From: Michael Sissenwine [mailto:m.sissenwine@gmail.com]
Sent: Tuesday, June 02, 2015 5:13 PM
To: Tom Nies
Subject: Comments on proposed revision of National Standard 1 Guidelines and other documents

Tom, I have reviewed three of the four documents you distributed. I have not reviewed the white paper on revision of the application of NEPA to the MSA. It is an important topic, but there are a lot of other people that are probably better able to comment on it.

The three documents I reviewed are important documents, but I think that all of them need more work. See my comments below. Feel free to share this message

National Standard 1 Guidelines

I spent most of my time reviewing the proposed revisions to the NS1 Guidelines. Specific comments are in the "redlined" version that is attached to this message. Here is my "big picture" list of concerns about the National Standard Guidelines (both current, and proposed revisions which do little to address some long standing concerns):

1. Management of mix stock fisheries- This has been one of the most important long standing issues with the Agency's interpretation of the MSA since 1996 when the Act was revised to make the definition of overfishing more restrictive (F< or = Fmsy) and require rebuilding plans. The Act applies the terms overfishing and overfished to a fishery not a stock, although it applies the requirement for rebuilding to stocks. The Guidelines defined a fishery as a stock (or stock complex), which limits flexibility to manage mix stock fisheries to achieve OY (providing the greatest overall benefits to the Nation). This limited flexibility is perhaps best illustrated by the mix stock problem in the New England and Mid Atlantic scallop fishery, which takes windowpane flounder as bycatch. By defining a fishery as a stocks, rather than a group of vessels prosecuting a fishery that catches multiple species, the OY from one of best assessed and most monetarily valuable fishery is potentially controlled by bycatch of a species no one wants to catch (it has minimal monetary value) with limited basis for assessing stock status or future trajectories. The long term viability of windowpane flounder should not be jeopardized, but applying the same conservation and management standards to minor, low value, poorly assessed stocks, as apply to valuable well studied stocks is likely to result in much less than OY. The mix stock exception in the current version of the NSG offers little flexibility to address this problem, and it is unchanged in the proposed revision of the Guidelines. This problem with the guidelines was pointed out by the NRC report on rebuilding plans: "The operational feasibility of the mixed-stock exception could be modified to expand the range of situations to which it can be applied, subject to assurances that the less productive species are not driven to unacceptably low abundance." (p.4).

Perhaps the proposed revision of the Guidelines intends to address the mix stock fishery management problem by deleting text on page 2 of the Redline version that defines a fishery as a stock or stock complex. However, there is little, if any, follow-thru to indicate that overfishing of one or more stocks in a mix stock fishery is permitted except under the very limited circumstances already in the Guidelines. For example, does the deletion of the aforementioned text give the NEFMC (with the MAFMC) more flexibility in dealing with finfish discards by the scallop fishery, or other so called choke stock problems in other fisheries?

2. Taking account of trophic interactions in fishery management- No one questions that trophic interactions between species influence the population dynamics of both predator and prey species, and competing species. However, the law and current guidelines interpretation MSY as property of individual stocks which is not scientifically correct. For example, many scientific publications and reports (including the NRC report on US Rebuilding Plans) points out that it is unrealistic to simultaneously maintain or rebuild all stocks to the Bmsy level estimated for stocks individually, yet this is the apparently the operational objective upon which National Standard 1 Guidelines are predicated.

The proposed revision of the Guidelines move in the right (or scientifically correct) direction by indicating that " Aggregate level MSY estimates could be used as a basis for specifying OY for the fishery (see paragraph (e)(1)(iv) of this section)." (p. 12 of redline draft Guidelines). However, it is unclear what this means in practice. Can OFL, ABC and ACL be set for the aggregation of species covered by the MSY estimate or are stock specific status determination criteria, ACLs, etc. required? Can the rebuilding target of a species within the complex be set lower than would be the case for a single species estimate of Bmsy for a species within the aggregate because this will produce a higher yield for the aggregation? Or conversely, should it be set higher because a high yield than the singles species MSY can be achieved by a multispecies fishing strategy? These are not easy questions, and depending on how an aggregate level of MSY is used in management there could be abuse (chronic overfishing to avoid the short term pain that results in long term benefits). However, as the proposed revision of the Guidelines are written, they open Pandora's box full of intriguing possibilities and temptations with no guidance on how to be scientifically rigorous and responsible as managers. The box should be open, but the Agency needs to offer more leadership on this important topic. It is not clear if the change in the proposed Guidelines allowing aggregate level MSY to be the basis for OY is a signal that the Agency wants Councils to shift from stock by stock ACLs and status determinations to management of energy based ecosystem units, or it is a meaningless respond to calls for ecosystem based management, or something (unspecified) in between.

3. Minimum Stock Size Threshold (MSST)- The MSA makes no mention of a MSST. The concept was introduced by the Agency following the 1996 Amendments to the Act to operationalize the idea of rebuilding overfished stocks. One argument was that stocks needed to be rebuilt if the biomass was less than Bmsy. However, scientists pointed out that this would occur approximately half the time without overfishing as a result of natural fluctuations in productivity (mostly recruitment). The outcome of this discussion was that the MSST was defined as a biomass that would rarely (i.e., 5% of the time) occur unless there was overfishing. The value of 1/2 Bmsy corresponded to a 5% probability for highly variable stocks, but technical guidance indicated that (1.0-M)Bmsy was a better general rule for setting the MSST. However, 1/2 Bmsy became the unofficial default value. The current guidelines made it the official default, but it describes the MSST as the biomass level from which the stock is expected to rebuild fishing at Fmsy. The default value is not necessarily consistent with this description.
The proposed revision of the Guidelines add to the confusion about MSST. The MSST now indicates that a stock is either overfished or depleted. The distinction is that the former is caused by overfishing and the later is caused by environmental conditions without overfishing having occurred. If depletion applies to the rare occurrence of a low stock size resulting from natural fluctuations in productivity, then the concept is not much different from the concept behind the definition following the 1996 Reauthorization of the Act. However, it is probably intended to apply to more persistent adverse changes in environmental conditions (e.g., climate change or other types of regime shifts). If this is the case, then the "prevailing" conditions upon which an estimate of MSY (and presumably Bmsy) is based have probably changed such that stock size is probably not below the applicable MSST. The proposed

revised guidelines allow this distinction such that there doesn't seem to be a reason for the depleted category.

Aside from the introduction of the depleted category in the proposed revision of the guideline, it changes the scientific base for the MSST. The MSST is defined as the "level of biomass below which the capacity of the stock or stock complex to produce MSY on a continuing basis has been jeopardized." (page 12 of the redlined draft). This is a substantive change since the previous basis of the MSST was unrelated or perhaps only indirectly related to jeopardizing a stocks long term capacity to produce MSY. In fact, the proposed guidelines go on to say that "MSST should be between ½ Bmsy and Bmsy, and could be informed by the life history of the stock, the natural fluctuations in biomass associated with fishing at MFMT over the long-term, the time needed to rebuild to Bmsy and associated social and/or economic impacts on the fishery, the requirements of internationally-managed stocks, or other considerations." This text says nothing about jeopardizing the long term capacity to produce MSY and it gives no reason to believe biomass between 1/2 Bmsy and Bmsy fulfills the definition. The definition in the proposed draft guidelines seems to require examination of recruitment dynamics (when does recruitment overfishing occur?), which will open the door for a lot more legitimate scientific debate than with previous understandings of the meaning of the MSST.

3. Discontinuity in maximum rebuilding time- The way that the Agency decided to interpret the law in terms of the maximum time to rebuild an overfished stock (Tmax) results in a so called "discontinuity." The discontinuity means that a large change in Tmax can result from a relatively small change in a stock assessment. The results can be counter intuitive such as a more pessimistic assessment leading to an increase in Tmax, Freb and catch. This is a rare event, but it is theoretically possible, and it has occurred. Simply put, it is bad system design when uncertainty (or noise) in scientific information is propagated or "blows-up" instead of being damped.

This problem has been well know for a long time. It was addressed in previous draft Guidelines (about 2005) that were not accepted. It was pointed out by the recent NRC report on US fishery rebuilding plans. This proposed revision of the Guideline offers two new methods for determining Tmax, but they seem to give about the same results as the current method and they do not eliminate the discontinuity problem. What's the point of adding methods that give the same results and that do not solve the underlying problem?

4. Implications of ecosystem change- The proposed revisions of the Guidelines clearly recognize that ecosystems change and that the changes effect MSY and status determination criteria. The Guidelines continue to be clear that estimates of MSY (and therefore status determination criteria) are based on prevailing conditions, but there is no guidance on what prevailing means. The determination should be science based, but there should be a consistent approach based on experience, theory and case studies. However, the decision on prevailing conditions (e.g., should long term average recruitment or recent average recruitment be used to estimate Bmsy) seems to be ad hoc. This opens the door for abuses (i.e., assertion that there is no need to rebuild because conditions changed) and false expectations (that a short term loss resulting from a cut in fishing mortality will be worth it). The abuse problem is particularly troubling when potential yield is wasted for decades. The false expectation problem is particularly wasteful (in terms of greatest overall benefits to the Nation) for minor choke stock stocks with highly uncertain assessments and status determination criteria.

5. Management in the face of limited information- The problem of managing fisheries with limited or missing information is well known. Yet the National Standard Guidelines seem to be designed for some of the most information rich fisheries that exist anywhere. The needs for information includes assessment of stock size and fishing mortality rate, projection of future stock size, estimation of MSY and status determination criteria, amount of catch and estimation of discards, quantification of uncertainty in all of these quantities. The list expands exponentially when ecological, economic and social considerations are addressed. Important information is lacking for even information rich stocks

and fisheries and it is severely limiting for perhaps half (or even more) of the stocks subject to management.

The problem of limited information not only applies to relatively minor stocks for which there is limited data. It applies to some of the most extensively studied (data rich) stocks including several New England stocks (e.g., cod). For these data rich stocks, the information problem results primarily from model uncertainty rather than sampling error. Model uncertainty occurs when there are multiple almost equally plausible or scientifically defensible ways of modeling important aspects of population dynamics (e.g., form of a spawner-recruit function). While the models may be almost equally plausible, the fishery management implications of the model choice may be large. Alternative approaches for responding to retrospective patterns in several New England fisheries is another type of model uncertainty. Quantifying model uncertainty is more difficult (and often subjective) than quantifying uncertainty resulting from sampling error. Management Strategy Evaluation is a promising approach for addressing model uncertainty, but the need far exceeds the available scientific resources.

The proposed revised Guidelines acknowledge the problem of limited information. They point to methods designed for so called "data poor stocks" including recent studies involving Agency scientists. However, the Guidelines do not seem to recognize the limitations of these methods. The methods often depend on unverifiable assumptions, subjective judgments, intuition or little more than guess. There seems to be a presumption that there is always enough information for a scientifically defensible ACL, estimate of catch including discards, and to apply an AM if the catch exceeds the ACL. There does not seem to be consideration of alternative approaches that might be more feasible in the face of limited information.

5. Balancing the achievement of optimum yield with the risk of overfishing- Current Guidelines call for a series of buffers between the level of catch that is associated with MSY at the current biomass level (OFL), the ABC, ACL and ACT. They also require accountability measures that further reduce the likelihood of exceeding the ACL. If the ACL is divided into sector ACLs, with sector ACTs and accountability measures, the likelihood of exceeding ACLs will be even lower.

The only guidance the proposed revision of the Guidelines gives on the size of the buffers is that OFL, ABC, and ACL should not be equal, and that the ACL should not be exceeded more than once in four years. This means the probability of overfishing will be less than 25%, and potentially much less depending on the buffers between OFL and ABC and between ABC and ACL. The probability of actually overfishing the stock (which is different from the probability of a "legal" determination that overfishing is occurring) also depends on estimates of MSY based status determination criteria, selection of proxies, estimation of catch including discards, and how uncertainty is either implicitly or explicitly treated in estimation procedures and stock assessment models. The bottom line is that the amount of the reduction in fishing mortality from Fmsy that will result from applying the scheme for dealing with uncertainty described by the Guidelines is unknown, and there is no guidance on how much risk of overfishing is prudent (in terms of OY which achieves the greatest overall benefits to the Nation) or legal. While there are numerous analyses that indicate that there is relatively little sacrifice in long term average yield for a modest reduction in fishing mortality below Fmsy (i.e., 0.75-0.90 Fmsy), these analyses do not mean that more reduction in F to reduce the risk of overfishing is always better. It should also be recognized that a modest to moderate degree of overfishing (particularly in the short term) sacrifices relatively little long term average yield and it does not jeopardize sustainability of a fishery. The Agency needs to provided more practical guidance on risk and buffers than is in the current or proposed revised Guidelines. The guidance should be based on analyses that consider the tradeoffs between risk and optimum yield. The NEFMC's risk policy highlights the importance of such analyses taking account of the cumulative effect of risk decisions made at all levels of the fishery management system and the importance of management strategy evaluation as an analysis tool.

6. System engineering- The National Standard Guidelines describe elaborate processes for managing a very complex ecological/economic/social system using diverse sources and types of data with varying degrees information value. This situation calls for a process engineering approach which optimizes system design in terms of the separation of signal from noise in data, and damps error rather than propagating it. Analytical tools such as Management Strategy Evaluation and other forms of simulation testing should be prominent in the engineering of the system, but there is little evidence that they have been applied to the design of the system described in the proposed revised Guidelines.

One piece of evidence that a better system design is needed comes from the NRC review of US Rebuilding Plans which found that the most common reason that stocks are declared rebuilt is that a current assessment finds they were not overfished at the time they were classified as overfished. The implication of this finding is that one of the two key criteria used to judge the performance of US fisheries management is almost as likely to reflect noise as signal. In the context of system engineering, thresholds, like the MSST and the Tmax threshold, create discontinuities in management that exacerbate the signal to noise ratio problem.

A well engineered system takes time, and there may not have been enough time for an engineering approach when new Guidelines were needed following the 2007 Reauthorization of the MSA, but it is now many years latter, and the proposed revision of the Guidelines continue to ignore important considerations for the design of a complex system based on noisy data.
A common response to many of the concerns raised above is "sorry, but it is the law." I do not think the Councils should except this response. Many of the concerns with National Standard Guidelines were expressed by many participants at the Managing Our Nations Fisheries III conference convened by the Agency in 2013. Many participants, including senior representatives of the Agency, indicated that it was preferable to address concerns administratively, including revision of National Standard Guidelines, rather than changing the law, and that changing the law was not necessary. Presumably, this was one of the reasons the Agency initiated these proposed revisions, but the proposal do not go far enough to address concerns.

It is also worth noting that the NRC report on US Fishery Rebuilding Plans also challenged the notion that "its the law" by pointing out that the law is unclear or vague or incorrect from a scientific point of view, and what is purported to be the law is a combination of Agency policies and interpretations of the law, and legal presidents, and that there may be other equally defensible scientific interpretations of the scientific underpinning of the law. The report points out that "... interpretations of the law must be consistent with the realities of nature" and that the "... Act does not seem to recognize the dynamic nature of fish stocks and limits of science." (p. 33 of the NRC report).

The bottom line is that if revisions of the guidelines that are necessary to make fishery management more scientifically defensible and sensible in terms of achieving the greatest overall benefits for the nation are precluded by the law, the law should be changed and the Council's should not be shy about point out needs for change.

Allocation Review

My comments on this topic are brief. Clearly there needs to be a process for allocation to change as fisheries, and most thinks else(climate, consumer preference, cultures, career aspirations, scientific capability, legal and policy frameworks), change. The problem is that change in allocation is always

difficult because it almost always leads to winners and losers. Without well defined criteria for change, agreement is unlikely, and the outcome is likely to be driven by politics.

The White Paper on Allocation Review lays out a general approach (pretty obvious steps), but it does not give any specifics on criteria for change or ways to change allocation when it is needed. Experience shows that getting agreement on a change in allocation is rare and painful (e.g., internationally for country allocations at international commissions, between states under the auspices of interstate commissions, and between sectors such as recreational and commercial), such that most fishery management fora avoid the topic. There is nothing in the White Paper that should make the Councils optimistic about a review of Allocation.

My view is that the most important step to be taken to address the need for allocation to change is to require that all schemes that allocate access to fisheries include well defined or specified process for change. Making rights marketable (e.g., ITQs is one approach), so long as restrictions on transfers and aggregation limits are not to restrictive, is one approach. If it is not used, then allocation of rights should be accompanied by a schedule for review with pre-agreed criteria for reallocation.

For fisheries that have already been allocated, the steps in the white paper are reasonable enough, but the Agency should provided more detailed ideas about criteria for reallocation and decision support processes that might help to get agreement on change.

Cooperative Research and Management

Cooperative research and management is desirable and it should be encourage. However, I do not think the draft white paper will be very helpful. I have three concerns:

1. The Draft White Paper distinguishes cooperative management from co-management, It says that cooperative management is a spectrum of arrangements for sharing management roles with co-management being the highest form of cooperative management with "Entities have equal power and authority in all respects ..." This description of the management arrangements between entities may be correct according to the scientific literature, but apparently (although it is not clear), it has lead the working group to consider Regional Fishery Management Councils as cooperative, not co-managers. It is a mistake for the Agency to refer to its fishery management relationship with RFMC as any thing less than co-management between equal partners. Of course all aspects of power and authority is not equal, but it is co-management in the sense that the entities are equally important (in deed essential) for the form of fisheries management in the US to exist. It is the foremost example of co-management of fisheries in the world, and it would be counter productive for the Agency to represent it any other way.
2. Much of the information in the Draft White Paper is based on 50 interviews of most people within the Agency. No information on the representativeness of these individuals is given. This in itself undermines the credibility of the conclusions. More importantly, there is virtually no analysis of information from decades of experience with cooperative management (including Co-management with RFMCs) and cooperative research.

3. The discussion of cooperative research identifies the usual desirable qualities or success factors (e.g., realistic expectations), but it does not comment on a major weakness of the current approach. The weakness is that the Agency scientists that are directly involved in preparation of the scientific advice to managers are no longer engaged in cooperative research. At least in the Northeast, they were full

partners with members of the fishing industry and academics in the early years of cooperative research. The success of these project encourage a rapid increase in funding (from a variety of sources) for cooperative research. However, today the scientists that prepare fishery management advice are both (a) too busy conducting and defending stock assessments, and (b) there ability to participate in all aspects of the projects (from design to implementation to analysis) is inhibited by the competitive grants process that NOAA has chosen to use as a funding vehicle. Not only does the process inhibit participation of NOAA scientists, but it discourages cooperation (e.g., idea sharing) in general. Competition for funding does not incentivize cooperation.

If NOAA Fisheries wants to maximize the benefits from cooperative research, it needs to find ways to broaden cooperation to include, in particular, the NMFS scientists that prepare fishery management advice.

NOAA FISHERIES

Proposed Changes to the National Standard Guidelines

On January 15, 2015, NOAA Fisheries filed a proposed rule in the *Federal Register* to revise the general section of the National Standard guidelines, and the guidelines for National Standard 1, 3, and 7. This document was prepared to show the proposed changes in a track-change format so that the public can more easily see the proposed changes to the guidelines. Any discrepancies between this document and the proposed rule will be resolved in favor of the *Federal Register*.

Key
Black text = current language
Red text = proposed new language
~~Red text~~ = current language that NOAA Fisheries is proposing to remove from the guidelines.
~~Green text~~ and Green text = current language that NOAA Fisheries is proposing to move from one paragraph to another paragraph in the guidelines.

§ 600.305 General.

(a) *Purpose*.

(1) This subpart establishes guidelines, based on the national standards, to assist in the development and review of FMPs, amendments, and regulations prepared by the Councils and the Secretary.

(2) In developing FMPs, the Councils have the initial authority to ascertain factual circumstances, to establish management objectives, and to propose management measures that will achieve the objectives. The Secretary will determine whether the proposed management objectives and measures are consistent with the national standards, other provisions of the Magnuson-Stevens Act, and other applicable law. The Secretary has an obligation under section 301(b) of the Magnuson-Stevens Act to inform the Councils of the Secretary's interpretation of the national standards so that they will have an understanding of the basis on which FMPs will be reviewed.

(3) The national standards are statutory principles that must be followed in any FMP. The guidelines summarize Secretarial interpretations that have been, and will be, applied under these principles. The guidelines are intended as aids to decision-making; FMPs formulated according to the guidelines will have a better chance for expeditious Secretarial review, approval, and implementation. FMPs that are in substantial compliance with the guidelines, the Magnuson-Stevens Act, and other applicable law must be approved.

(b) *Fishery management objectives*.

(1) Each FMP, whether prepared by a Council or by the Secretary, should identify what the FMP is designed to accomplish (i.e., the management objectives to be attained in regulating the fishery under consideration). In establishing objectives, Councils balance biological constraints with human needs, reconcile present and future costs and benefits, and integrate the diversity of public and private interests. If objectives are in conflict, priorities should be established among them.

(2) To reflect the changing needs of the fishery over time, Councils should reassess the objectives of the fishery on a regular basis.

(3) How objectives are defined is important to the management process. Objectives should address the problems of a particular fishery. The objectives should be clearly stated, practicably attainable, framed in terms of definable events and measurable benefits, and based upon a comprehensive rather than a fragmentary approach to the problems addressed. An FMP should make a clear distinction between objectives and the management measures chosen to achieve them. The objectives of each FMP provide the

context within which the Secretary will judge the consistency of an FMP's conservation and management measures with the national standards.

(c) Stocks that require conservation and management.

(1) Magnuson-Stevens Act section 302(h)(1) requires a Council to prepare an FMP for each fishery under its authority that requires (or in other words, is in need of) conservation and management. Not every fishery requires Federal management. Any stocks that are predominately caught in Federal waters and are overfished or subject to overfishing, or likely to become overfished or subject to overfishing, are considered to require conservation and management. In addition, the following non-exhaustive list of factors should be used by a Council when deciding whether stocks require conservation and management:

(i) The stock is an important component of the marine environment.

(ii) The stock is caught by the fishery.

(iii) Whether an FMP can improve or maintain the condition of the stocks.

(iv) The stock is a target of a fishery.

(v) The stock is important to commercial, recreational, or subsistence users.

(vi) The fishery is important to the Nation and to the regional economy.

(vii) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.

(viii) The economic condition of a fishery and whether an FMP can produce more efficient utilization.

(ix) The needs of a developing fishery, and whether an FMP can foster orderly growth.

(x) The extent to which the fishery could be or is already adequately managed by states, by state/Federal programs, by Federal regulations pursuant to other FMPs or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.

(2) When considering adding a new stock to an FMP or keeping an existing stock within an FMP, Councils should prepare a thorough analysis of the factors, and any additional considerations that may be relevant to the particular stock. No single factor is dispositive, but Councils should consider weighting the factors as follows. Factors (c)(1)(i)-(iii) of this section should be considered first, as they address maintaining a fishery resource and the marine environment. *See* § 1802(5)(A). These factors weigh in favor of including a stock in an FMP. Councils should next consider factors (c)(1)(iv)-(ix) of this section, which set forth key economic, social, and other reasons contained within the MSA for an FMP action. *See* 16 U.S.C. §1802(5)(B). Regardless of whether any of the first nine factors indicates a conservation and management need, a Council should consider factor (c)(1)(x) of this section before deciding to include or maintain a stock in an FMP. In many circumstances, adequate management of a fishery by states, state/Federal programs, or another Federal FMP would weigh heavily against a Federal FMP action. *See*, *e.g.*, 16 U.S.C. § 1851(a)(7); 1856(a)(3). In evaluating the above criteria, a Council should consider the specific circumstances of a fishery, based on the best scientific information available; to determine whether there are biological, economic, social and/or operational concerns that can be addressed by Federal management.

(3) Councils may choose to identify stocks within their FMPs as ecosystem component (EC) species (see 50 CFR 600.310(d)(1)) if they do not require conservation and management. EC species may be identified at the species or stock level, and may be grouped into complexes. Consistent with National Standard 9, MSA section 303(b)(12), and other applicable MSA sections, management measures can be adopted in order to, for example, collect data on the EC species, minimize bycatch or bycatch mortality of EC species, protect the associated role of EC species in the ecosystem, or for other reasons.

(4) A stock or stock complex may be identified in more than one FMP. In this situation, the relevant Councils should choose which FMP will be the primary FMP in which reference points for the stock or stock complex are established. In other FMPs, the stock or stock complex may be identified as "other managed stocks" and management measures that are consistent with the objectives of the primary FMP can be established.

(5) Councils should periodically review their FMPs and the best scientific information available and determine if the stocks are appropriately identified. As appropriate, stocks should be reclassified within a FMP, added to or removed from an existing FMP, or added to a new FMP, through a FMP amendment that documents the rationale for the decision.

(d~~e~~) Word usage~~.~~ within the National Standard Guidelines. The word usage refers to all regulations in this subpart.

(1) *Must* is used, instead of "shall", to denote an obligation to act; it is used primarily when referring to requirements of the Magnuson-Stevens Act, the logical extension thereof, or of other applicable law.

(2) *Shall* is used only when quoting statutory language directly, to avoid confusion with the future tense.
(3) *Should* is used to indicate that an action or consideration is strongly recommended to fulfill the Secretary's interpretation of the Magnuson-Stevens Act, and is a factor reviewers will look for in evaluating a SOPP or FMP.
(4) *May* is used in a permissive sense.
~~(5) *May not* is proscriptive; it has the same force as "must not."~~
~~(6~~(5) *Will* is used descriptively, as distinguished from denoting an obligation to act or the future tense.
(~~7~~6) *Could* is used when giving examples, in a hypothetical, permissive sense.
(~~8~~7) *Can* is used to mean "is able to," as distinguished from "may."
(~~9~~8) *Examples* are given by way of illustration and further explanation. They are not inclusive lists; they do not limit options.
(~~10~~9) *Analysis,* as a paragraph heading, signals more detailed guidance as to the type of discussion and examination an FMP should contain to demonstrate compliance with the standard in question.
(~~11~~10) *Council* includes the Secretary, as applicable, when preparing FMPs or amendments under section 304(c) and (g) of the Magnuson-Stevens Act.
~~(12) *Stock or stock complex* is used as a synonym for "fishery" in the sense of the Magnuson-Stevens Act's first definition of the term; that is, as "one or more stocks of fish that can be treated as a unit for purposes of conservation and management and that are identified on the basis of geographic, scientific, technical, recreational, or economic characteristics," as distinguished from the Magnuson-Stevens Act's second definition of fishery as "any fishing for such stocks."~~
(11) *Target stocks* are stocks or stock complexes that fishers seek to catch for sale or personal use, including "economic discards" as defined under Magnuson-Stevens Act section 3(9).

§ 600.310 National Standard 1—Optimum Yield.

(a) *Standard 1*. Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield (OY) from each fishery for the U.S. fishing industry.

(b) *General*.

(1) The guidelines set forth in this section describe fishery management approaches to meet the objectives of National Standard 1 (NS1), and include guidance on:

(i) Specifying maximum sustainable yield (MSY) and OY;

(ii) Specifying status determination criteria (SDC) so that overfishing and overfished determinations can be made for stocks and stock complexes that ~~are part of a fishery~~require, or are in need of, conservation and management;

(iii) Preventing overfishing and achieving OY, incorporation of scientific and management uncertainty in control rules, and adaptive management using annual catch limits (ACL) and measures to ensure accountability (~~AM);~~i.e., accountability measures (AMs)); and

(iv) Rebuilding stocks and stock complexes.

(2) *Overview of Magnuson-Stevens Act concepts and provisions related to NS1—*

(i) *MSY*. The Magnuson-Stevens Act establishes MSY as the basis for fishery management and requires that: The fishing mortality rate ~~does~~must not jeopardize the capacity of a stock or stock complex to produce MSY; the abundance of an overfished stock or stock complex must be rebuilt to a level that is capable of producing MSY; and OY must not exceed MSY.

(ii) *OY*. The determination of OY is a decisional mechanism for resolving the Magnuson-Stevens Act's conservation and management objectives, achieving a fishery management plan's (FMP) objectives, and balancing the various interests that comprise the greatest overall benefits to the Nation. OY is based on MSY as reduced under paragraphs (e)(3)(iii)(A) and (~~iv~~B) of this section. The most important limitation on the specification of OY is that the choice of OY and the conservation and management measures proposed to achieve it must prevent overfishing.

(iii) *ACLs and AMs*. Any FMP ~~which is prepared by any Council~~ shall establish a mechanism for specifying ACLs in the FMP (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability (Magnuson-Stevens Act section 303(a)(15)). ~~Subject to certain exceptions and circumstances described in paragraph (h) of this section, this requirement takes effect in fishing year 2010, for fisheries determined subject to overfishing, and in fishing year 2011, for all other fisheries (Magnuson-Stevens Act section 303 note). "Council" includes the Regional Fishery Management Councils and the Secretary of Commerce, as appropriate (*see* § 600.305(c)(11)).~~

(iv) *Reference points*. SDC, MSY, OY, acceptable biological catch (ABC), and ACL, which are described further in paragraphs (e) and (f) of this section, are collectively referred to as "reference points."

(v) *Scientific advice*. The Magnuson-Stevens Act has requirements regarding scientific and statistical committees (SSC) of the Regional Fishery Management Councils, including but not limited to, the following provisions~~:~~ (paragraphs (b)(2)(v)(A)-(D) of this section). See the National Standard 2 guidelines for further guidance on SSCs and the peer review process (§ 600.315).

(A) Each Regional Fishery Management Council shall establish an SSC as described in section 302(g)(1)(A) of the Magnuson-Stevens Act.

(B) Each SSC shall provide its Regional Fishery Management Council recommendations for ABC as well as other scientific advice, as described in Magnuson-Stevens Act section 302(g)(1)(B).

(C) The Secretary and each Regional Fishery Management Council may establish a peer review process for that Council for scientific information used to advise the Council about the conservation and management of a fishery (see Magnuson-Stevens Act section 302(g)(1)(E)). If a peer review process is established, it should investigate the technical merits of stock assessments and other scientific information to be used by the SSC or agency or international scientists, as appropriate. For Regional Fishery Management Councils, the peer review process is not a substitute for the SSC and should work in conjunction with the SSC. For the Secretary, which does not have an SSC, the peer review process should provide the scientific information necessary.

(D) Each Council shall develop ACLs for each of its managed fisheries that may not exceed the "fishing level recommendations" of its SSC or peer review process (Magnuson-Stevens Act section 302(h)(6)). The SSC recommendation that is the most relevant to ACLs is ABC, as both ACL and ABC are levels of annual catch.

(3) *Approach for setting limits and accountability measures, including targets, for consistency with NS1*. ~~In general, when~~ When specifying limits and accountability measures ~~intended to avoid overfishing and achieve sustainable fisheries~~, Councils must take an approach that considers uncertainty in scientific information and management control of the fishery. These guidelines describe how ~~to~~the Councils could address uncertainty such that there is a low risk that limits are exceeded as described in paragraphs (f)(~~4~~2) and (~~f~~)(~~6~~g)(4) of this section.

(~~4~~10) *Vulnerabili*[illegible] stock's vulnerability to fishing pressure is a combination of its productivity, which depends upon its life history characteristics, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce MS[illegible]nd to recover if the population is depleted or overfished, and susceptibility is the potential for the stock to be impacted by the fishery, which includes direct captures, as well as indirect impacts to the fishery (e.g., loss of habitat quality).

(c) *Summary of items to include in FMPs related to NS1*. This section provides a summary of items that Councils must include in their FMPs and FMP amendments in order to address ACL, AM, and other aspects of the NS1 guidelines. ~~As described in further detail in paragraph (d) of this section, Councils may review their FMPs to decide if all stocks are "in the fishery" or whether some fit the category of "ecosystem component species."~~ Councils must ~~also~~ describe fisheries data for the stocks~~,~~ and stock complexes~~, and ecosystem component species~~ in their FMPs, or associated public documents such as Stock Assessment and Fishery Evaluation (SAFE) Reports. For all stocks and stock complexes that ~~are "in the fishery" (see paragraph (d)(2) of this section),~~require conservation and management (see § 600.305(c)), the Councils must evaluate and describe the following items in their FMPs and amend the FMPs, if necessary, to align their management objectives to end or prevent overfishing and to achieve OY:

(1) MSY and SDC (see paragraphs (e)(1) and (2) of this section)

(2) OY at the stock, stock complex, or fishery lev[illegible]d provide the OY specification analysis (see paragraph (e)(3) of this section).

(3) ABC control rule (see paragraph (f)(~~4~~2) of this section).

(4) Mechanisms for specifying ACLs ~~and possible sector-specific ACLs in relationship to the ABC~~ (see paragraph~~s~~ (f)(~~5) and (h~~4) of this section).

(5) AMs (see paragraph~~s~~ (g) ~~and (h)(1)~~ of this section).

(6) Stocks and stock complexes that have statutory exceptions from ACLs and AMs (see paragraph (h)(~~2~~1) of this section) or which fall under limited circumstances which require different approaches to meet the ~~ACL~~Magnuson-Stevens Act requirements (see paragraph (h)(~~3~~2) of this section).

(d) ~~*Classifying stocks in an FMP*~~ *Stocks and stock complexes—*

(1) *Introduction*. As described in § 600.305(c), Councils should identify in their FMPs the stocks that require conservation and management. Such stocks must have ACLs, other reference points, and accountability measures. Other stocks that are identified in an FMP (i.e., ecosystem component species or stocks that the fishery interacts with but are managed primarily under another FMP, see § 600.305(c)(3)-(4)) do not require ACLs, other reference points, and accountability measures.

~~(1) *Introduction*. Magnuson-Stevens Act section 303(a)(2) requires that an FMP contain, among other things, a description of the species of fish involved in the fishery. The relevant Council determines which specific target stocks and/or non-target stocks to include in a fishery. This section provides that a Council may, but is not required to, use an "ecosystem component (EC)" species classification. As a default, all stocks in an FMP are considered to be "in the fishery," unless they are identified as EC species (see § 600.310(d)(5)) through an FMP amendment process.~~

~~(2) *Stocks in a fishery*. Stocks in a fishery may be grouped into stock complexes, as appropriate. Requirements for reference points and management measures for these stocks are described throughout these guidelines.~~

~~(3) "Target stocks" are stocks that fishers seek to catch for sale or personal use, including "economic discards" as defined under Magnuson-Stevens Act section 3(9).~~

~~(4) "Non-target species" and "non-target stocks" are fish caught incidentally during the pursuit of target stocks in a fishery, including "regulatory discards" as defined under Magnuson-Stevens Act section 3(38). They may or may not be retained for sale or personal use. Non-target species may be included in a fishery and, if so, they should be identified at the stock level. Some non-target species may be identified in an FMP as ecosystem component (EC) species or stocks.~~

(5) *Ecosystem component (EC) species.*

(i) To be considered for possible classification as an EC species, the species should:

(A) Be a non-target species or non-target stock;

(B) Not be determined to be subject to overfishing, approaching overfished, or overfished;

(C) Not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and

(D) Not generally be retained for sale or personal use.

(ii) Occasional retention of the species would not, in and of itself, preclude consideration of the species under the EC classification. In addition to the general factors noted in paragraphs (d)(5)(i)(A)-(D) of this section, it is important to consider whether use of the EC species classification in a given instance is consistent with MSA conservation and management requirements.

(iii) EC species may be identified at the species or stock level, and may be grouped into complexes. EC species may, but are not required to, be included in an FMP or FMP amendment for any of the following reasons: For data collection purposes; for ecosystem considerations related to specification of OY for the associated fishery; as considerations in the development of conservation and management measures for the associated fishery; and/or to address other ecosystem issues. While EC species are not considered to be "in the fishery," a Council should consider measures for the fishery to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9, and to protect their associated role in the ecosystem. EC species do not require specification of reference points but should be monitored to the extent that any new pertinent scientific information becomes available (e.g., catch trends, vulnerability, etc.) to determine changes in their status or their vulnerability to the fishery. If necessary, they should be reclassified as "in the fishery."

(6) *Reclassification.* A Council should monitor the catch resulting from a fishery on a regular basis to determine if the stocks and species are appropriately classified in the FMP. If the criteria previously used to classify a stock or species is no longer valid, the Council should reclassify it through an FMP amendment, which documents rationale for the decision.

(7) *Stocks or species identified in more than one FMP.* If a stock is identified in more than one fishery, Councils should choose which FMP will be the primary FMP in which management objectives, SDC, the stock's overall ACL and other reference points for the stock are established. Conservation and management measures in other FMPs in which the stock is identified as part of a fishery should be consistent with the primary FMP's management objectives for the stock.

(8) *Stock complex.* "Stock complex" means a group of stocks that are sufficiently similar in geographic distribution, life history, and vulnerabilities to the fishery such that the impact of management actions on the stocks is similar.

(2) *Stock complex.* Stocks that require conservation and management can be grouped into stock complexes. A "stock complex" is a tool to manage a group of stocks within a FMP.

(i) At the time a stock complex is established, the FMP should provide, to the extent practicable, a full and explicit description of the proportional composition of each stock in the stock complex, to the extent possible.. Stocks may be grouped into complexes for various reasons, including where stocks in a multispecies fishery cannot be targeted independent of one another and MSY cannot be defined on a stock-by-stock basis (*see* paragraph (e)(1)(iii) of this section);; where there is insufficient data to measure theira stock's status relative to SDC; or when it is not feasible for fishermen to distinguish individual stocks among their catch. Where practicable, the group of stocks should have a similar geographic distribution, life history characteristics, and vulnerabilities to fishing pressure such that the impact of management actions on the stocks is similar. The vulnerability of individual stocks to the fishery should be evaluatedconsidered when determining if a particular stock complex should be established or reorganized, or if a particular stock should be included in a complex. Stock complexes may be comprised of: one or more indicator stocks, each of which has SDC and ACLs, and several other stocks; several stocks without an indicator stock, with SDC and an ACL for the complex as a whole; or one of more indicator stocks, each of which has SDC and management objectives, with an ACL for the complex as a whole (this situation might be applicable to some salmon species).

(9) ii) *Indicator stocks.*

(A) An indicator stock is a stock with measurable and objective SDC that can be used to help manage and evaluate more poorly known stocks that are in a stock complex.

(B) Where practicable, stock complexes should include one or more indicator stocks (each of which has SDC and ACLs). Otherwise, stock complexes may be comprised of: several stocks without an indicator stock (with SDC and an ACL for the complex as a whole), or one or more indicator stocks (each of which has SDC and management objectives) with an ACL for the complex as a whole (this situation might be applicable to some salmon species). Councils should review the available quantitative or qualitative information (e.g., catch trends, changes in vulnerability, fish health indices, etc.) of stocks within a complex on a regular basis to determine if they are being sustainably managed.

(C) If an indicator stock is used to evaluate the status of a complex, it should be representative of the typical ~~status~~vulnerability of ~~each stock~~stocks within the complex~~, due to similarity in vulnerability.~~. If the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex, management measures ~~need to~~should be more conservative so that the more vulnerable members of the complex are not at risk from the fishery.

(D) More than one indicator stock can be selected to provide more information about the status of the complex. ~~When indicator stock(s) are used, periodic re-evaluation of available quantitative or qualitative information (e.g., catch trends, changes in vulnerability, fish health indices, etc.) is needed to determine whether a stock is subject to overfishing, or is approaching (or in) an overfished condition.~~

(E) When indicator stocks are used, the stock complex's MSY could be listed as "unknown," while noting that the complex is managed on the basis of one or more indicator stocks that do have known stock-specific MSYs, or suitable proxies, as described in paragraph (e)(1)(iv) of this section.

~~(10) *Vulnerability.* A stock's vulnerability is a combination of its productivity, which depends upon its life history characteristics, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce MSY and to recover if the population is depleted, and susceptibility is the potential for the stock to be impacted by the fishery, which includes direct captures, as well as indirect impacts to the fishery (e.g., loss of habitat quality). Councils in consultation with their SSCs, should analyze the vulnerability of stocks in stock complexes where possible.~~

(e) *Features of MSY, SDC, and OY—*

(1) *MSY.* Each FMP must include an estimate of MSY for the stocks and stock complexes ~~in~~that require conservation and management. MSY may also be specified for the fishery~~,~~ as ~~described in paragraph (d)(2) of this section).~~a whole.

(i) *Definitions.*

(A) *MSY* is the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics (e.g., gear selectivity), and the distribution of catch among fleets.

(B) *MSY fishing mortality rate* (F_{msy}) is the fishing mortality rate that, if applied over the long term, would result in MSY.

(C) *MSY stock size* (B_{msy}) means the long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate measure of the stock's reproductive potential that would be achieved by fishing at Fmsy.

(ii) *MSY for stocks.* MSY should be estimated for each stock based on the best scientific information available (see § 600.315).

(iii) *MSY for stock complexes.* When stock complexes are used, MSY should be estimated ~~on a stock-by-stock basis whenever possible. However, where MSY cannot be estimated for each stock in a stock complex, then MSY may be estimated~~ for one or more indicator stocks ~~for the complex~~ or for the complex as a whole (see paragraph (d)(2)(ii)). ~~When indicator stocks are used, the stock complex's MSY could be listed as "unknown," while noting that the complex is managed on~~

~~the basis of one or more indicator stocks that do have known stock-specific MSYs, or suitable proxies, as described in paragraph (e)(1)(iv) of this section. When indicator stocks are not used, MSY, or a suitable proxy, should be calculated for the stock complex as a whole.~~

(iv) *Methods of estimating MSY for an aggregate group of stocks.* Estimating MSY for an aggregate group of stocks (including stock complexes and the fishery as a whole) can be done using models that account for multi-species interactions, composite properties for a group of similar species, common biomass (energy) flow and production patterns, or other relevant factors (see paragraph (e)(3)(iv)(C) of this section).

(~~iv)~~ v) *Specifying MSY.*

(A) Because MSY is a long-term average, it need not be estimated annually, ~~but it must be based on the best scientific information available (see § 600.315),~~ and should be re-estimated as required by changes in long-term environmental or ecological conditions, fishery technological characteristics, or new scientific information.

(B) When data are insufficient to estimate MSY directly, Councils should adopt other measures of reproductive potential~~, based on the best scientific information available,~~ that can serve as reasonable proxies for MSY, F_{msy}, and B_{msy}~~, to the extent possible.~~.

(C) The MSY for a stock or stock complex is influenced by its interactions with other stocks in its ecosystem and these interactions may shift as multiple stocks in an ecosystem are fished. ~~These ecological conditions~~Ecological and environmental information should be taken into account, to the extent ~~possible~~practicable, when assessing stocks and specifying MSY. Ecological ~~conditions~~and environmental information that is not directly accounted for in the specification of MSY can be among the ecological factors considered when setting OY below MSY.

(D) As MSY values are estimates or are based on proxies, they will have some level of uncertainty associated with them. The degree of uncertainty in the estimates should be identified, when ~~possible~~practicable, through the stock assessment process and peer review (see §~~600.335),~~ 600.335), and should be taken into account when specifying the ABC Control rule (see paragraph (f)(2) of this section). ~~Where uncertainty cannot be directly calculated, such as when proxies are used, then a proxy for the uncertainty itself should be established based on the best scientific information, including comparison to other stocks.~~

(2) *Status determination criteria—*

(i) *Definitions.*

(A) *Status determination criteria* (*SDC*) mean the ~~quantifiable~~measurable and objective factors, MFMT, OFL, and MSST, or their proxies, that are used to determine if overfishing has occurred, or if the stock or stock complex is overfished. Magnuson-Stevens Act (section 3(34)) defines both "overfishing" and "overfished" to mean a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the MSY on a continuing basis. To avoid confusion, this section clarifies that "overfished" relates to biomass of a stock or stock complex, and "overfishing" pertains to a rate or level of removal of fish from a stock or stock complex.

(B) *Overfishing* ~~(to overfish)~~ occurs whenever a stock or stock complex is subjected to a level of fishing mortality or ~~annual~~ total catch that jeopardizes the capacity of a stock or stock complex to produce MSY on a continuing basis.

(C) *Maximum fishing mortality threshold* (*MFMT*) means the level of fishing mortality (F)~~, on an annual basis,~~ above which overfishing is occurring. The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.

(D) *Overfishing limit* (*OFL*) means the annual amount of catch that corresponds to the estimate of MFMT applied to a stock or stock complex's abundance and is expressed in terms of numbers or weight of fish. ~~The OFL is an estimate of the catch level above which overfishing is occurring.~~

(E) *Overfished.* A stock or stock complex is considered "overfished" when its biomass has declined below MSST.~~a level that jeopardizes the capacity of the stock or stock complex to produce MSY on a continuing basis.~~

(F) *Depleted*. An overfished stock or stock complex is considered depleted when it has not experienced overfishing at any point over a period of two generation times of the stock and its biomass has declined below MSST, or when a rebuilding stock or stock complex has reached its targeted time to rebuild and the stock's biomass has shown no significant signs of growth despite being fished at or below catch levels that are consistent with the rebuilding plan throughout that period (see paragraphs (j)(3)(i)(B)(2)(i) and (j)(6) of this section).

(~~F~~G) *Minimum stock size threshold* (*MSST*) means the level of biomass below which the capacity of the stock or stock complex ~~is considered~~ to ~~be overfished~~produce MSY on a continuing basis has been jeopardized.

(~~G~~) H) *Approaching an overfished condition.* A stock or stock complex is approaching an overfished condition when it is projected that there is more than a 50 percent chance that the biomass of the stock or stock complex will decline below the MSST within two years.

(ii) *Specification of SDC and overfishing and overfished determinations.* Each FMP must describe how objective and measurable SDCs will be specified, as described in paragraphs (e)(2)(ii)(A) and (B) of this section. To be measurable and objective, SDC must be expressed in a way that enables the Council to monitor the status of each stock or stock complex in the FMP~~, and determine annually, if possible, whether~~. Applying the SDC set forth in the FMP, the Secretary determines if overfishing is occurring and whether the stock or stock complex is overfished~~.~~ (Magnuson-Stevens Act section 304(e)). SDCs are often based on fishing rates or biomass levels associated with MSY or MSY based proxies. When data are not available to specify SDCs based on MSY or MSY proxies, alternative types of SDCs that promote sustainability of the stock or stock complex can be used. For example, SDC could be based on recent average catch, fish densities derived from visual census surveys, length/weight frequencies or other methods. In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential~~. Each FMP must specify, to the extent possible, objective and measurable SDC as follows (*see* paragraphs (e)(2)(ii)(A) and (B) of this section):~~ of stocks of fish within the fishery. If alternative types of SDCs are used, the Council should explain how the approach will promote sustainability of the stock or stock complex on a long term basis. A Council should consider a process that allows SDCs to be quickly updated to reflect the best scientific information available. In the case of internationally-managed stocks, the Council may decide to use the SDCs defined by the relevant international body. In this instance, the SDCs should allow the Council to monitor the status of a stock or stock complex, recognizing that the SDCs may not be defined in such a way that a Council could monitor the MFMT, OFL, or MSST as would be done with a domestically managed stock or stock complex.

(A) *SDC to D~~d~~etermine O~~o~~verfishing S~~s~~tatus.* ~~Each FMP must describe which of the following two methods will be used for each stock or stock complex to determine an overfishing status.~~ Each FMP must describe the method used to determine the overfishing status for each stock or stock complex. For domestically-managed stocks or stocks complexes, one of the following methods should be used:

(1) Fishing M~~m~~ortality R~~r~~ate E~~e~~xceeds MFMT. Exceeding the MFMT for a period of 1 year or ~~more~~exceeding a multi-year mortality reference point constitutes overfishing. ~~The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.~~

(2) Catch E~~e~~xceeds the OFL. ~~Should the annual catch exceed~~Exceeding the annual OFL for 1 year or ~~more, the stock or stock complex is considered subject to~~exceeding a multi-year catch reference point constitutes overfishing.

(3) Use of Multi-Year Periods to Determine Overfishing Status. A multi-year period may not exceed three years. A Council may develop overfishing SDCs that use a multi-year approach, so long as it provides a comprehensive analysis based on the best scientific information available that supports that the approach will not jeopardize the capacity of the fishery to produce MSY on a continuing basis. A Council should identify in its FMP or FMP amendment circumstances

in which the multi-year approach should not be used (e.g., because the capacity of the stock to produce MSY over the longer term could be jeopardized).

(B) *SDC to determine overfished status.* The MSST or reasonable proxy must be expressed in terms of spawning biomass or other measure of reproductive potential. ~~To the extent possible, the MSST should equal whichever of the following is greater: One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years, if the stock or stock complex were exploited at the MFMT specified under paragraph (e)(2)(ii)(A)(1) of this section. Should the estimated size of the stock or stock complex in a given year fall below this threshold, the stock or stock complex is considered overfished.~~ MSST should be between ½ B_{msy} and B_{msy}, and could be informed by the life history of the stock, the natural fluctuations in biomass associated with fishing at MFMT over the long-term, the time needed to rebuild to B_{msy} and associated social and/or economic impacts on the fishery, the requirements of internationally-managed stocks, or other considerations.

(C) Where practicable, all sources of mortality including that resulting from bycatch, scientific research catch, and all fishing activities should be accounted for in the evaluation of stock status with respect to reference points.

(iii) *Relationship of SDC to environmental and habitat change*. Some short-term environmental changes can alter the size of a stock or stock complex without affecting its long-term reproductive potential. Long-term environmental changes affect both the short-term size of the stock or stock complex and the long-term reproductive potential of the stock or stock complex.

(A) If environmental changes cause a stock or stock complex to fall below its MSST without affecting its long-term reproductive potential, fishing mortality must be constrained sufficiently to allow rebuilding within an acceptable time frame (see also ~~see~~ paragraph (j)(3)(~~ii~~ii) of this section). SDC should not be respecified.

(B) If environmental, ecosystem, or habitat changes affect the long-term reproductive potential of the stock or stock complex, one or more components of the SDC must be respecified. Once SDC have been respecified, fishing mortality may or may not have to be reduced, depending on the status of the stock or stock complex with respect to the new criteria.

(C) If manmade environmental changes are partially responsible for a stock or stock complex's biomass being ~~in an overfished condition~~below MSST, in addition to controlling fishing mortality, Councils should recommend restoration of habitat and other ameliorative programs, to the extent possible (see also the guidelines issued pursuant to section 305(b) of the Magnuson-Stevens Act for Council actions concerning essential fish habitat).

(iv) *Secretarial approval of SDC*. Secretarial approval or disapproval of proposed SDC will be based on consideration of whether the proposal:

(A) ~~Has sufficient~~ Is based on the best scientific ~~merit~~information available;

(B) Contains the elements described in paragraph (e)(2)(ii) of this section;

(C) Provides a basis for objective measurement of the status of the stock or stock complex against the criteria; and

(D) ~~is~~Is operationally feasible.

(3) *Optimum yield*—For stocks that require conservation and management, OY may be established at the stock, ~~or~~ stock complex, ~~level,~~ or ~~at the~~ fishery level.

(i) *Definitions*—

(A) *Optimum yield (OY).* Magnuson-Stevens Act section (3)(33) defines "optimum," with respect to the yield from a fishery, as the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities and taking into account the protection of marine ecosystems; that is prescribed on the basis of the MSY from the fishery, as reduced by any relevant economic, social, or ecological factor; and, in the case of an overfished fishery, that provides for rebuilding to a level consistent with producing the MSY in such fishery. ~~OY may be established at the stock or stock complex level, or at the fishery level.~~

(B) In NS1, use of the phrase "achieving, on a continuing basis, the optimum yield from each fishery" means: producing, from each stock, stock complex, or fishery, ~~long-term~~

series, an amount of catches suchcatch that theis, on average catch is, equal to the Council's specified OY,; prevents overfishing is prevented,; maintains the long term average biomass is near or above Bmsy,; and rebuilds overfished stocks and stock complexes are rebuilt consistent with timing and other requirements of section 304(e)(4) of the Magnuson-Stevens Act and paragraph (j) of this section.

(ii) *General*. OY is a long-term average amount of desired yield from a stock, stock complex, or fishery. An FMP must contain conservation and management measures, including ACLs and AMs, to achieve OY on a continuing basis, and provisions for information collection that are designed to determine the degree to which OY is achieved. These measures should allow for practical and effective implementation and enforcement of the management regime. The Secretary has an obligation to implement and enforce the FMP. If management measures prove unenforceable—or too restrictive, or not rigorous enough to prevent overfishing while achieving on a continuing basis OY—they should be modified; an alternative is to reexamine the adequacy of the OY specification to ensure that the dual requirements of NS1 are met (preventing overfishing while achieving, on a continuing basis, OY). Exceeding OY does not necessarily constitute overfishing. However, even if no overfishing resulted from exceeding OY, continual harvest at a level above OY would violate NS1, because OY was not achieved on a continuing basis.

(iii) *Assessing OY.* An FMP must contain an assessment and specification of OY, includingwhich documents how the OY will produce the greatest benefits to the nation and prevent overfishing. The assessment should include a summary of information utilized in making such specification, consistent with requirements of section 303(a)(3) of the Magnuson-Stevens Act. A Council must identify those and consideration of the economic, social, and ecological factors relevant to management of a particular stock, stock complex, or fishery, and then evaluate them to determine the. Consistent with Magnuson-Stevens Act section 302(h)(5), the assessment and specification of OY. The choice of a particular OY must should be carefully documented to showreviewed on a continuing basis, so that the OY selected will produceit is responsive to changing circumstances in the greatest benefit to the Nation and prevent overfishingfishery.

(iii) A) *Determining the greatest benefit to the Nation.* In determining the greatest benefit to the Nation, the values that should be weighed and receive serious attention when considering the economic, social, or ecological factors used in reducing MSY, or its proxy, to obtain OY are:

(A) *1)* The benefits of food production are derived from providing seafood to consumers; maintaining an economically viable fishery together with its attendant contributions to the national, regional, and local economies; and utilizing the capacity of the Nation's fishery resources to meet nutritional needs.

(B) 2) The benefits of recreational opportunities reflect the quality of both the recreational fishing experience and non-consumptive fishery uses such as ecotourism, fish watching, and recreational diving. Benefits also include the contribution of recreational fishing to the national, regional, and local economies and food supplies.

(C) 3) The benefits of protection afforded to marine ecosystems are those resulting from maintaining viable populations (including those of unexploited species), maintaining adequate forage for all components of the ecosystem, maintaining evolutionary and ecological processes (e.g., disturbance regimes, hydrological processes, nutrient cycles), maintaining productive habitat, maintaining the evolutionary potential of species and ecosystems, and accommodating human use.

(iv) B) *Economic, Ecological, and Social Factors.* Factors to consider in OY specification. Councils should consider the management objectives of their FMPs and their management framework to determine the relevant social, economic, and ecological factors used to determine OY. There will be inherent trade-offs when determining the objectives of the fishery.

Because fisheries have limited capacities, any attempt to maximize the measures of benefits described in paragraph (e)(3)(iii) of this section will inevitably encounter practical constraints. OY cannot exceed MSY in any circumstance, and must take into

~~account the need to prevent overfishing and rebuild overfished stocks and stock complexes. OY is prescribed on the basis of MSY as reduced by social, economic, and ecological factors. To the extent possible, the relevant social, economic, and ecological factors used to establish OY for a stock, stock complex, or fishery should be quantified and reviewed in historical, short-term, and long-term contexts. Even where quantification of social, economic, and ecological factors is not possible, the FMP still must address them in its OY specification.~~ The following is a non-exhaustive list of potential considerations for ~~each factor. An FMP must address each factor but not necessarily each example.~~social, economic, and ecological factors.

(~~A)~~ *1) Social factors.* Examples are enjoyment gained from recreational fishing, avoidance of gear conflicts and resulting disputes, preservation of a way of life for fishermen and their families, and dependence of local communities on a fishery (e.g., involvement in fisheries and ability to adapt to change). Consideration may be given to fishery-related indicators (e.g., number of fishery permits, number of commercial fishing vessels, number of party and charter trips, landings, ex-vessel revenues etc.) and non-fishery related indicators (e.g., unemployment rates, percent of population below the poverty level, population density, etc.)~~.~~, and preference for a particular type of fishery (e.g., size of the fishing fleet, type of vessels in the fleet, permissible gear types). Other factors that may be considered include the effects that past harvest levels have had on fishing communities, the cultural place of subsistence fishing, obligations under Indian treaties, proportions of affected minority and low-income groups, and worldwide nutritional needs.

(~~B)~~ 2) Economic factors. Examples are prudent consideration of the risk of overharvesting when a stock's size or reproductive potential is uncertain (see § 600.335(c)(2)(i)), satisfaction of consumer and recreational needs, and encouragement of domestic and export markets for U.S. harvested fish. Other factors that may be considered include: the value of fisheries, the level of capitalization, the decrease in cost per unit of catch afforded by an increase in stock size, the attendant increase in catch per unit of effort, alternate employment opportunities, and economic contribution to fishing communities, coastal areas, affected states, and the nation.

(~~C)~~ 3) Ecological factors. Examples include impacts on ecosystem component species, forage fish stocks, other fisheries, predator-prey or competitive interactions, marine mammals, threatened or endangered species, and birds. Species interactions that have not been explicitly taken into account when calculating MSY should be considered as relevant factors for setting OY below MSY. In addition, consideration should be given to managing forage stocks for higher biomass than Bmsy to enhance and protect the marine ecosystem. Also important are ecological or environmental conditions that stress marine organisms or their habitat, such as natural and manmade changes in wetlands or nursery grounds, and effects of pollutants on habitat and stocks.

~~(v) *Specification of OY.*~~ (iv) *Specifying OY.* ~~The specification of OY must be consistent with paragraphs (e)(3)(i) (iv) of this section.~~ If the estimates of MFMT and current biomass are known with a high level of certainty and management controls can accurately limit catch, then OY could be set very close to MSY, assuming no other reductions are necessary for social, economic, or ecological factors. To the degree that such MSY estimates and management controls are lacking or unavailable, OY should be set farther from MSY. ~~If management measures cannot adequately control fishing mortality so that the specified OY can be achieved without overfishing, the Council should reevaluate the management measures and specification of OY so that the dual requirements of NS1 (preventing overfishing while achieving, on a continuing basis, OY) are met.~~

(A) The ~~amount of fish that constitutes the~~ OY ~~should~~can be expressed in terms of numbers or weight of fish~~.~~

~~(B) Either a range or~~, and either as a single value or a range. When it is not possible to specify OY quantitatively, OY may be ~~specified for OY.~~described qualitatively.

~~(C) All catch must be counted against OY, including that resulting from bycatch, scientific research, and all fishing activities.~~

~~(D) The OY specification should be translatable into an annual numerical estimate for the purposes of establishing any total allowable level of foreign fishing (TALFF) and analyzing impacts of the management regime.~~

~~(E)~~ (B) The determination of OY is based on MSY, directly or through proxy. However, even where sufficient scientific data as to the biological characteristics of the stock do not exist, or where the period of exploitation or investigation has not been long enough for adequate understanding of stock dynamics, or where frequent large-scale fluctuations in stock size diminish the meaningfulness of the MSY concept, OY must still be established based on the best scientific information available.

(~~F)~~ C) An OY established at a fishery level may not exceed the sum of the MSY values for each of the stocks or stock complexes within the fishery. Aggregate level MSY estimates could be used as a basis for specifying OY for the fishery (see paragraph (e)(1)(iv) of this section). When aggregate level MSY is estimated, single stock MSY estimates can also be used to inform single stock management. For example, OY could be specified for a fishery, while other reference points are specified for individual stocks in order to prevent overfishing on each stock within the fishery.

~~(G) There should be a mechanism in the FMP for periodic reassessment of the OY specification, so that it is responsive to changing circumstances in the fishery.~~

~~(H) Part of the OY may be held as a reserve to allow for factors such as uncertainties in estimates of stock size and domestic annual harvest (DAH). If an OY reserve is established, an adequate mechanism should be included in the FMP to permit timely release of the reserve to domestic or foreign fishermen, if necessary.~~

(D) For internationally-managed stocks, fishing levels that are agreed upon by the U.S. at the international level are consistent with achieving OY.

(v~~i~~) *OY and foreign fishing*. Section 201(d) of the Magnuson-Stevens Act provides that fishing by foreign nations is limited to that portion of the OY that will not be harvested by vessels of the United States. The FMP must include an assessment to address the following, as required by section 303(a)(4) of the Magnuson-Stevens Act:

(A) The OY specification is the basis for establishing any total allowable level of foreign fishing (TALFF).

(B) Part of the OY may be held as a reserve to allow for ~~factors such as uncertainties in estimates of stock size and~~ domestic annual harvest (DAH). If an OY reserve is established, an adequate mechanism should be included in the FMP to permit timely release of the reserve to domestic or foreign fishermen, if necessary.

(~~A~~C) *DAH*. Councils and/or the Secretary must consider the capacity of, and the extent to which, U.S. vessels will harvest the OY on an annual basis. Estimating the amount that U.S. fishing vessels will actually harvest is required to determine the surplus.

(~~B)~~ D) *Domestic annual processing (DAP)*. Each FMP must assess the capacity of U.S. processors. It must also assess the amount of DAP, which is the sum of two estimates: The estimated amount of U.S. harvest that domestic processors will process, which may be based on historical performance or on surveys of the expressed intention of manufacturers to process, supported by evidence of contracts, plant expansion, or other relevant information; and the estimated amount of fish that will be harvested by domestic vessels, but not processed (e.g., marketed as fresh whole fish, used for private consumption, or used for bait).

(~~C)~~ E) *Joint venture processing (JVP)*. When DAH exceeds DAP, the surplus is available for JVP.

(f) *Acceptable biological catch~~,~~ and annual catch limits~~, and annual catch targets~~*. ~~The following features (see paragraphs (f)(1) through (f)(5) of this section) of acceptable biological catch and annual catch limits apply to stocks and stock complexes in the fishery (see paragraph (d)(2) of this section).~~

~~(1) *Introduction*. A control rule is a policy for establishing a limit or target fishing level that is based on the best available scientific information and is established by fishery managers in consultation with fisheries scientists. Control rules should be designed so that management actions become more conservative as biomass estimates, or other proxies, for a stock or stock complex decline and as science and management~~

~~uncertainty increases. Examples of scientific uncertainty include uncertainty in the estimates of MFMT and biomass. Management uncertainty may include late catch reporting, misreporting, and underreporting of catches and is affected by a fishery's ability to control actual catch. For example, a fishery that has inseason catch data available and inseason closure authority has better management control and precision than a fishery that does not have these features.~~

(1)~~(2)~~*Definitions.*

(i) *Catch* is the total quantity of fish, measured in weight or numbers of fish, taken in commercial, recreational, subsistence, tribal, and other fisheries. Catch includes fish that are retained for any purpose, as well as mortality of fish that are discarded.

(ii) *Acceptable biological catch (ABC)* is a level of a stock or stock complex's annual catch, which is based on an ABC control rule that accounts for the scientific uncertainty in the estimate of OFL ~~and,~~ any other scientific uncertainty ~~(see paragraph (f)(3) of this section), and should be specified based on the ABC control rule~~, and the Council's risk policy.

~~(iii) *ABC control rule* means a specified approach to setting the ABC for a stock or stock complex as a function of the scientific uncertainty in the estimate of OFL and any other scientific uncertainty (*see* paragraph (f)(4) of this section).~~

(i~~i~~ii~~v~~) *Annual catch limit (ACL)* is a limit on the ~~level of~~total annual catch of a stock or stock complex, which cannot exceed the ABC, that serves as the basis for invoking AMs. ~~ACL cannot exceed the ABC, but~~ An ACL may be divided into sector-ACLs (see paragraph (f)(~~5~~4) of this section).

~~(v) *Annual catch target (ACT)* is an amount of annual catch of a stock or stock complex that is the management target of a fishery, and accounts for management uncertainty in controlling the actual catch at or below the ACL. ACTs are recommended in the system of accountability measures so that ACL is not exceeded.~~

~~(vi) *ACT control rule* means a specified approach to setting the ACT for a stock or stock complex such that the risk of exceeding the ACL due to management uncertainty is at an acceptably low level.~~

(iv) *Control rule* is a policy for establishing a limit or target catch level that is based on the best scientific information available and is established by the Council in consultation with its SSC.

(v) *Management uncertainty* refers to uncertainty in the ability of managers to constrain catch so that the ACL is not exceeded, and the uncertainty in quantifying the true catch amounts (i.e., estimation errors). The sources of management uncertainty could include: late catch reporting; misreporting; underreporting of catches; lack of sufficient inseason management, including inseason closure authority; or other factors.

(vi) *Scientific uncertainty* refers to uncertainty in the information about a stock and its reference points. Sources of scientific uncertainty could include: uncertainty in stock assessment results; uncertainty in the estimates of MFMT, MSST, the biomass of the stock, and OFL; time lags in updating assessments; the degree of retrospective revision of assessment results; uncertainty in projections; uncertainties due to the choice of assessment model; longer-term uncertainties due to potential ecosystem and environmental effects; or other factors.

(2) *ABC control rule.—*

(i) For stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule that accounts for scientific uncertainty in the OFL and the Council's risk policy. The Council's risk policy could be based, on an acceptable probability (at least 50 percent) that catch equal to the stock's ABC will not result in overfishing, but other appropriate methods can be used. When determining the risk policy, Councils could consider the economic, social, and ecological trade-offs between being more or less risk averse. The Council's choice of a risk policy cannot result in an ABC that exceeds the OFL. The process of establishing an ABC control rule may~~could also~~ involve science advisors or the peer review process established under Magnuson-Stevens Act section 302(g)(1)(E).

(ii) The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock or stock complex and taking into account scientific uncertainty (see paragraph (f)(1)(vi) of this section).

The ABC control rule should consider reducing fishing mortality as stock size declines below B_{msy} and as scientific uncertainty increases, and may establish a stock abundance level below which directed fishing would not be allowed. When~~re~~ scientific uncertainty cannot be directly

calculated, such as when proxies are used, then a proxy for the uncertainty itself should be established based on the best scientific information, including comparison to other stocks. The control rule may be used in a tiered approach to address different levels of scientific uncertainty. Councils can develop ABC control rules that allow for changes in catch limits to be phased-in over time or to account for the carry-over of some of the unused portion of the ACL from one year to the next; in which case, the Council must provide a comprehensive analysis and articulate within their FMP when the control rule can and cannot be used and how the control rule prevents overfishing.

(A) *Phase-in ABC control rules*. Large changes in catch limits due to new scientific information about the status of the stock can have negative short-term effects on a fishing industry. To help stabilize catch levels as stock assessments are updated, a Council may choose to develop a control rule that phases in changes to ABC over a period of time, not to exceed 3 years, as long as overfishing is prevented.

(B) *Carry-over ABC control rules*. An ABC control rule may include provisions for carry-over of some of the unused portion of the ACL from one year to increase the ABC for the next year, based on the increased stock abundance resulting from the fishery harvesting less than the full ACL. The resulting ABC recommended by the SSC must prevent overfishing and consider scientific uncertainty consistent with the Council's risk policy. In cases where an ACL has been reduced from the ABC, carry-over provisions may not require the ABC to be re-specified if the ACL can be adjusted upwards so that it is equal to or below the existing ABC.

(3) *Specification of ABC*. ABC may not exceed OFL (see paragraph (e)(2)(i)(D) of this section). Councils and their SSC should develop a process ~~for receiving~~by which the SSC can access the best scientific information ~~and advice used to establish ABC. This process should: Identify the body that will apply~~available regarding implementation of the ABC control rule ~~(*i.e.*, calculates the ABC), and identify the review process that will evaluate the resulting ABC. The SSC must recommend the ABC to the Council.~~ An SSC may recommend an ABC that differs from the result of the ABC control rule calculation, based on factors such as data uncertainty, recruitment variability, declining trends in population variables, and other factors, but must ~~explain why.~~provide an explanation for the deviation. For Secretarial FMPs or ~~FMP~~ amendments, agency scientists or a peer review process would provide the scientific advice to establish ABC. For internationally-assessed stocks, an ABC as defined in these guidelines is not required if ~~they meet~~stocks fall under the international exception (see paragraph (h)(~~2~~1)(ii)~~).~~ of this section). While the ABC is allowed to equal OFL, NMFS expects that in most cases ABC will be reduced from OFL to reduce the probability that overfishing might occur in a year. ~~Also, *see* paragraph (f)(5) of this section for cases where a Council recommends that ACL is equal to ABC, and ABC is equal to OFL.~~

(i) *Expression of ABC*. ABC should be expressed in terms of catch, but may be expressed in terms of landings as long as estimates of bycatch and any other fishing mortality not accounted for in the landings are incorporated into the determination of ABC.

(ii) *ABC for overfished stocks*. For overfished stocks and stock complexes, a rebuilding ABC must be set to reflect the annual catch that is consistent with the schedule of fishing mortality rates (i.e., $F_{rebuild}$) in the rebuilding plan.

~~(4) *ABC control rule*. For stocks and stock complexes required to have an ABC, each Council must establish an ABC control rule based on scientific advice from its SSC. The determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing. This probability that overfishing will occur cannot exceed 50 percent and should be a lower value. The ABC control rule should consider reducing fishing mortality as stock size declines and may establish a stock abundance level below which fishing would not be allowed. The process of establishing an ABC control rule could also involve science advisors or the peer review process established under Magnuson-Stevens Act section 302(g)(1)(E). The ABC control rule must articulate how ABC will be set compared to the OFL based on the scientific knowledge about the stock or stock complex and the scientific uncertainty in the estimate of OFL and any other scientific uncertainty. The ABC control rule should consider uncertainty in factors such as stock assessment results, time lags in updating assessments, the degree of retrospective revision of assessment results, and projections. The control rule may be used in a tiered approach to address different levels of scientific uncertainty.~~

(~~4~~5) *Setting the annual catch limit—*

(i) *General*. ACL cannot exceed the ABC and may be set annually or on a multiyear plan basis. ACLs in coordination with AMs must prevent overfishing (see MSA section 303(a)(15)). If an annual catch target (ACT) is not used, management uncertainty should be accounted for in the ACL. If a Council recommends an ACL which equals ABC, and the ABC is equal to OFL, the Secretary may presume that the proposal would not prevent overfishing, in the absence of sufficient analysis and justification for the approach. A "multiyear plan" as referenced in section 303(a)(15) of the Magnuson-Stevens Act is a plan that establishes harvest specifications or harvest guidelines for each year of a time period greater than 1 year. A multiyear plan must include a mechanism for specifying ACLs for each year with appropriate AMs to prevent overfishing and maintain an appropriate rate of rebuilding if the stock or stock complex is in a rebuilding plan. A multiyear plan must provide that, if an ACL is exceeded for a year, then AMs are ~~triggered~~implemented for the next year consistent with paragraph (g)(3) of this section.

(ii) *Sector-ACLs*. A Council may, but is not required to, divide an ACL into sector-ACLs. If sector-ACLs are used, sector-AMs should also be specified. "Sector," for purposes of this section, means a distinct user group to which separate management strategies and separate catch quotas apply. Examples of sectors include the commercial sector, recreational sector, or various gear groups within a fishery. If the management measures for different sectors differ in the degree of management uncertainty, then sector-ACLs may be necessary so that appropriate AMs can be developed for each sector. If a Council chooses to use sector-ACLs, the sum of sector-ACLs must not exceed the stock or stock complex level ACL. The system of ACLs and AMs designed must be effective in protecting the stock or stock complex as a whole. Even if sector-ACLs and AMs are established, additional AMs at the stock or stock complex level may be necessary.

(iii) *ACLs for State-Federal Fisheries*. For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments should include an ACL for the overall stock that may be further divided. For example, the overall ACL could be divided into a Federal-ACL and state-ACL. However, NMFS recognizes that Federal management is limited to the portion of the fishery under Federal authority ~~(*see* paragraph (g)(5) of this section).~~ See 16 U.S.C. 1856. When stocks are co-managed by Federal, state, tribal, and/or territorial fishery managers, the goal should be to develop collaborative conservation and management strategies, and scientific capacity to support such strategies (including AMs for state or territorial and Federal waters), to prevent overfishing of shared stocks and ensure their sustainability.

(iv) *Relationship between OY and the ACL framework*. The dual goals of NS1 are to prevent overfishing and achieve on a continuing basis OY. The ABC is an upper limit on catch and is designed to prevent overfishing. As described in paragraph (e)(3) of this section, ecological, economic, and social factors, as well as values associated with determining the greatest benefit to the Nation, are important considerations in specifying OY. These OY considerations can also be considered in the ACL framework. For example, an ACL (or ACT) could be set lower than the ABC to account for OY considerations (e.g., needs of forage fish, promoting stability, addressing market conditions, etc.). Additionally, economic, social, or ecological trade-offs could be evaluated when determining the risk policy for an ABC control rule (see paragraph (f)(2) of this section). While OY is a long-term average amount of desired yield, there is, for each year, an amount of fish that is consistent with achieving the long-term OY. A Council can choose to express OY on an annual basis, in which case the FMP or FMP amendment should indicate that the OY is an "annual OY." An annual OY cannot exceed the ACL.

~~(6) *ACT control rule*. If ACT is specified as part of the AMs for a fishery, an ACT control rule is utilized for setting the ACT. The ACT control rule should clearly articulate how management uncertainty in the amount of catch in the fishery is accounted for in setting ACT. The objective for establishing the ACT and related AMs is that the ACL not be exceeded.~~

~~(i) *Determining management uncertainty*. Two sources of management uncertainty should be accounted for in establishing the AMs for a fishery, including the ACT control rule if utilized: Uncertainty in the ability of managers to constrain catch so the ACL is not exceeded, and uncertainty in quantifying the true catch amounts (*i.e.*, estimation errors). To determine the level of management uncertainty in controlling catch, analyses need to consider past management performance in the fishery and factors such as time lags in reported catch. Such analyses must be based on the best available scientific information from an SSC, agency scientists, or peer review process as appropriate.~~

~~(ii) *Establishing tiers and corresponding ACT control rules.* Tiers can be established based on levels of management uncertainty associated with the fishery, frequency and accuracy of catch monitoring data available, and risks of exceeding the limit. An ACT control rule could be established for each tier and have, as appropriate, different formulas and standards used to establish the ACT.~~

~~(7) A Council may choose to use a single control rule that combines both scientific and management uncertainty and supports the ABC recommendation and establishment of ACL and if used ACT.~~

(g) *Accountability measures* *(AMs)*. ~~The following features (see paragraphs (g)(1) through (5) of this section) of accountability measures apply to those stocks and stock complexes in the fishery.~~

(1) *Introduction*. AMs are management controls to prevent ACLs, including sector-ACLs, from being exceeded, and to correct or mitigate overages of the ACL if they occur. AMs should address and minimize both the frequency and magnitude of overages and correct the problems that caused the overage in as short a time as possible. NMFS identifies two categories of AMs, inseason AMs and AMs for when the ACL is exceeded. The FMP should identify what sources of data will be used to implement AMs (e.g., inseason data, annual catch compared to the ACL, or multi-year averaging approach).

(2) *Inseason AMs*. Whenever possible, FMPs should include inseason monitoring and management measures to prevent catch from exceeding ACLs. Inseason AMs could include, but are not limited to: ~~ACT;~~an annual catch target (see paragraph (g)(4) of this section); closure of a fishery; closure of specific areas; changes in gear; changes in trip size or bag limits; reductions in effort; or other appropriate management controls for the fishery. If final data or data components of catch are delayed, Councils should make appropriate use of preliminary data, such as landed catch, in implementing inseason AMs. FMPs should contain inseason closure authority giving NMFS the ability to close fisheries if it determines, based on data that it deems sufficiently reliable, that an ACL has been exceeded or is projected to be reached, and that closure of the fishery is necessary to prevent overfishing. For fisheries without inseason management control to prevent the ACL from being exceeded, AMs should utilize ACTs that are set below ACLs so that catches do not exceed the ACL.

(3) *AMs for when the ACL is exceeded*. On an annual basis, the Council must determine as soon as possible after the fishing year if an ACL was exceeded. If an ACL was exceeded, AMs must be ~~triggered and~~ implemented as soon as possible to correct the operational issue that caused the ACL overage, as well as any biological consequences to the stock or stock complex resulting from the overage when it is known. These AMs could include, among other things, modifications of inseason AMs, the use or modification of ACTs, or overage adjustments. The type of AM chosen by a Council will likely vary depending on the sector of the fishery, status of the stock, the degree of the overage, recruitment patterns of the stock, or other pertinent information. If an ACL is set equal to zero and the AM for the fishery is a closure that prohibits fishing for a stock, additional AMs are not required if only small amounts of catch or bycatch occur, and the catch or bycatch is unlikely to result in overfishing. For stocks and stock complexes in rebuilding plans, the AMs should include overage adjustments that reduce the ACLs in the next fishing year by the full amount of the overage~~s~~, unless the best scientific information available shows that a reduced overage adjustment, or no adjustment, is needed to mitigate the effects of the overage~~s~~. ~~If catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness. A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing, if the vulnerability of the stock has not already been accounted for in the ABC control rule.~~

(4) *Annual Catch Target (ACT) and ACT control rule*. ACTs are recommended in the system of AMs~~accountability measures~~ so that ACL is not exceeded. An ACT is an amount of annual catch of a stock or stock complex that is the management target of a fishery, and accounts for management uncertainty in controlling the ~~actual~~ catch at or below the ACL. ACT control rules can be used to articulate how management uncertainty is accounted for in setting the ACT. ACT control rules can be developed by the Council, in coordination with the SSC, to help the Council account for management uncertainty.

(5~~4~~) *AMs based on multi-year average data*. Some fisheries have highly variable annual catches and lack reliable inseason or annual data on which to base AMs. If there are insufficient data upon which to compare catch to ACL, ~~either inseason or on an annual basis,~~ AMs could be based on comparisons of average catch to average ACL over a three-year moving average period or, if supported by analysis, some other appropriate multi-year period. Councils should explain why basing AMs on a multi-year period is

appropriate. Evaluation of the moving average catch to the average ACL must be conducted annually, and ~~AMs should be implemented~~ if the average catch exceeds the average ACL, appropriate AMs should be implemented consistent with paragraph (g)(3) of this section. ~~As a performance standard, if the average catch exceeds the average ACL for a stock or stock complex more than once in the last four years, then the system of ACLs and AMs should be re-evaluated and modified if necessary to improve its performance and effectiveness. The initial ACL and management measures may incorporate information from previous years so that AMs based on average ACLs can be applied from the first year. Alternatively, a Council could use a stepped approach where in year 1, catch is compared to the ACL for year 1; in year 2 the average catch for the past 2 years is compared to the average ACL; then in year 3 and beyond, the most recent 3 years of catch are compared to the corresponding ACLs for those years.~~

(~~6~~5) *AMs for State-Federal Fisheries*. For stocks or stock complexes that have harvest in state or territorial waters, FMPs and FMP amendments must, at a minimum, have AMs for the portion of the fishery under Federal authority. Such AMs could include closing the EEZ when the Federal portion of the ACL is reached, or the overall stock's ACL is reached, or other measures.

(7) *Performance Standard*. If catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness. If AMs are based on multi-year average data, the performance standard is based on a comparison of the average catch to the average ACL. A Council could choose a higher performance standard (e.g., a stock's catch should not exceed its ACL more often than once every five or six years) for a stock that is particularly vulnerable to the effects of overfishing, if the vulnerability of the stock has not already been accounted for in the ABC control rule.

(h) *Establishing ACL mechanisms and AMs in FMPs*. FMPs or FMP amendments must establish ACL mechanisms and AMs for all stocks and stock complexes ~~in the fishery,~~that require conservation and management (see § 600.305(c)), unless paragraph (h)(~~2~~1) of this section is applicable. These mechanisms should describe the annual or multiyear process by which ~~specific~~ ACLs, AMs, and other reference points such as OFL, and ABC will be established. ~~If a complex has multiple indicator stocks, each indicator stock must have its own ACL; an additional ACL for the stock complex as a whole is optional. In cases where fisheries (e.g., Pacific salmon) harvest multiple indicator stocks of a single species that cannot be distinguished at the time of capture, separate ACLs for the indicator stocks are not required and the ACL can be established for the complex as a whole.~~

~~(1) In establishing ACL mechanisms and AMs, FMPs should describe:~~

~~(i) Timeframes for setting ACLs (e.g., annually or multi-year periods);~~

~~(ii) Sector ACLs, if any (including set-asides for research or bycatch);~~

~~(iii) AMs and how AMs are triggered and what sources of data will be used (e.g., inseason data, annual catch compared to the ACL, or multi-year averaging approach); and~~

~~(iv) Sector AMs, if there are sector ACLs.~~

(~~1~~2) Exceptions from ACL and AM requirements—

(i) *Life cycle*. Section 303(a)(15) of the Magnuson-Stevens Act "shall not apply to a fishery for species that has a life cycle of approximately 1 year unless the Secretary has determined the fishery is subject to overfishing of that species" (as described in Magnuson-Stevens Act section 303 note). This exception applies to a stock for which the average ~~length~~age of ~~time it takes for an individual to produce a reproductively active offspring~~spawners in the population is approximately 1 year ~~and that the individual has only one breeding season in its lifetime.~~or less. While exempt from the ACL and AM requirements, FMPs or FMP amendments for these stocks must have SDC, MSY, OY, ABC, and an ABC control rule.

(ii) *International fishery agreements*. Section 303(a)(15) of the Magnuson-Stevens Act applies "unless otherwise provided for under an international agreement in which the United States participates" (Magnuson-Stevens Act section 303 note). This exception applies to stocks or stock complexes subject to management under an international agreement, which is defined as "any bilateral or multilateral treaty, convention, or agreement which relates to fishing and to which the United States is a party" (see Magnuson-Stevens Act section 3(24)). These stocks would still need to have SDC, MSY, and ~~MSY~~OY.

(~~2~~3) *Flexibility in application of NS1 guidelines*. There are limited circumstances that may not fit the standard approaches to specification of reference points and management measures set forth in these guidelines. These include, among other things, conservation and management of Endangered Species Act listed species, harvests from aquaculture operations, ~~and~~ stocks with unusual life history characteristics (e.g., Pacific salmon, where the spawning potential ~~for a stock~~ is ~~spread over a multi-~~concentrated in one

year ~~period).~~), and stocks for which data are not available either to set reference points based on MSY or MSY proxies, or manage to reference points based on MSY or MSY proxies. In these circumstances, Councils may propose alternative approaches for satisfying ~~the NS1~~ requirements of the Magnuson-Stevens Act other than those set forth in these guidelines. Councils must document their rationale for any alternative approaches ~~for these limited circumstances~~ in an FMP or FMP amendment, which will be reviewed for consistency with the Magnuson-Stevens Act.

(i) *Fisheries data*. In their FMPs, or associated public documents such as SAFE reports as appropriate, Councils must describe general data collection methods, as well as any specific data collection methods used for all stocks ~~in the fishery,~~ and ~~EC species~~stock complexes in their FMPs, including:

(1) Sources of fishing mortality (both landed and discarded), including commercial and recreational catch and bycatch in other fisheries;

(2) Description of the data collection and estimation methods used to quantify total catch mortality in each fishery, including information on the management tools used (i.e., logbooks, vessel monitoring systems, observer programs, landings reports, fish tickets, processor reports, dealer reports, recreational angler surveys, or other methods); the frequency with which data are collected and updated; and the scope of sampling coverage for each fishery; and

(3) Description of the methods used to compile catch data from various catch data collection methods and how those data are used to determine the relationship between total catch at a given point in time and the ACL for stocks and stock complexes that ~~are part of a fishery~~require conservation and management.

(j) *Council actions to address overfishing and rebuilding for stocks and stock complexes ~~in the fishery~~*

(1) *Notification*. The Secretary will immediately notify in writing a Regional Fishery Management Council whenever it is determined that:

(i) Overfishing is occurring;

(ii) A stock or stock complex is overfished;

(iii) A stock or stock complex is approaching an overfished condition; or

(iv) Existing remedial action taken for the purpose of ending previously identified overfishing or rebuilding a previously identified overfished stock or stock complex has not resulted in adequate progress.

(2) *Timing of actions—*

(i) *If a stock or stock complex is undergoing overfishing*. Upon notification that a stock or stock complex is undergoing overfishing, a Council should immediately begin working with its SSC (or agency scientists or peer review processes in the case of Secretarially-managed fisheries) to ensure that the ABC is set appropriately to end overfishing. Councils should evaluate the cause of overfishing, address the issue that caused overfishing, and reevaluate their ACLs and AMs to make sure they are adequate. ~~FMPs or FMP amendments must establish ACL and AM mechanisms in 2010, for stocks and stock complexes determined to be subject to overfishing, and in 2011, for all other stocks and stock complexes (*see* paragraph (b)(2)(iii) of this section). To address practical implementation aspects of the FMP and FMP amendment process, paragraphs (j)(2)(i)(A) through (C) of this section clarifies the expected timing of actions.~~

~~(A) In addition to establishing ACL and AM mechanisms, the ACLs and AMs themselves must be specified in FMPs, FMP amendments, implementing regulations, or annual specifications beginning in 2010 or 2011, as appropriate.~~

~~(B) For stocks and stock complexes still determined to be subject to overfishing at the end of 2008, ACL and AM mechanisms and the ACLs and AMs themselves must be effective in fishing year 2010.~~

~~(C) For stocks and stock complexes determined to be subject to overfishing during 2009, ACL and AM mechanisms and ACLs and AMs themselves should be effective in fishing year 2010, if possible, or in fishing year 2011, at the latest.~~

(ii) *If a stock or stock complex is overfished or approaching an overfished condition*. ~~(A) For notifications~~ Upon notification that a stock or stock complex is overfished or approaching an overfished condition ~~made before July 12, 2009, a Council must prepare an FMP, FMP amendment, or proposed regulations within one year of notification. If the stock or stock complex is overfished, the purpose of the action is to specify a time period for ending overfishing and rebuilding the stock or stock complex that will be as short as possible as described under section 304(e)(4) of the Magnuson-Stevens Act. If the stock or stock complex is approaching an overfished condition, the purpose of the action is to prevent the biomass from declining below the~~

~~MSST.(B) For notifications that a stock or stock complex is overfished or approaching an overfished condition made after July 12, 2009~~, a Council must prepare and implement an FMP, FMP amendment, or proposed regulations within two years of notification, consistent with the requirements of section 304(e)(3) of the Magnuson-Stevens Act. Council actions should be submitted to NMFS within 15 months of notification to ensure sufficient time for the Secretary to implement the measures, if approved. ~~If the stock or stock complex is overfished and overfishing is occurring, the rebuilding plan must end overfishing immediately and be consistent with ACL and AM requirements of the Magnuson-Stevens Act.~~

(3) *Overfished fishery*.—

(i) Where a stock or stock complex is overfished, a Council must specify a time period for rebuilding the stock or stock complex based on factors specified in Magnuson-Stevens Act section 304(e)(4). This target time for rebuilding (T_{target}) shall be as short as possible, taking into account: ~~The~~the status and biology of any overfished stock, the needs of fishing communities, recommendations by international organizations in which the U.S. participates, and interaction of the stock within the marine ecosystem. In addition, the time period shall not exceed 10 years, except where biology of the stock, other environmental conditions, or management measures under an international agreement to which the U.S. participates, dictate otherwise. SSCs (or agency scientists or peer review processes in the case of Secretarial actions) shall provide recommendations for achieving rebuilding targets (see Magnuson-Stevens Act section 302(g)(1)(B)). The above factors enter into the specification of Ttarget as follows:

(A) *The ~~"~~minimum time for rebuilding a stock~~"~~ (Tmin).* T_{min} means the amount of time the stock or stock complex is expected to take to rebuild to its MSY biomass level in the absence of any fishing mortality. In this context, the term "expected" means to have at least a 50 percent probability of attaining the Bmsy~~.~~, where such probabilities can be calculated. The starting year for the T_{min} calculation should be the first year that the rebuilding plan is expected to be implemented.

~~(B) For scenarios under paragraph (j)(2)(ii)(A) of this section, the starting year for the T_{min} calculation is the first year that a rebuilding plan is implemented. For scenarios under paragraph (j)(2)(ii)(B) of this section, the starting year for the T_{min} calculation is 2 years after notification that a stock or stock complex is overfished or the first year that a rebuilding plan is implemented, whichever is sooner.~~

(B) *The maximum time for rebuilding a stock or stock complex to its B_{msy} (T_{max}).*

(*1~~C~~*) If T_{min} for the stock or stock complex is 10 years or less, then ~~the maximum time allowable for rebuilding (T_{max}) that stock to its B_{msy}~~ is 10 years.

(*2~~D~~*) If T_{min} for the stock or stock complex exceeds 10 years, then ~~the maximum time allowable for rebuilding a stock or stock complex~~one of the following methods can be used to ~~its B_{msy} is~~determine T_{max}:

(i) T_{min} plus the length of time associated with one generation time for that stock or stock complex. "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 or stock complex is expected to take to rebuild to B_{msy} if fished at 75 percent of MFMT, or

(iii) T_{min} multiplied by two.

(3) When selecting a method for determining T_{max}, a Council must provide a rationale for its decision based on the best scientific information available.

~~(E) T_{target} shall not exceed T_{max}, and should be calculated based on the factors described in paragraph (j)(3).~~

(C) Target time to rebuilding a stock or stock complex (T_{target}). T_{target} is the specified time period for rebuilding a stock that is considered to be in as short a time as possible, while taking into account the factors described in paragraph (j)(3)(i) of this section. T_{target} shall not exceed T_{max}, and the fishing mortality associated with achieving T_{target} is referred to as $F_{rebuild}$.

~~(ii) If a stock or stock complex reached the end of its rebuilding plan period and has not yet been determined to be rebuilt, then the rebuilding F should not be increased until the stock or stock complex has been demonstrated to be rebuilt. If the rebuilding plan was based on a T_{target} that was less than T_{max}, and the stock or stock complex is not rebuilt by T_{target}, rebuilding measures should~~

~~be revised, if necessary, such that the stock or stock complex will be rebuilt by T_{max}. If the stock or stock complex has not rebuilt by T_{max}, then the fishing mortality rate should be maintained at $F_{rebuild}$ or 75 percent of the MFMT, whichever is less.~~

(ii~~i~~) Council action addressing an overfished fishery must allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery.

(ii~~i~~v) For fisheries managed under an international agreement, Council action addressing an overfished fishery must reflect traditional participation in the fishery, relative to other nations, by fishermen of the United States.

(iv) *Adequate Progress.* The Secretary shall review rebuilding plans at routine intervals that may not exceed two years to determine whether the plans have resulted in adequate progress toward ending overfishing and rebuilding affected fish stocks (MSA section 304(e)(7)). Such reviews could include the review of recent stock assessments, comparisons of catches to the ACL, or other appropriate performance measures. The Secretary may find that adequate progress is not being made if $F_{rebuild}$ or the ACL associated with $F_{rebuild}$ are exceeded, and AMs are not correcting the operational issue that caused the overage and addressing any biological consequences to the stock or stock complex resulting from the overage when it is known (see paragraph (g)(3) of this section). A lack of adequate progress may also be found when the rebuilding expectations of a stock or stock complex are significantly changed due to new and unexpected information about the status of the stock. If a determination is made under this provision, the Secretary will notify the appropriate Council and recommend further conservation and management measures, and the Council must develop and implement a new or revised rebuilding plan within two years (see MSA sections 304(e)(3) and (e)(7)(B)). For Secretarially-managed fisheries, the Secretary would take immediate action necessary to achieve adequate progress toward ending overfishing and rebuilding.

(v) While a stock or stock complex is rebuilding, revising rebuilding timeframes (i.e., T_{target} and T_{max}) or $F_{rebuild}$ is not necessary, unless the Secretary finds that adequate progress is not being made.

(vi) If a~~the~~ stock or stock complex has 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 or stock complex is rebuilt or the Secretary finds that adequate progress in not being made.

(4) *Emergency actions and interim measures.* ~~The Secretary, on his/her own initiative or in response to a Council request, may implement interim measures to reduce overfishing or promulgate regulations to address an emergency (Magnuson-Stevens Act section 304(e)(6) or 305(c)). In considering a Council request for action, the Secretary would consider, among other things, the need for and urgency of the action and public interest considerations, such as benefits to the stock or stock complex and impacts on participants in the fishery.~~ If a Council is developing a rebuilding plan or revising an existing rebuilding plan due to a lack of adequate progress (see MSA section 304(e)(7)), the Secretary may, in response to a Council request, implement interim measures that reduce, but do not necessarily end, overfishing (see MSA section 304(e)(6)) if all of the following criteria are met:

(i) The interim measures are needed to address an unanticipated and significantly changed understanding of the status of the stock or stock complex;

(ii) Ending overfishing immediately is expected to result in severe social and/or economic impacts to a fishery; and

(iii) The interim measures will ensure that the stock or stock complex will increase its current biomass through the duration of the interim measures.

~~(i) These measures may remain in effect for not more than 180 days, but may be extended for an additional 186 days if the public has had an opportunity to comment on the measures and, in the case of Council-recommended measures, the Council is actively preparing an FMP, FMP amendment, or proposed regulations to address the emergency or overfishing on a permanent basis.~~

~~(ii) Often, these measures need to be implemented without prior notice and an opportunity for public comment, as it would be impracticable to provide for such processes given the need to act quickly and also contrary to the public interest to delay action. However, emergency regulations and interim measures that do not qualify for waivers or exceptions under the Administrative Procedure Act would need to follow proposed notice and comment rulemaking procedures.~~

(5) *Discontinuing a rebuilding plan based on new scientific information*. A Council may discontinue a rebuilding plan for a stock or stock complex before it reaches B_{msy}, if all of the following criteria are met:

(i) The Secretary determines that the stock was not overfished in the year that the overfished determination (see MSA section 304(e)(3)) was based on; and

(ii) The biomass of the stock is not currently below the MSST.

(6) *Management measures for depleted stocks*. In cases where an overfished stock or stock complex is considered to be "depleted" (see paragraph (e)(2)(i)(F)), a Council may identify in its rebuilding plan additional management measures or initiatives that could improve the status of the stock, such as: reevaluating SDCs to determine if they are representative of current environmental conditions, recommending the restoration of habitat and other ameliorative programs, identifying research priorities to improve the Councils understanding of the impediments to rebuilding, or partnering with Federal and state agencies to address non-fishing related impacts.

(k) *International overfishing*. If the Secretary determines that a fishery is overfished or approaching a condition of being overfished due to excessive international fishing pressure, and for which there are no management measures (or no effective measures) to end overfishing under an international agreement to which the United States is a party, then the Secretary and/or the appropriate Council shall take certain actions as provided under Magnuson-Stevens Act section 304(i). The Secretary, in cooperation with the Secretary of State, must immediately take appropriate action at the international level to end the overfishing. In addition, within one year after the determination, the Secretary and/or appropriate Council shall:

(1) Develop recommendations for domestic regulations to address the relative impact of the U.S. fishing vessels on the stock. Council recommendations should be submitted to the Secretary.

(2) Develop and submit recommendations to the Secretary of State, and to the Congress, for international actions that will end overfishing in the fishery and rebuild the affected stocks, taking into account the relative impact of vessels of other nations and vessels of the United States on the relevant stock. Councils should, in consultation with the Secretary, develop recommendations that take into consideration relevant provisions of the Magnuson-Stevens Act and NS1 guidelines, including section 304(e) of the Magnuson-Stevens Act and paragraph (j)(3)(~~iv~~iii) of this section, and other applicable laws. For highly migratory species in the Pacific, recommendations from the Western Pacific, North Pacific, or Pacific Councils must be developed and submitted consistent with Magnuson-Stevens Reauthorization Act section 503(f), as appropriate.

(3) *Considerations for assessing "relative impact."* "Relative impact" under paragraphs (k)(1) and (2) of this section may include consideration of factors that include, but are not limited to: Domestic and international management measures already in place, management history of a given nation, estimates of a nation's landings or catch (including bycatch) in a given fishery, and estimates of a nation's mortality contributions in a given fishery. Information used to determine relative impact must be based upon the best available scientific information.

(l) *Relationship of National Standard 1 to other national standards— General*. National Standards 2 through 10 provide further requirements for conservation and management measures in FMPs~~, but do not alter the requirement of NS1 to prevent overfishing and rebuild overfished stocks~~ (see MSA section 301(a)), and guidelines for these standards are provided in §§ 600.315 – 600.355. Below is a description of how some of the other National Standards intersect with National Standard 1.

(1) *National Standard 2* (see § 600.315). Management measures and reference points to implement NS1 must be based on the best scientific information available. When data are insufficient to estimate reference points directly, Councils should develop reasonable proxies to the extent possible (also ~~*see*paragraph~~see paragraph (e)(1)(~~iv~~v)(B) of this section). In cases where scientific data are severely limited, effort should also be directed to identifying and gathering the needed data. SSCs should advise their Councils regarding the best scientific information available for fishery management decisions.

(2) *National Standard 3* (see § 600.320). Reference points should generally be specified in terms of the level of stock aggregation for which the best scientific information is available (also see ~~paragraph (e)(1)(iii) of this section). Also, scientific assessments must be based on the best information about the total range of the stock and potential biological structuring of the stock into biological sub-units, which may differ from the geographic units on which management is feasible.~~paragraphs (e)(1)(ii) and (iii) of this section).

(3) *National Standard 6* (see § 600.335). Councils must build into the reference points and control rules appropriate consideration of risk, taking into account uncertainties in estimating harvest, stock conditions, life history parameters, or the effects of environmental factors.

(4) *National Standard 8* (see § 600.345). National Standard 8 ~~directs the Councils to apply~~addresses economic and social ~~factors towards sustained participation of fishing communities~~considerations and minimizing to the extent practicable~~, minimize~~ adverse economic impacts on ~~such~~fishing communities within the context of preventing overfishing and rebuilding overfished stocks as required under National Standard 1. ~~Therefore, calculation~~ Calculation of OY as reduced from MSY ~~should include~~also includes consideration of economic and social factors, but the combination of management measures chosen to achieve the OY must principally be designed to prevent overfishing and rebuild overfished stocks.

(5) *National Standard 9* (see § 600.350). Evaluation of stock status with respect to reference points must take into account mortality caused by bycatch. In addition, the estimation of catch should include the mortality of fish that are discarded.

(m) *Exceptions to requirements to prevent overfishing*. Exceptions to the requirement to prevent overfishing could apply under certain limited circumstances. Harvesting one stock at its optimum level may result in overfishing of another stock when the two stocks tend to be caught together (This can occur when the two stocks are part of the same fishery or if one is bycatch in the other's fishery). Before a Council may decide to allow this type of overfishing, an analysis must be performed and the analysis must contain a justification in terms of overall benefits, including a comparison of benefits under alternative management measures, and an analysis of the risk of any stock or stock complex falling below its MSST. The Council may decide to allow this type of overfishing if the fishery is not overfished and the analysis demonstrates that all of the following conditions are satisfied:

(1) Such action will result in long-term net benefits to the Nation;

(2) Mitigating measures have been considered and it has been demonstrated that a similar level of long-term net benefits cannot be achieved by modifying fleet behavior, gear selection/configuration, or other technical characteristic in a manner such that no overfishing would occur; and

(3) The resulting rate of fishing mortality will not cause any stock or stock complex to fall below its MSST more than 50 percent of the time in the long term, although it is recognized that persistent overfishing is expected to cause the affected stock to fall below its Bmsy more than 50 percent of the time in the long term.

§ 600.320 National Standard 3—Management Units.

(a) *Standard 3*. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
(b) *General*. The purpose of this standard is to induce a comprehensive approach to fishery management. The geographic scope of the fishery, for planning purposes, should cover the entire range of the stocks(s) of fish, and not be overly constrained by political boundaries. Wherever practicable, an FMP should seek to manage interrelated stocks of fish.
(c) *Unity of management*. Cooperation and understanding among entities concerned with the fishery (e.g., Councils, states, Federal Government, international commissions, foreign nations) are vital to effective management. Where management of a fishery involves multiple jurisdictions, coordination among the several entities should be sought in the development of an FMP. Where a range overlaps Council areas, one FMP to cover the entire range is preferred. The Secretary designates which Council(s) will prepare the FMP~~, under~~ (see section 304(f) of the Magnuson-Stevens Act~~.~~).
(d) *Management unit*. The term "management unit" means a fishery or that portion of a fishery identified in an FMP as relevant to the FMP's management objectives. Stocks in the fishery management unit are considered to be in need of conservation and management (see § 600.305(c)).

(1) *Basis*. The choice of a management unit depends on the focus of the FMP's objectives, and may be organized around biological, geographic, economic, technical, social, or ecological perspectives. ~~For example:~~

~~(i) *Biological*—could be based on a stock(s) throughout its range.~~
~~(ii) *Geographic*—could be an area.~~
~~(iii) *Economic*—could be based on a fishery supplying specific product forms.~~
~~(iv) *Technical*—could be based on a fishery utilizing a specific gear type or similar fishing practices.~~
~~(v) *Social*—could be based on fishermen as the unifying element, such as when the fishermen pursue different species in a regular pattern throughout the year.~~
~~(vi) *Ecological*—could be based on species that are associated in the ecosystem or are dependent on a particular habitat.~~

(2) *Conservation and management measures*. FMPs should include conservation and management measures for that part of the management unit within U.S. waters, although the Secretary can ordinarily implement them only within the EEZ. The measures need not be identical for each geographic area within the management unit, if the FMP justifies the differences. A management unit may contain~~, in addition to regulated species,~~ stocks of fish for which there is not enough information available to specify MSY and OY or ~~to establish management measures, so that data on these species may be collected under the FMP.~~their proxies.

(e) *Analysis*. ~~To document that an~~An FMP ~~is as comprehensive as practicable, it~~ should include ~~discussions~~discussion of the following:

(1) The range and distribution of the stocks, as well as the patterns of fishing effort and harvest.
(2) Alternative management units and reasons for selecting a particular one. A less-than-comprehensive management unit may be justified if, for example, complementary management ~~exits~~exists or is planned for a separate geographic area or for a distinct use of the stocks, or if the unmanaged portion of the resource is immaterial to proper management.
(3) Management activities and habitat programs of adjacent states and their effects on the FMP's objectives and management measures. Where state action is necessary to implement measures within state waters to achieve FMP objectives, the FMP should identify what state action is necessary, discuss the consequences of state inaction or contrary action, and make appropriate recommendations. The FMP should also discuss the impact that Federal regulations will have on state management activities.
(4) Management activities of other countries having an impact on the fishery, and how the FMP's management measures are designed to take into account these impacts. International boundaries may be dealt with in several ways. For example:

(i) By limiting the management unit's scope to that portion of the stock found in U.S. waters;
(ii) By estimating MSY for the entire stock and then basing the determination of OY for the U.S. fishery on the portion of the stock within U.S. waters; or
(iii) By referring to treaties or cooperative agreements.

§ 600.340 National Standard 7—Costs and Benefits.

(a) *Standard 7*. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

~~(b) *Necessity of Federal management.*~~

~~(1) *General*. The principle that not every fishery needs regulation is implicit in this standard. The Magnuson-Stevens Act requires Councils to prepare FMPs only for overfished fisheries and for other fisheries where regulation would serve some useful purpose and where the present or future benefits of regulation would justify the costs. For example, the need to collect data about a fishery is not, by itself, adequate justification for preparation of an FMP, since there are less costly ways to gather the data (see § 600.320(d)(2). In some cases, the FMP preparation process itself, even if it does not culminate in a document approved by the Secretary, can be useful in supplying a basis for management by one or more coastal states.~~

~~(2) *Criteria*. In deciding whether a fishery needs management through regulations implementing an FMP, the following general factors should be considered, among others:~~

~~(i) The importance of the fishery to the Nation and to the regional economy.~~

~~(ii) The condition of the stock or stocks of fish and whether an FMP can improve or maintain that condition.~~

~~(iii) The extent to which the fishery could be or is already adequately managed by states, by state/Federal programs, by Federal regulations pursuant to FMPs or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.~~

~~(iv) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.~~

~~(v) The economic condition of a fishery and whether an FMP can produce more efficient utilization.~~

~~(vi) The needs of a developing fishery, and whether an FMP can foster orderly growth.~~

~~(vii) The costs associated with an FMP, balanced against the benefits (see paragraph (d) of this section as a guide).~~

(b~~e~~) *Alternative management measures*. Management measures should not impose unnecessary burdens on the economy, on individuals, on private or public organizations, or on Federal, state, or local governments. Factors such as fuel costs, enforcement costs, or the burdens of collecting data may well suggest a preferred alternative.

(c~~d~~) *Analysis*. The supporting analyses for FMPs should demonstrate that the benefits of fishery regulation are real and substantial relative to the added research, administrative, and enforcement costs, as well as costs to the industry of compliance. In determining the benefits and costs of management measures, each management strategy considered and its impacts on different user groups in the fishery should be evaluated. This requirement need not produce an elaborate, formalistic cost/benefit analysis. Rather, an evaluation of effects and costs, especially of differences among workable alternatives, including the status quo, is adequate. If quantitative estimates are not possible, qualitative estimates will suffice.

(1) *Burdens*. Management measures should be designed to give fishermen the greatest possible freedom of action in conducting business and pursuing recreational opportunities that are consistent with ensuring wise use of the resources and reducing conflict in the fishery. The type and level of burden placed on user groups by the regulations need to be identified. Such an examination should include, for example: Capital outlays; operating and maintenance costs; reporting costs; administrative, enforcement, and information costs; and prices to consumers. Management measures may shift costs from one level of government to another, from one part of the private sector to another, or from the government to the private sector. Redistribution of costs through regulations is likely to generate controversy. A discussion of these and any other burdens placed on the public through FMP regulations should be a part of the FMP's supporting analyses.

(2) *Gains*. The relative distribution of gains may change as a result of instituting different sets of alternatives, as may the specific type of gain. The analysis of benefits should focus on the specific gains produced by each alternative set of management measures, including the status quo. The benefits to society that result from the alternative management measures should be identified, and the level of gain assessed.