This is functionally equivalent to an ACL of 0 lb in Federal waters. Authorized catch level would rebuild fishery in eight years, but rebuilding would be more likely to occur in 40 years due to continued catch in territorial waters. No AMs.

Expected fishery outcome of alternatives	Continuation of fishery as operated under the interim measure. Federal fishery may close by the end of November with 14,521 lb of catch annually. Catch expected to exceed level of OFL, so overfishing would not be prevented, and rebuilding projected to take more than 40 years.	Federal fishery may close in as early as January or as late as March in the first fishing year; Federal fishery closure expected for the full year each year after the first due to the post-season AM; catch expected to be slightly less than Alt. 1. Desired reduction in harvest of BMUS could be offset by fishing in territorial waters where the majority of bottomfish habitat is located, and some fishing effort may redistribute there. Reduction in harvest of BMUS from Federal waters compared to Alt. 1. Overfishing would be reduced, but not ended, and rebuilding likely to be delayed to > 40 years because of fishing in territorial waters.	Catch expected to be less than Alt. 1 and less than Alt. 2 in the first year with a closure of Federal waters for entirety of each fishing year for the duration of the rebuilding plan. Desired reduction in harvest of BMUS could be offset fishing to territorial waters where the majority of bottomfish habitat is located, and some fishing effort may redistribute there. Reduction in harvest of BMUS from Federal waters compared to Alt. 1. Overfishing would be reduced, but not ended, and rebuilding likely to be delayed to >40 years because of fishing in territorial waters.

American Samoa bottomfish fishery (Sections 2.3 through 2.6; see also Potential Effects on Fishing Communities, Section 3.4.1)	No change from interim measure. Fishing may be restricted in Federal waters late in each fishing year due to the in-season AM. BMUS available to community as under the interim measure. Overfishing reduced but not ended. Rebuilding under this level of catch would take more than 40 years.	Slight change. A closure of Federal waters for most of the most of the first year and the entirety of each subsequent year would affect fishermen who customarily fish in Federal waters. Fishermen could fish year round in territorial waters. BMUS available to community as in previous years, but with possible reduction in catch when the Federal fishery is closed. Reduced catches in Federal waters, reduced overfishing, and some conservation benefit to the stock complex relative to Alt. 1.	Slight but largest potential change. Federal waters would be closed for the duration of the rebuilding plan. This may adversely affect fishermen who customarily fish in Federal waters. Fishermen could fish year round in territorial waters. BMUS available to community as in previous years, but with possible reduction in catches due to the Federal fishery closure. Reduced catches in Federal waters, reduced overfishing, and some conservation benefit to the stock complex relative to Alt. 1 and 2.

Fishery operation in terms of location, gear, participation, effort, seasonality	The fishery operates around Tutuila, the Manua Islands, and offshore banks. Distribution of harvest from Federal and territorial waters is unknown. 85 percent of bottomfish habitat is in territorial waters; most catch is assumed to be from these waters. Seasonality has not undergone detailed analysis, but the fishery operates year round. Alt. 1 would not result in a change to the fishery with respect to location, gear, seasonality, participation, or intensity relative to the interim measure, but areas fished and catch may slightly change relative to years immediately prior to the interim measure if a Federal closure is enacted. (Section 2.3, Section 3.3.1)	No large change from Alt. 1. Some fishing may be displaced into territorial waters over the duration of the rebuilding if Federal waters close. Since most fishing occurs in territorial waters, this would not result in a large change. Overall, effort is expected to be reduced during the rebuilding plan because of a closure to fishing in Federal waters for most of the first year and each of the following years for the duration of the rebuilding plan. (Section 2.4, Section 3.3.1)	No large change to areas fished from Alt. 1. Federal waters would be closed for the duration of the rebuilding plan, so all fishing would occur in territorial waters during this time. Since most fishing occurs in territorial waters, this would not result in a large change. Overall, effort is expected to be reduced during the rebuilding plan because of the complete closure to fishing in Federal waters for the duration of the rebuilding plan. (Section 2.5, Section 3.3.1)
3.2 Effects on the Physical Environment			
Effects on air and water quality, noise, and view planes	No effect, not considered further.	No change from status quo.	No change from status quo.

Effects on unique features of the geographic environment	The fishery does not affect unique features of the geographic environment. (Sections 3.2, 3.3.4, and 3.4.2)	No change from status quo.	No change from status quo.
3.3 Effects on the Biological Environment			
Estimated annual catch of BMUS in subsequent years	Between 14,521 lb and 14,789 lb.	Between 12,571 lb and 14,789 lb.	Between 12,571 lb and 14,789 lb.

3.3.2.1 Effects on target species (BMUS)	Stock would be managed under an authorized catch consistent with the interim measure but would take over 40 years to rebuild. Overfishing would not be reduced from recent years, but not ended. Impacts to BMUS would be expected to be the same as under the interim measure.	Catch would be authorized at a level that is intended to end overfishing and rebuild the fishery in nine years. A reduction in overfishing is expected, but it would not be prevented without a complementary closure in territorial waters. There would be a reduction in harvest from offshore areas due to a closure of Federal waters to bottomfish fishing expected early in the first year and for the full year for the rest of the rebuilding plan, which would reduce overfishing but not end it. There may be less displacement into territorial waters than Alt. 3 in the first year due to Federal waters being open to bottomfish fishing until the ACL is reached.	Authorized catch would be functionally equivalent to zero in Federal waters, which is intended to end overfishing and rebuild the fishery in eight years. However, fishing would not be limited in territorial waters. Reduction in overfishing is expected, but effects would not be completely mitigated without a complementary closure in territorial waters. There would be a reduction in harvest of BMUS from offshore areas due to the closure of Federal waters to bottomfish fishing for the duration of the rebuilding plan, which would reduce overfishing but not end it.
3.3.2.2 Effects on non-target species and bycatch	Under this alternative, fishery effects on non-target stocks are expected to continue at low levels because bottomfish fishing is target-specific, and there has been no recorded bycatch in the fishery in recent years.	No change from status quo.	No change from status quo.

3.3.3. Effects on protected species	The fishery is known to have limited level of interactions with protected species and operates within existing ESA and MMPA authorizations. The fishery is a Category III fishery under the MMPA (remote likelihood or no known incidental mortality and serious injury of marine mammals). The fishery is not adversely interacting with seabirds.	No change from status quo.	No change from status quo.
3.3.3.1 Effects on critical habitat	There is no designated critical habitat in the action area.	No change from baseline.	No change from baseline.
3.3.4 Effects on habitats and vulnerable ecosystems	The fishery uses hooks and lines and is not known to have adverse effects on habitats including EFH or HAPC, coral reefs, or vulnerable ecosystems. The fishery does not operate in areas closed to bottomfish fishing.	No change from status quo.	No change from status quo.
3.3.4.3 Effects on other vulnerable marine or coastal ecosystems	The fishery is not known to be adversely affecting other vulnerable coastal ecosystems including deep coral ecosystems.	No change from status quo.	No change from status quo.
3.4 Effects on the Socioeconomic Setting			

3.4.1 Fishing communities	The affected fishing community is comprised of people from the American Samoa Archipelago, which includes fishermen, vendors, and consumers. BMUS are important for social and cultural uses, and the fishery supports jobs and provides revenue for fishermen. Impacts to the fishing community would be the same as under the interim measure.	Slight change. Commercial fishermen would see a 11.9 percent reduction in revenues for the first year and a 13.4 reduction in each subsequent year for the duration of the rebuilding plan relative to the status quo due to the expected closures of Federal waters. There would be a similar reduction in BMUS for the community. Effects on non-commercial, sustenance, and cultural fishing would be similar to commercial fishing. Fishing in territorial waters would still be available and would partially offset the effects. Long term, the management measure would improve conservation of BMUS over Alt 1.	Slight change. Revenue reduced about 13.4 percent for fishermen each year for the duration of the rebuilding plan relative to the status quo as the fishery would be closed in Federal waters. A similar reduction is expected in BMUS for the community. Effects on non-commercial, sustenance, and cultural fishing would be similar to commercial fishing. Fishing in territorial waters would still be available and would partially offset the effects. Long term, Alt. 3 would improve conservation of BMUS over the status quo and slightly more than Alt. 2 in the first year but would provide less mitigation of management impacts on the fishing community.

3.4.1 Effects on fishery revenue	Fishing is expected to continue at levels similar to the interim measure, and fishermen would realize $4,694 in total revenue if they catch 14,521 lb and 7.7 percent is sold.	Revenue under this alternative is expected to be slightly less than the status quo at $4,375 in the first year of the rebuilding plan since catch is expected to be reduced due to a closure of Federal waters if the ACL is reached. Revenue in subsequent years is expected to be $4,298 since catch is expected to be further reduced due to a complete closure of Federal waters in accordance with the post-season AM.	Revenue under this alternative is expected to be slightly less than the status quo at $4,285 each year of the rebuilding plan since catch is expected to be reduced relative to recent levels due to a complete closure of Federal waters.
3.4.1.2 Effects on public health or safety	The fishery is not causing an adverse effect on public health or safety.	No change from status quo.	No change from status quo.
3.4.1.3 Potential for controversy	There is no potential for controversy from fishermen since the same management would be implemented as 2020 and 2021.	There may be potential for controversy with fishermen due to the implementation of a relatively low ACL compared to the status quo that would restrict catch in Federal waters.	There may be the potential for controversy with fishermen due to the fishing grounds in the offshore banks being completely restricted for the duration of the rebuilding plan.
3.4.1.2 Safety at sea	There are no known safety-at-sea issues in the fishery.	No change from status quo.	No change from status quo.
3.4.2 Scientific, historic, archaeological, or cultural resources	The fishery is not known to be having an adverse effect on historic, archaeological, or cultural resources.	No change from status quo.	No change from status quo.

3.5 Effects on the Fishery Management Setting			
3.5.1 NMFS management	NMFS would implement the same management as under the interim measure. NMFS would continue to participate in annual fishery monitoring activities with the Council. Additional administrative costs would be required for NMFS to monitor the fishery's progress toward the ACL and to implement an in-season Federal fishery closure, which may occur late in each fishing year.	NMFS would continue to participate in Council fishery monitoring activities. Additional administrative costs would be required for NMFS to monitor the fishery's progress toward the ACL and to implement an in-season Federal fishery closure, which is expected to occur early in the first year of the rebuilding plan under this alternative. Additionally, the post-season AM would likely require the specification of a new ACL of 0 lb after the first year of the plan, which would accrue further administrative costs.	Similar to Alternative 2, but there would not be a need to monitor progress toward an ACL or to implement an in-season closure. The closure would be implemented at the start of each fishing year for the duration of the rebuilding plan.
3.5.1 Council management activities	The Council would continue to monitor and review annual BMUS catches in the annual SAFE report.	No change from status quo.	No change from status quo.

3.5.2 Territorial management activities	American Samoa would administer the commercial receipt book system and creel survey program and would continue to enforce fishery related laws in territorial waters and on shore.	No change from status quo.	No change from status quo.
Complementary Federal and territorial management of the fishery	No new Federal action under the status quo alternative relative to the interim measure, so no change to the management relationship. American Samoa is not currently proposing to implement a complementary closure for BMUS in territorial waters if the catch is anticipated to reach the ACL	American Samoa is not currently proposing to implement a complementary closure for BMUS in territorial waters if the catch is anticipated to reach the ACL. So, this alternative would result in no change in management by American Samoa in terms of fishery closure regulation or enforcement.	Same as Alt. 2.
Fishermen's compliance	Fishermen would continue to comply with closed fishing areas, territorial laws regarding commercial reporting requirements, and Federal rules regarding destructive fishing practices. The same potential for a Federal closure would exist as under the interim measure.	The regulations would not cause substantial costs to fishermen. Fishermen would continue to comply with existing laws, and the mechanism for the potential Federal closure would be the same as the status quo. Fishermen would need to comply with the no-retention regulation for BMUS caught in Federal waters if a closure was implemented.	Same as Alt. 2. Fishermen would need to comply with the no-retention regulation for BMUS caught in Federal waters. Compliance for fishermen would be easier than under Alt. 1 or 2 because the closure of Federal waters would not change over the course of the rebuilding plan.

Enforcement	NOAA Office of Law Enforcement, U.S. Coast Guard, and DMWR would continue to enforce fishery regulations around American Samoa and for the Federal closure if needed.	Enforcement of the bottomfish fishing closure in Federal waters would not be difficult to enforce because the 3 mile limit is easily determined.	Same as Alt. 2.
Violation of Federal, state, or local law or requirements imposed for environmental protection?	No violations are consistently occurring and are not expected.	No change from status quo.	No change from status quo.
Would the action under each alternative be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?	No. The Magnuson-Stevens Act and the American Samoa FEP require that NMFS implement ACLs and AMs for all management unit species annually. Implementing the same provisions as the interim measure would not change this requirement.	No. The proposed rebuilding plan, despite being long-term, is a limited duration management action intended to benefit BMUS by ending overfishing and rebuilding the stock while considering the effects of this new fishery management need on the American Samoa fishing community. This alternative would not narrow future choices having to do with rebuilding the fishery.	Same as Alt 2.
3.6 Other Potential Effects			

3.6.1 Biodiversity and ecosystem function	Other than effects on BMUS stocks, the fishery is not known to be having large adverse effects on biodiversity or ecosystem function. Fishery managers are not aware of imbalances to ecosystem function from the fishery.	No change from status quo.	No change from status quo.
3.6.1 Introduction or spread of invasive species	Not occurring as a result of fishery management and not expected to occur.	No change from status quo.	No change from status quo.
3.6.2 Likelihood the effects on the human environment would be highly uncertain or involve unique or unknown risks	Unlikely. Catches are monitored, and the characteristics of the fishery are known due to a recent stock assessment. The effects of continued fishing for BMUS under the same provisions as the interim measure are understood and are not highly risky.	Unlikely. The effects of the proposed action are known due to an understanding of the fishery and a recent stock assessment. The effects of continued fishing for BMUS within the limited constraints of this fishery rebuilding plan are understood and are not highly risky.	Same as Alt. 2.

3.6.3 Environmental justice	Members of minority and low-income groups may be affected by management decisions. However, the fishery is not having a large adverse effect on subsistence harvests of marine resources, the environment, or human health in a way that disproportionately affects members of environmental justice communities.	No change from status quo.	No change from status quo.
3.7 Additional Considerations			
3.7.1 Climate change and greenhouse gases	The fishery requires the use of vessels that are powered by fossil fuels. NMFS does not control the amount of vessel use or where vessels are used by the fishery.	No substantial change from the status quo. Even if there is a closure of Federal waters to bottomfish fishing, vessel use could be slightly reduced or remain the same.	Same as Alt. 2

4 APPLICABLE LAWS

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6 PROPOSED REGULATIONS

7 REGULATORY IMPACT REVIEW