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Habitat Conservation 03-301 NMFS Policy on Mitigating Impacts to Trust Resources	
NMFS Procedure on Mitigating of Impacts to Trust Resources	
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I. Introduction

As outlined in NOAA Administrative Order 216-123 (“Policy”), mitigation is an important component of NOAA’s work in conserving and managing coastal, riverine, marine, and Great Lakes ecosystems and resources. NOAA’s mitigation work consists of ensuring that adverse impacts to resources under its regulatory, stewardship, and management authorities are avoided, minimized, and compensated for, as appropriate. NOAA has many mandates that involve the use of “mitigation” concepts or tools. While one purpose of this document is to standardize the approaches used in mitigation, differences in the applicable legal definitions and standards will at times require varying interpretation and application in accordance with the law. The Policy and this Procedure do not expand NOAA’s authorities, and all NOAA mitigation activities will be conducted in accordance with existing authorities.

The definition of mitigation used in the Policy and this Procedure is derived from the Council on Environmental Quality (CEQ) National Environmental Policy Act (NEPA) regulations (40 CFR 1508.1(s)), which describe five types of mitigation. In practice, the five mitigation

elements in the CEQ definition¹ are often categorized into three general types: avoidance, minimization, and compensation. The Policy and this Procedure use these three categories:

- Avoid - avoid the impact altogether by not taking a certain action or parts of an action, or modifying the action to avert all impacts. For example, relocating the site of a proposed building so that it does not require fill in wetlands.
- Minimize - minimize the impact by limiting the degree or magnitude of an impact, action, or the action's implementation. For example, limiting dredging to months when aquatic life is less abundant than other months.
- Compensate - compensate for the impact by replacing or providing equivalent substitute resources or environments. For example, restoring a damaged salt marsh in one location in a way that fully offsets the salt marsh functions and services destroyed or degraded in a different location.

Descriptions of common mechanisms for conducting compensatory mitigation are in Appendix A of this Procedure, and additional definitions are in Appendix B.

II. Objective and Scope

The purpose of this Procedure is to outline how the Policy will be implemented and to do the following:

- Inform action agencies and project proponents of NOAA's mitigation-related mandates
- Provide a framework for formulating measures to conserve species and habitats through an application of the mitigation sequence
- Standardize the approaches used in mitigation
- Provide flexibility for project- and resource-specific circumstances
- Promote innovation and incorporation of lessons learned from mitigation project successes and failures
- Promote communication and cooperation among federal, state/territorial, and local agencies, tribal governments, project proponents, and other stakeholders

The Policy and this Procedure apply to all NOAA activities (except the exclusions noted in the next paragraph) related to evaluating the effects of proposed actions on NOAA trust resources and developing recommendations or requirements to mitigate impacts to these resources. For purposes of this Procedure, actions are activities or programs implemented, authorized, or funded by federal agencies (including NOAA-proposed activities); or non-federal activities or programs for which NOAA has statutory authority to make mitigation recommendations, specify mitigation requirements, or provide technical assistance for mitigation planning.

The Policy and this Procedure do not apply to actions specifically exempted under statute from NOAA review. They do not apply retroactively to completed actions or pending actions

¹ The five elements are avoid, minimize, rectify, reduce, and compensate.

for which NOAA has already agreed to mitigation, except where (a) new activities or changes in current activities would result in new NOAA mitigation recommendations or requirements, (b) new authorities warrant new NOAA mitigation recommendations or requirements, or (c) failure to implement prior requirements or agreed-upon recommendations warrants new NOAA mitigation recommendations or requirements. NOAA personnel may elect to apply the Policy and this Procedure to actions that are under review as of the date of its final publication.

The Policy and this Procedure apply to NOAA trust resources and their habitats, which are commercial and recreational fishery resources (marine and estuarine fish and shellfish, including diadromous fish species); endangered and threatened marine species (including diadromous fish species) and their designated critical habitats; marine mammals and marine turtles; marshes, mangroves, seagrass beds, coral reefs, and other coastal habitats; areas identified as essential fish habitat (EFH); marine habitats and resources associated with national marine sanctuaries, national marine monuments, and other protected places; and aquatic habitats and resources associated with the Great Lakes. The types of resources for which NOAA is authorized to recommend, require, or implement mitigation also include those that contribute broadly to ecological functions that sustain species. This definition of “NOAA trust resources” is provided for purposes of the Policy and this Procedure only.²

III. Guidance: Procedures for Effective Mitigation

The NOAA Administrative Order consists of the following principles:

1. Apply the mitigation sequence appropriately.
2. Employ the best scientific information available.
3. Apply a holistic landscape and/or seascape approach.
4. Promote mitigation strategies with high probability of success.
5. Consider climate change and climate resilience when evaluating and developing mitigation measures.
6. Implement compensatory mitigation that is proportional to impacts to NOAA trust resources and offsets those impacts to the full extent provided by NOAA authorities.
7. Use preservation of intact habitat as compensation appropriately, taking into account the high risk of habitat loss in many coastal and marine landscapes and seascapes.
8. Collaborate with partner agencies and stakeholders.

We are also adopting the following guidance and procedures for implementing these principles.

² The definition of “NOAA trust resources” is not meant to define or interpret the meaning of terms such as “trust,” “trust resources,” or “trustee” as they are used in other contexts, such as under Natural Resource Damage Assessment (NRDA).

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A. Compensatory Mitigation Considerations in the Context of a Landscape or Seascape Approach

The Policy states, “Mitigation recommendations and decisions should be made using a holistic landscape and/or seascape approach, with a goal of selecting the option that best achieves the conservation objectives for the affected NOAA trust resources.”

A landscape or seascape is an area encompassing an interacting mosaic of ecosystems and human systems that is characterized by common management concerns. Landscapes and seascapes may range in size from large regions to a single watershed or bay. For a given mitigation decision, the appropriate geographic scale of a landscape or seascape approach will vary depending on numerous factors, such as the range of the affected living marine resources and their habitats, the size of the impact, connectivity between the affected area and other areas, and cumulative effects.

A landscape or seascape approach involves considering all the different ecological functions, uses, needs, and human values in a landscape or seascape and integrating them to achieve multiple objectives at the same time. In the context of compensatory mitigation, this approach can be used to identify compensatory mitigation projects that offset losses of NOAA trust resources while also benefiting the landscape or seascape.

NOAA should make decisions about the location and type of compensatory mitigation that we recommend or require using a landscape or seascape approach with a goal of selecting the option that best achieves conservation objectives for the affected trust resources, within the constraints of the authority or program under which mitigation is being conducted.

Where a landscape or seascape management plan is available, it should be evaluated to determine if it is appropriate to use in mitigation decisions. An appropriate plan should use the best scientific information available. It should acknowledge the connections between inland, estuarine, and marine resources and describe how those connections affect conservation planning. It should also acknowledge the connections between human systems and ecosystems, considering the habitat requirements of important species, habitat loss or conversion trends, and sources of landscape or seascape impairment. It should include the protection, restoration, and maintenance of terrestrial resources, such as riparian areas and uplands, when those resources contribute to or improve the overall ecological functioning of aquatic resources in the landscape or seascape.

NOAA supports, but does not require, the development of landscape or seascape management plans. Any landscape or seascape plan that NOAA develops should include

coordination with partners, tribes, communities, and stakeholders, including underserved communities and stakeholders. Landscape or seascape management plans should also use the best available scientific information, and be coordinated with other natural resource management plans.

Whether or not an appropriate landscape or seascape management plan exists, NOAA will evaluate mitigation options based on best available scientific information about the landscape or seascape conditions and the needs of the affected trust resources. When evaluating compensatory mitigation options, the following factors should be considered:

1. Proximity of Compensation to Impact

Preference should be given to compensation sites located within the same ecological community as the impact site, so that the compensation will provide an appropriate offset for the ecological functions and services lost as a result of the proposed action. Compensation for impacts to aquatic resources in coastal watersheds (watersheds that include a tidal water body) should generally be located in that coastal watershed, if that location provides the best possible conservation outcome for the affected resources. When compensating for impacts to marine resources, the location of the compensation site should be chosen to replace lost functions and services within the same marine ecological system (e.g., reef complex, estuary). Furthermore, compensation for impacts to national marine sanctuary resources shall be located within national marine sanctuaries consistent with the National Marine Sanctuaries Act (NMSA) section 312.

Locating compensatory mitigation near impacts can mean choosing a compensation site that will be affected by nearby urban, suburban, and/or industrial land uses or other stressors. These sites may require more careful planning and possibly more maintenance than a compensation site in a more rural location.

There may be circumstances in which the compensatory mitigation option that best achieves the affected trust resources' conservation objective is located some distance from the impact site. For example, in an island complex, a preferred compensation site might be located on an adjacent island rather than the island where the impact occurred, because the need for restoration is most urgent on the adjacent island. Another example would be compensating within a species' range, but outside of the watershed where the impact occurs because that watershed is a priority for conserving the species. When selecting compensation sites for consideration, the ecological relationship between the location of the adverse impact and the location of the proposed compensation should be clearly articulated.

While NOAA has an obligation to its trust resources, human systems may also be taken into account when evaluating options for compensation in a landscape or seascape context. Human systems include transportation, social services, the economy, and culture, among others. As long as doing so will meet conservation objectives, compensation should be implemented in such a way that the benefits provided (e.g., flood storage, recreational opportunities, coastal resilience) stay within the community affected by the proposed action.

2. Equivalency in Ecological Type

Preference should be given to compensation that benefits the same type of habitat or species as that affected by the proposed action or an equivalent type that will replace the ecological functions and services lost as a result of the proposed action. Under the ESA, any required compensation must be directed towards addressing the needs of the threatened or endangered (ESA-listed) species affected by the project.

However, there are circumstances, including for listed species, in which compensation with a different type of habitat may be preferable and would be a better option for achieving conservation objectives for the affected NOAA trust resources. In evaluating whether compensation with a different type of habitat is appropriate, NOAA should consider factors such as the following:

- Whether compensation with a different type of habitat best achieves conservation objectives for the affected NOAA trust resources
- Whether compensation with a different type of habitat is consistent with the planning goals, objectives, and priorities of science-based multi-agency watershed and/or coastal conservation planning efforts
- When ESA-listed species are affected by the proposed action, whether compensation with a different type of habitat will address the recovery goals and objectives for the species, priority actions for conserving the ecosystems upon which the ESA-listed species depend, and/or priority threats and limiting factors for ESA-listed species
- Whether compensation with a different type of habitat increases or prevents the decline of a habitat type that is rare or becoming scarce
- Whether compensation with a different type of habitat replaces common or readily available functions with scarce and important functions

3. Preservation as Compensation

The Policy states, “NOAA supports habitat preservation as compensatory mitigation in certain, limited situations.”

Preservation is defined as the removal of a threat to, or preventing the decline of, natural resources by an action usually in or near those resources. Preservation maintains the capacity of an existing habitat to continue to provide the level of ecological functions and services it already provides. One of the most common examples is purchasing and placing in a conservation easement on privately-owned wetlands or other aquatic habitats that are under threat of loss or damage. Preserved areas are generally subject to the same requirements for long-term protection and management (discussed below in Sections D and E) as restoration and establishment sites.

Preservation does not provide new functions and services to offset the loss of functions and services elsewhere. Therefore, preservation alone as compensation results in a net loss of habitat. For this reason, preservation is often considered the least preferred compensatory mitigation option, behind restoration, enhancement, or establishment.

However, preservation also can have long-term benefits, particularly in areas where habitats are being lost or degraded rapidly and/or opportunities for other types of compensation are limited. Under the USACE and EPA 2008 Clean Water Act (CWA) Mitigation Rule (33 CFR Part 332), preservation may be used to provide compensatory mitigation under certain conditions. These conditions include the following: the resources to be preserved provide important physical, chemical, or biological functions for the watershed; the resources to be preserved contribute significantly to the ecological sustainability of the watershed; and the resources are under threat of destruction or adverse modifications. Preserving these habitats may achieve a greater amount of habitat conservation than restoration alone. High-value habitats should be given priority in identifying areas suitable for preservation as compensatory mitigation (see B.1. for more information on high value habitats).

Preservation is generally most effective as compensatory mitigation when it is part of a mitigation plan³ that includes other compensatory activities, such as restoration. Therefore, this combined approach of preservation plus restoration is the preferred way of using preservation as compensation. However, preservation alone may be considered appropriate compensation under some circumstances and in some landscapes or seascapes with limited restoration opportunities.

Factors to consider in determining whether preservation may be appropriate compensation include the following:

- Characteristics of the area to be preserved
 - The overall ecological value of the area to be preserved and how the preserved area contributes to ecosystem integrity
 - The connectivity and proximity of the area to be preserved to other important habitats
 - Whether the area to be preserved is a difficult resource to replace
 - Whether the area to be preserved provides high-value habitat for a trust resource (see B.1.)
 - Whether the area to be preserved is a priority area or habitat type in conservation plans, recovery plans, watershed plans, or other similar documents
 - Whether the area to be preserved acts as a buffer for high-value resources
 - Whether the area to be preserved can act as a sea-level rise retreat corridor or provide other benefits that contribute to climate resiliency for the affected trust resources
 - Whether the area, once preserved, will be durable
- Level of current protection and/or vulnerability of the area to be preserved

³ Mitigation plans are required under the Clean Water Act Mitigation Rule, (33 CFR 332.4(c)). Under other authorities, equivalent plans are usually required but may not be called mitigation plans. In this Procedure, the term “mitigation plan” encompasses all plans for how offsets will be achieved, e.g., through compensatory mitigation.

- Whether the area to be preserved is already under a conservation easement or some other protection
- Vulnerability of the area to be preserved to loss or degradation due to development or other habitat change
- The impact for which the area to be preserved would serve as compensation
 - Whether the impact requiring compensation reduces function, but not acreage (e.g., an impact that degrades the wetland but does not convert the wetland to non-wetland, or one that causes a temporary functional loss)
 - Whether the impact requiring compensation is to a low-value habitat due to degradation or fragmentation

Because preservation alone does not replace lost functions, the amount of preservation required to compensate for an impact should be greater than would be required if the compensation was achieved through restoration.

Areas preserved as compensatory mitigation should be maintained over the long term in the same manner as other forms of compensatory mitigation. Long-term management, maintenance plans, and sufficient funding for the long-term stewardship of the preserved area are necessary to achieve the full benefits of preservation.

B. Natural Resource Assessment and Valuation

The Policy states, “NOAA will use the best scientific information available in recommending, planning, implementing, and monitoring mitigation.”

Natural resource assessment is an essential part of science-based mitigation. An assessment provides information about the functions and services provided by a species, habitat, or ecosystem. These functions and services should be assessed at both the impact site and any potential compensation site using the same methodology. Since most healthy ecosystems contain myriad species, a subset of “evaluation species” may be used for assessment. Assessments may reveal that some habitats are more valuable than others for achieving conservation objectives. This variability in habitat value is important to all aspects of mitigation, particularly avoidance of impacts to high-value habitats. It also affects determining how much of one kind of habitat is necessary to offset impacts to another habitat that may have a different value with respect to achieving conservation objectives.

1. Evaluation Resources

To determine appropriate mitigation, NOAA may use a subset of trust resources, or “evaluation resources,” to characterize the impacts to all trust resources. NOAA should select a set of evaluation resources sufficient to represent the effects of an action to the full suite of affected resources. The impact assessment and recommended or required mitigation measures should encompass effects on all species and/or habitats for which NOAA is

required to issue opinions, permits, recommendations, or other regulatory determinations, no matter which evaluation resources are used. Mitigation measures formulated for the evaluation resources should also mitigate impacts to other similarly affected resources.

There are numerous characteristics of evaluation resources that may be useful in mitigation planning:

- Species or habitats with special statutory or regulatory status (e.g., ESA-listed species or physical or biological features of designated critical habitat; designated habitat areas of particular concern pursuant to the essential fish habitat provisions of the Magnuson-Stevens Fishery Conservation Act (MSA); designated national marine sanctuaries or marine national monuments; and special aquatic sites under the CWA)
- Species, habitats, or their features that are addressed in conservation or recovery plans relevant to the affected area and for which habitat objectives are articulated
- Species strongly associated with an affected habitat type
- Species or habitats for which limiting factors are well understood
- Species or habitats that perform a key role in ecological processes which may, therefore, serve as indicators of ecosystem health
- Species that require large areas of contiguous habitat, connectivity between habitats, or a distribution of suitable habitats along migration/movement corridors
- Species that serve as indicators of ecosystem health and functions
- Species that belong to a group of species (a guild) that uses a common environmental resource
- Species or habitats for which sensitivity to one or more anticipated effects of the proposed action is documented
- Species or habitats of cultural or religious significance to tribes⁴
- Species or habitats that provide monetary and non-monetary benefits to people from consumptive and non-consumptive uses, including fishing, hunting, bird watching, and educational, aesthetic, scientific, or subsistence uses
- Species or habitats with characteristics, such as those above, that are also easily monitored to evaluate the effectiveness of mitigation actions
- Species or size classes of species that would be subject to direct mortality as a result of an action
- Habitats that are difficult to replace or require long periods of time to mature

2. Habitat Assessment

The purpose of habitat assessment is to quantify the value of the habitat in a way that can be used to determine appropriate mitigation, including equivalent replacement. NOAA will

⁴ NAO 218-8: Policy on Government-to-Government Consultation with Federally Recognized Indian Tribes and Alaska Native Corporations.

assess the overall value of affected habitats by considering their (a) scarcity, (b) suitability as habitat for affected NOAA trust resources, and (c) importance to achieving conservation objectives in a landscape or seascape context.

Scarcity is the relative spatial extent (e.g., rare, common, or abundant) of the habitat type in the relevant context (e.g., landscape or seascape, species or habitat range). *Suitability* is the relative ability of the affected habitat to support one or more elements of the affected resources' life history (e.g., reproduction, rearing, feeding, dispersal, migration, or resting protected from disturbance) stages compared to other similar habitats. Suitability may also be related to the condition of the habitat. *Importance* is the relative ecological significance of the affected natural resource, compared to other examples of a similar natural resource in the landscape or seascape context, to achieving conservation objectives for NOAA trust resources. Habitats of high importance can be irreplaceable, difficult to replace, take a long time to replace, and/or be critical to NOAA trust resources by virtue of their role in achieving conservation objectives within the landscape or seascape (e.g., sustaining core habitat areas, linkages, ecological functions).

The relevance of these three characteristics—scarcity, suitability, and importance—to habitat value will vary depending on local or regional context. For example, in some remote areas with little human alteration, a given habitat (e.g., coastal wetlands) may not be scarce, but it could be of high suitability and importance and therefore of overall high value. In addition to these three characteristics, NOAA may use additional criteria for assessing habitat value that are based on best available scientific information for evaluating habitat developed for specific regions or NOAA trust resources, such as the Coral Reef Task Force's Coral Mitigation Handbook⁵ or National Marine Sanctuary (or National Marine Sanctuary System) Condition Reports⁶.

The ability of specific habitats to maintain ecosystem functions and services for NOAA trust resources varies widely, such that the loss or degradation of higher value habitats has a greater impact on conservation objectives and functional ecosystems than the loss or degradation of an equivalent area of lower value habitats. Although the NOAA Mitigation Policy applies to all affected habitats, regardless of their value in a conservation context, NOAA staff should consider variations in habitat value in formulating appropriate mitigation.

Areas containing high-value habitats are often, but not always, identified in conservation or management plans addressing resources under NOAA authorities, (e.g., in ESA recovery plans, habitat areas of particular concern identified in essential fish habitat designations pursuant to the MSA fishery management plans, MMPA conservation plans, and national marine sanctuary management plans) or federal, state/territorial, tribal, and local government management plans, community-based landscape conservation plans, or similar plans.

⁵ Handbook on Coral Reef Impacts: Avoidance, Minimization, Compensatory Mitigation, and Restoration (U.S. Coral Reef Task Force, 2016)

⁶ Available at <https://sanctuaries.noaa.gov/science/condition/>

3. Assessment of Proposed Actions and Mitigation Measures

Robust assessment methodologies help to ensure that impacts to NOAA trust resources are avoided and minimized and that unavoidable impacts are offset to the full extent of our authorities through effective compensation. In order to sufficiently offset impacts, an assessment of the effects of the proposed action should characterize the affected resources and consider the full spatial and temporal extent of direct, indirect, and cumulative effects to NOAA trust resources. The spatial assessment should consider the effects in the appropriate landscape and/or seascape context. Temporal considerations should include the loss of functions and services that occurs after project impacts and before compensation replaces those functions and services.

An assessment of the affected area or species should evaluate expected natural disturbance regimes and species succession; implementation of approved restoration/improvement plans; and reasonably foreseeable conditions resulting directly or indirectly from any other factors that may affect the evaluation of the project, including climate change.

The best available assessment methodologies should be used to measure or characterize resource conditions, ecological functions, and/or services at impact sites and compensation sites. Assessments should include all resources that may be important for maintaining habitat for trust resources, regardless of their perceived quality. Those methodologies should contain the following characteristics:

- Assessment methods should be science-based, consistent, and related to the conservation objectives associated with the affected trust resources
- Assessment methods should be applied in a manner consistent with the resources and purpose for which they were designed
- Assessment methods may be species- or habitat-based, and may use evaluation resources as a proxy for determining impacts on a suite of resources
- Assessment methods should assess the overall value of affected habitats or evaluation resources by considering their scarcity, suitability, and importance to achieving conservation objectives
- Assessment methods should account for frequency and duration of the impact and temporal loss
- The same assessment method should be used to assess adverse impacts and the effects of mitigation measures or, if different assessment methods must be used, the relationship (conversion) between the results of the different assessment methods should be transparent and scientifically defensible
- Assessment methods should characterize the impact site and the compensation site with the same level of detail
- If resources at the impact and compensation sites are dissimilar, assessment methods should have mechanisms for determining equivalent offset for dissimilar resources
- Assessment methods should take into account the risk associated with mitigation
- Uncertainty should be noted where it exists and methods should be based on

- the best scientific data available to gauge the adequacy of the mitigation
- The impacts of climate change (using appropriate climate model projections) should be considered when evaluating the effects of an action and developing appropriate mitigation measures

While actions designed to restore or create habitats generally do not require compensatory mitigation, some of these projects may result in habitat disturbance and/or loss. Assessments of these projects should evaluate both the positive and any negative effects of the project, with compensatory mitigation required if specific and important functions and habitats lost will not be adequately offset by the benefits of the restoration.

C. Timing of Compensation

The Policy states, “NOAA will support mitigation measures that provide a high degree of certainty in their effectiveness and durability while also achieving the best conservation outcome for NOAA’s trust resources.”

To increase certainty in mitigation implementation, success, and sustainability, NOAA generally prefers compensatory mitigation that is implemented prior to project impacts over compensatory mitigation implemented after project impacts. However, achieving the best conservation outcome for the affected resources is the most important consideration in evaluating compensatory mitigation, regardless of the timing.

The Policy also states, “Compensatory mitigation should be proportional in scale to impacts to NOAA trust resources and of a sufficient quantity and quality to offset those impacts, including any interim losses.”

If compensatory mitigation is implemented after adverse effects occur, which is often the case in NRDA actions, permittee-responsible compensation, and in-lieu fee programs, the compensation must account for interim loss.

D. Maximizing Certainty of Mitigation Measures

The Policy states, “NOAA will support mitigation measures that provide a high degree of certainty in their effectiveness and durability while also achieving the best conservation outcome for NOAA’s trust resources.”

To increase certainty in mitigation implementation, success, and sustainability, NOAA recommends that the considerations below be incorporated and documented in mitigation plans to the greatest extent feasible. While incorporating these considerations will help reduce uncertainty, uncertainty cannot be entirely eliminated. In some cases, the level and type of uncertainty associated with the compensatory mitigation project may create the need for an increased amount of compensation to assure that impacts are sufficiently offset, or a longer period of monitoring to ensure success. The following considerations should apply equally to all forms of compensation including banks, in-lieu fee programs, proponent-responsible compensation, or other arrangements.

1. Considerations for Implementation of Mitigation Measures

- Identify the entities implementing mitigation measures and their legal authority to implement the measures
- Identify and describe the legal requirements/authorizations necessary to implement the mitigation, and provide a plan detailing the steps necessary to obtain these authorizations (e.g., NEPA, CWA Section 404 and 401 permits, ESA consultations and permits, landowner permission)
- Specify the level of funding necessary for implementation, monitoring, and long-term maintenance, and describe how the funding will be obtained
- Describe the steps necessary to implement the mitigation project and provide an implementation schedule
- Document approval of a mitigation plan by all appropriate parties

2. Considerations for Effectiveness of Mitigation Measures

- Describe and quantify, to the greatest extent possible, the nature and extent of the impacts on trust resources and how the mitigation avoids, minimizes, or compensates for those impacts
- Summarize available information on the effectiveness of similar mitigation measures implemented elsewhere, including an evaluation of whether the effectiveness is likely to translate to the proposed location
- Summarize the qualifications and track record of the entity(ies) responsible for implementing the mitigation
- Provide project design, goals and objectives, interim and final performance criteria, and credit and debit calculations and projections. These criteria should be written in a way to trigger adaptive management of the project, as appropriate.
- Provide plans for pre- and post-construction monitoring (see E.1)

3. Considerations for Durability of Mitigation Measures

- Describe how long the mitigation measures are intended to persist on the landscape and/or seascape and provide the desired functions and services
- Identify non-compatible uses (activities that are not compatible with the long-term success of the site as compensatory mitigation) and develop plans to prevent or manage them
- Describe the financial assurances that will be provided by the project proponent sufficient for successful development, maintenance, and long-term stewardship of the mitigation measures
- Describe the legal mechanism that will ensure compensatory mitigation sites are protected (e.g., a conservation easement)
- Clearly identify who has responsibility for the long-term stewardship and success of the compensatory mitigation project
- Outline the process for modifying the project and success criteria should adaptive management be necessary

4. Considerations for Resilience of Mitigation Measures

- Describe the ability of the mitigation measures to continue to function as intended under changing environmental conditions. Take into account existing and projected environmental changes including the effects of climate change, sea-level rise, adjacent development, and changes in water quality. In other words, will the mitigation measures provide long-term ecosystem structure, function, and services given the projected changes in conditions?
- Identify and describe the potential effects of climate-related environmental changes (e.g., sea level, salinity, air and water temperature, and streamflow) on the effectiveness and durability of the proposed mitigation measures
- Prioritize adaptability. Design and provide mitigation measures with the ability to adapt to future environmental change. Identify adaptive management measures to reduce the risk of adverse impacts to the mitigation site due to climate-related or other environmental changes.

E. Monitoring, Adaptive Management, and Site Protection

The Policy states, “To increase the certainty of compensatory mitigation outcomes, projects should have measurable ecological performance standards, detailed monitoring requirements, an adaptive management plan, and a long-term management plan.”

Monitoring, adaptive management, and site protection are measures that can be implemented to ensure the mitigation is successful. Mitigation sites and activities should be evaluated regularly to ensure that the mitigation activity meets its intended goals and objectives. This evaluation should include not only monitoring to determine if the mitigation project is meeting its performance standards, but also a comprehensive consideration of whether the avoidance, minimization, or offset that should be provided by the mitigation activity is being achieved. Adaptive management and long-term stewardship are also necessary for mitigation success, as is long-term protection of the mitigation site.

1. Monitoring

All mitigation plans should address monitoring requirements, including:

- The parameters or metrics to be monitored
- The length of the monitoring period
- The entity responsible for conducting the monitoring
- The frequency for submitting monitoring reports
- The entity responsible for submitting those monitoring reports
- The entity responsible for reviewing those reports

The mitigation plan should provide for a monitoring period that is sufficient to demonstrate that the mitigation project has met performance standards. For example, the 2008 CWA Mitigation Rule establishes standards and criteria for the use of all types of compensatory mitigation, authorized through the issuance of Department of the Army permits pursuant to section 404 of the CWA and/or sections 9 or 10 of the Rivers and Harbors Act of 1899.

This includes the requirement for monitoring for a minimum of five years with longer monitoring periods required for aquatic resources with slow maturation rates (e.g., forested wetlands and corals).

2. Adaptive Management

The mitigation plan should include an adaptive management plan to address unforeseen changes in site conditions or other components of the mitigation project. The adaptive management plan should identify the following:

- Which site conditions or performance standards will be monitored
- The circumstances under which adaptive management measures will be triggered
- Actions that will be taken in response to specific deficiencies, i.e., in response to a trigger being met
- The entity responsible for implementing those actions

Measures to be taken in an adaptive management plan if triggers are met may include site modifications, design changes, revisions to maintenance actions, and revised monitoring requirements. The measures should be designed to ensure that the modified mitigation project provides aquatic resource functions comparable to those described in the mitigation plan objectives. In addition, mitigation project sponsors should demonstrate during the planning phase that they have set aside sufficient funds to implement adaptive management actions that are necessary for the project to meet performance standards.

3. Long-Term Management

The mitigation plan should identify the entity responsible for ownership of all compensatory mitigation sites and long-term management of the compensation project. The permit conditions or instrument may contain provisions allowing the action agency or project proponent to transfer the long-term management responsibilities of the compensatory mitigation project site to a land stewardship entity, such as a public agency, non-governmental organization, or private land manager. Responsibility should only be transferred to entities that are able to demonstrate a capacity to fulfill all the obligations of the permit or instrument.

A long-term management plan should include a description of long-term management needs, annual cost estimates for these needs, and the funding mechanism that will be used to meet those needs. Appropriate long-term financing mechanisms include non-wasting endowments, trusts, contractual arrangements with future responsible parties, and other appropriate financial instruments. In cases where the long-term management entity is a public authority or government agency, that entity should provide a plan for the long-term financing of the site. Long-term management plans should account for any uncertainty associated with climate-related or other environmental changes and include appropriate monitoring and maintenance measures.

4. Site Protection

Any aquatic habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation project should be provided long-term or, whenever possible,

permanent protection. Methods of providing permanent protection include permanent real estate instruments and other long-term mechanisms, such as conservation easements held by federal, tribal, state/territorial, or local resource agencies, non-profit conservation organizations, or private land managers; the transfer of title to such entities; and restrictive covenants. Many intertidal, sub-tidal, and submerged habitats are in public ownership, which may preclude permanent protection. For compensation sites on public lands, long-term protection may be provided through alternative mechanisms such as conservation land use agreements or renewable leases.

To provide sufficient site protection, a conservation easement or restrictive covenant should, where practicable, establish in an appropriate third party (e.g., governmental or non-profit resource management agency) the right to monitor and enforce site protections. The real estate instrument, long-term management plan, or other mechanism providing long-term protection of the compensatory mitigation site should prohibit incompatible uses (e.g., clear cutting or mineral extraction) that might undermine achieving the objectives of the compensatory mitigation project. Where appropriate, compatible uses (e.g., recreational use, fishing or hunting) may be authorized in the site protection agreement.

F. Climate Change and Mitigation

The Policy states, “NOAA will consider how the effects of climate change (e.g., sea-level rise, changes in species and habitat ranges) may influence the effectiveness and resilience of some mitigation approaches.”

Climate change has become a key lens through which to view mitigation, since climate change affects NOAA trust resources throughout marine, coastal, and riverine ecosystems. Effects on species and habitats from climate change include changes in air and water temperature, ocean acidification, sea level rise, water column stratification, reduced sea-ice extent, changing ocean circulation, changes in precipitation and freshwater input, increased deoxygenation, changes in species phenology, changes in marine and aquatic food web ecology, and changes in species and habitat ranges. These effects should be taken into consideration when developing mitigation recommendations, requirements, and plans.

Climate informed mitigation takes into account the following:

- Synergistic effects, including the effects of multiple climate change impacts (e.g., the combined effects of ocean acidification and increased temperature), as well as natural and anthropogenic stressors (e.g., extreme events like droughts and floods, pollution, land and resource use, and invasive species)
- Climate projections, which should be evaluated based on the appropriate Intergovernmental Panel on Climate Change (IPCC) pathway. When data specific to the appropriate pathway are not available, mitigation should be informed by the best available scientific information that is as consistent as possible with the underlying direction of that pathway.⁷

⁷ NOAA programs may take a different approach in the pathways they use for evaluation based on the goals of the program. For example, listed species may be evaluated only according to a more conservative IPCC pathway, while essential fish habitat might be evaluated using a range of IPCC pathways.

- Changes in property ownership that may occur if an area becomes subtidal or is altered in other ways that affect its ownership status
- The timeframe over which the mitigation needs to persist. The effects of climate change need to be considered over the long term, including how those effects might change over time. Near-term effects also need to be considered for situations in which changes are occurring rapidly, e.g., in areas where local inundation is so rapid that a restored low marsh will drown in a short time period.

Since climate change considerations function as a lens through which the mitigation sequence is viewed, other mitigation procedures and principles are affected accordingly. Three such cases are highlighted below:

1. Adaptive Management Strategies for Climate Change

Where appropriate, climate-informed mitigation should integrate adaptive management strategies to improve mitigation resilience to future climate change effects and maximize mitigation effectiveness and durability. Examples of adaptive management for climate-informed mitigation include the following:

- Managing tidal marshes to accommodate sea level rise, via measures, such as:
 - thin-layer placement of sediment on restored marshes
 - basing marsh planting elevations and locations on anticipated rates of sea level rise
 - identifying and mapping areas where marsh migration is occurring and removing any barriers to that migration
- Installing culverts large enough to accommodate increases in sea level or changes in precipitation rates and snowmelt that affect streamflow
- Incorporating stone sills or toe structures into shoreline restoration projects to dissipate wave energy (which may increase as a result of climate change)
- Designing fish passage systems to accommodate changing hydrologic (flow) regimes and temperatures.

All climate-informed adaptive management should consider the broader landscape or seascape context as described in procedure A and be implemented within that context, to the greatest extent possible.

2. Employing the Best Scientific Information Available Related to Climate Change

Climate-informed mitigation requires special consideration of the NOAA mitigation principle to employ the best scientific information available. Special attention to using best available science for the design of climate-informed mitigation is warranted since (i) the scientific literature on climate impacts to NOAA trust resources is increasing rapidly and addressing knowledge gaps in the response of species and habitats to climate change; and (ii) the rate and magnitude of climate change in coming decades depends on the global future energy pathway, so the best scientific information available will be updated accordingly.

G. Compensation in Dynamic Environments

The Policy states, “achieving mitigation goals may require the use of measures that do not have a high degree of certainty.”

Providing appropriate offsets for losses of estuarine, marine, and riverine habitat may require locating compensation sites in areas experiencing subsidence, erosion, sea level rise, shifting landforms, or other changes that characterize dynamic environments. These areas provide important habitats despite, and in some cases because of, the rapid changes occurring there. Although restoration or other kinds of compensation in these environments can be risky, this risk can be managed and minimized through the use of adaptive management plans. Therefore, compensation in dynamic environments should not be avoided if it will provide the best conservation outcome for NOAA trust resources.

Compensation sites in dynamic environments should be designed in a way that considers changing conditions and supports transition within natural variations or along a natural trajectory. Bar-built estuaries, which contain a mosaic of habitat types that change in location and extent over time, are an example of habitats with substantial natural variation. Marshes along the east coast of the United States are an example of habitats transitioning along a trajectory. Where sea-level rise is a concern, upland buffers that will allow the compensatory mitigation habitats to migrate inland should be one factor considered when evaluating the suitability of a site. An adaptive management plan (see Section E.2) is particularly important for these sites, not only to address unforeseen circumstances but also to address how well the site is adapting to changing conditions.

Depending on the rate of change and the needs of trust resources, it may be appropriate to offset loss of a habitat type that has a relatively short lifespan with a habitat that will persist long-term and eventually transition into the type of habitat lost. For example, in areas with extensive low marshes undergoing a high rate of change, establishing high marsh as compensation for low marsh might be appropriate. However, as with any out-of-kind compensation, the trade-offs of the different functions and services provided by the different types of habitat must be considered. Species that rely on low marsh will experience a loss of suitable habitat if the loss of low marsh is offset with high marsh. In some cases the best option might be to design a site for current habitat needs, as well as habitat transitions over time (e.g., a site that includes both low marsh and high marsh that will transition to low marsh).

Even in rapidly changing environments, compensation sites need to have long-term protection (see section E.4).

H. Methods of Compensatory Mitigation

The Policy states, “NOAA will support mitigation measures that provide a high degree of certainty in their effectiveness and durability while also achieving the best conservation outcome for NOAA’s trust resources.”

The most common methods of compensatory mitigation include the restoration, preservation,

enhancement, and establishment of aquatic habitats. However, there are other methods, such as the use of mooring buoys to protect seagrass or coral, that can sometimes be used to fulfill compensation requirements. In all instances, NOAA should choose the compensatory mitigation method that achieves the best conservation outcome for the affected species and/or habitat.

1. Restoration, Preservation, Enhancement, and Establishment

Restoration, preservation, enhancement, and establishment of aquatic habitats are the most commonly-used methods of compensatory mitigation. However, more is known about these compensation methods in some habitats (e.g., salt marsh) than in others (e.g., seagrass, tidal flats, mangroves, or corals). Restoration, preservation, enhancement, and establishment in these less well-studied habitats involves a certain amount of risk, but this risk can be addressed by applying the considerations in Section D. Maximizing Certainty of Mitigation Measures.

2. Invasive Species Prevention, Control, or Eradication

Invasive species are a widespread threat to NOAA trust resources. Their prevention, control, and eradication are a priority in supporting conservation goals. The threats that invasive species pose should be explicitly considered in compensatory mitigation planning, as well as during NOAA's review of mitigation proposals. To increase the probability of success, an invasive species monitoring and eradication plan should be included as part of the overall compensation plan.

The prevention, control or eradication of invasive species may be appropriate compensatory mitigation when invasive species impair ecological functions and their eradication can result in a measurable and long-term reduction of the invasive species. Assessment methodologies should be used to quantify the benefit provided by the invasive species eradication and control measures. When compensatory mitigation consists of invasive species prevention, control or eradication, it is extremely important that long-term management plans identify measures to ensure that invasive species eradication and control efforts are durable.

3. Combining Research or Education with Compensatory Mitigation

Research and education, although important to the conservation of many resources, are not typically considered appropriate methods of compensatory mitigation by themselves, because they do not provide ecological functions and services that directly offset adverse effects to species or their habitats. However, research and education could be measures included in compensatory mitigation plans to enhance the effectiveness of other activities that more directly result in compensation. For example, a compensatory mitigation plan could include not only habitat restoration, but also a survey of benthic invertebrates that will inform the adaptive management plan, or inform key data needs to help quantify the value of the affected trust resources. Another example is the installation of signage that not only educates the public but also reduces the adverse impacts of inappropriate public use of a sensitive site.

Research may be particularly appropriate in implementing climate-informed mitigation. For instance, sea-level rise is causing some marshes to migrate inland, but many factors affect the

rate of this migration. A compensatory mitigation plan for an impact to a marsh could include not only restoring a marsh but also conducting research to identify the factors controlling marsh migration in the surrounding area. This information could inform future decisions about marsh compensatory mitigation.

In rare circumstances, NOAA may recommend research and/or education as compensatory mitigation without pairing it with other compensation activities. This could be appropriate when the research or education is directly linked to reducing threats or provides a quantifiable benefit to trust resources. These circumstances may exist when (a) a major threat to a resource is something other than habitat loss, (b) NOAA can reasonably expect the outcome of research or education to contribute significantly to our understanding of the species or habitat, or (c) no other reasonable options for compensatory mitigation are available. This approach is consistent with NOAA's Policy on using best scientific information available, which includes research.

4. Special Considerations for Species Compensation

Compensation for effects on species can include controlled propagation, population augmentation, reintroductions, and captive rearing and release of individuals of affected species.

Under certain circumstances these activities may offset losses from an action with adverse effects on species. However, these approaches are not always appropriate forms of compensation. For ESA-listed species, any use of controlled propagation needs to be consistent with the NMFS/FWS Policy Regarding Controlled Propagation of Species Listed Under the Endangered Species Act.

I. Mechanisms of Compensation

The Policy states, "NOAA will support mitigation measures that provide a high degree of certainty in their effectiveness and durability while also achieving the best conservation outcome for NOAA's trust resources."

Multiple administrative mechanisms are currently available to accomplish compensatory mitigation, and more may develop in the future. Currently the three most common mechanisms are mitigation/conservation/restoration banks, in-lieu fee programs, and proponent-responsible compensation (for additional information see Appendix A). Each of these mechanisms has their own considerations with regard to timing of the compensation, who retains responsibility for the success of the compensation, and the certainty of their effectiveness and durability. However, not all of these mechanisms may be available to provide compensation for any given impact. Mechanisms should be chosen based on which option provides the best compensation for NOAA's trust resources.

In applying different mechanisms of compensation, NOAA works with many partners. In some cases, these partnerships may involve leveraging different programs and authorities through shared responsibility for a joint bank, implementing compensation on public lands, or addressing questions about the use of in-lieu fees as non-federal match for federal grants.

1. Banks, In-Lieu Fee Programs, and Proponent-Responsible Compensation

Banks, in-lieu fee programs, and proponent-responsible compensation are each associated with different levels of certainty. A bank usually provides the most certainty because bank credits cannot be used as compensation unless specific milestones are achieved, including a compensation plan coordinated with an interagency review team (IRT), as well as appropriate real estate and financial assurances. Although a limited number of bank credits can be released before habitat improvement activities take place, most credits are released only after habitat improvement has occurred and the anticipated functions and services are present. Thus, the use of bank credits can help reduce risk that mitigation will not be fully successful. In-lieu fee programs provide some of the same advantages as banks in terms of advance planning and requirements for a compensation plan approved by an IRT. However, in-lieu-fee programs generally undertake habitat improvement activities only after credits are purchased and thus the probability of success with in-lieu-fees is less than it is for banks. The habitat improvement associated with proponent-responsible compensation also usually takes place after credits are purchased. Furthermore, proponent-responsible compensation usually involves smaller sites than a bank or in-lieu -fee program. For these and other reasons, proponent-responsible compensation is usually associated with the highest uncertainty of success.

2. Joint/Combination Banks

A “joint” or “combination” bank is a bank developed to address resources protected under two or more statutes, including federal, state/territorial, tribal and local authorities. NOAA supports the development of joint banks when their use would be appropriate and beneficial to our NOAA trust resources. NOAA should actively engage with agency partners and bank sponsors to streamline the process of joint bank development to the greatest practicable extent.

Joint banks are discussed in the USACE and EPA 2008 CWA Mitigation Rule⁸. The potential advantages of a joint bank approach include these considerations:

- Projects designed to address multiple authorities may be larger and more cost effective than projects addressing only one authority, and can restore multiple ecosystem processes and services
- Large projects may be more feasible in joint banks, more durable and less susceptible to perturbation, and therefore may have a higher probability of success and long-term sustainability
- Combining multiple authorities may create a larger market for restoration credits, which reduces risk for bank developers
- Joint banks can provide procedural efficiencies in the review and certification processes, resulting in reduced transaction costs for developers and government

In addition to the potential benefits described above, the joint bank approach poses some

⁸ 33 CFR 332.3(j).

unique issues and challenges. First, a common metric for measuring debits and credits must be identified. For compensation projects, the metric selected must be appropriate for calculating debit and credit across all types of resources addressed by the project.

In order to prevent double-counting of benefits to the environment, joint banks must ensure that each credit is sold only once. Credits that are “stacked” (i.e., credits that represent a “bundle” of benefits to multiple resources) may not be “unstacked”; individual functions and services cannot be sold multiple times to offset multiple resource impacts. As with any compensatory mitigation project, a system of tracking credit transactions is necessary to provide transparency and accountability.

3. Use of In-Lieu Fee Programs with Financial Assistance Awards for Compensatory Mitigation

Many financial assistance or grant programs require or recommend a “non-federal match,” which is the non-federal share of costs that the grantee or the grantee’s partners are required to contribute to accomplish the purposes of a federal grant. Non-federal matching funds generally include the following:

- Non-federal public or private funds
- Funds that are not used as non-federal match for any other federal program
- Unrecovered indirect costs
- Cash or in-kind services, fairly valued

NOAA has been asked if funds that are to be used to generate compensation, such as in-lieu fees or other types of prescribed fees, can be used as non-federal match. Compensatory mitigation fees can be used as non-federal match only under certain circumstances. Those circumstances are when 1) the fees are not associated with any compensation required under the Clean Water Act section 404 program, 2) the federal funds for which the compensatory mitigation fees are providing match will not be used to fulfill any of the requirements associated with the compensatory mitigation such as monitoring, maintenance, long-term management, or adaptive management, and 3) the entity administering the compensatory mitigation fees retains their responsibility to ensure the compensatory mitigation is successful. All three of these conditions must be met for compensatory mitigation fees to be used as non-federal match for federally funded restoration projects.

While there are limitations to what NOAA can and cannot accept as non-federal match, all compensatory mitigation funds can be leveraged to expand or improve a restoration project. For example, a habitat restoration project could be implemented alongside, or jointly with, a compensatory mitigation project so as to increase the size and benefit of both the restoration project and the compensatory mitigation project. CWA compensatory mitigation funds may be used to increase the length of a shoreline restoration project funded by NOAA funds and its separately sourced non-federal match.

4. Compensation on Public Lands

The use of publicly-owned lands to offset habitat loss on privately-owned lands requires

careful evaluation. A key consideration is that when compensation is located on private lands, one benefit is that the overall amount of protected area on the landscape is increased. When compensation is located on public lands, the benefits do not include the purchase and protection of the land. Locating compensation on public lands risks a long-term net loss in landscape capacity to sustain species by relying increasingly on public lands to serve conservation purposes.

When public lands are used for compensation, the ecological benefits already provided by the public land should not be included in an accounting of the benefits provided by any privately-funded compensatory mitigation. Therefore, the credits generated by restoration, enhancement, or other forms of mitigation on public lands should be fewer than the number of credits that equivalent activities would generate on private lands. Otherwise, the public could be perceived as subsidizing compensation for impacts on private lands.

NOAA acknowledges that public ownership does not automatically confer long-term protection and/or management, which may justify locating compensatory mitigation measures on public lands. Further, many NOAA trust resources are located on federal or state/territorial-owned submerged lands, thereby necessitating that NOAA consider compensation on public lands. When considering compensation for private land impacts on public lands, the following criteria should apply:

- Compensation on public lands is an appropriate means of achieving conservation goals
- Compensation on public lands provides additional functions and services above and beyond those provided by measures the public land manager/agency is foreseeably expected to implement absent the compensation, and only those additional functions and services are credited
- The additional functions and services are durable
- Compensation on public lands is consistent with and not otherwise prohibited by all relevant statutes, regulations, and policies
- The public land location provides the best possible conservation outcome, such as when private lands suitable for compensatory mitigation are unavailable or are available but do not provide an equivalent or greater contribution towards offsetting the impacts to meet conservation goals
- Compensation on public lands is the only feasible way to offset the impacts or injuries (i.e., estuarine and marine areas are generally public land, so restoring these habitats typically requires work to be conducted on public land)

For compensatory mitigation on public lands that are already designated primarily for the conservation of natural resources, such as National Wildlife Refuges, NOAA generally supports locating compensation on these lands only if it can be clearly and quantifiably demonstrated that the compensatory mitigation activities will result in functions and services above and beyond what is already conferred by the land's conservation status (often called "additionality").⁹ In other words, if a mitigation provider proposes to restore and preserve

⁹ This need for additionality is reflected in our definitions of "compensate" and "compensatory mitigation," which state that "Providing additional benefit is a requisite of compensation." Compensatory mitigation should ensure an

land that is already designated for the conservation of natural resources, the mitigation provider can take credit for only the functions and services that result from the additional restoration activities and the preservation of any land not already protected by its conservation status.

Similarly, NOAA generally only supports locating compensatory mitigation on private lands that are already designated for the conservation of natural resources, if it can be clearly and quantifiably demonstrated that the compensatory mitigation activities will result in functions and services above and beyond what is already conferred by the land's conservation status. In other words, if a mitigation provider proposes to restore and preserve land that is already under a conservation easement, the provider can take credit for only the functions and services that result from the additional restoration activities and the preservation of any land not already protected by a conservation easement.

IV. Attachments

Attachment A. Additional Information on Compensatory Mitigation Mechanisms

Attachment B. Definitions

Attachment C. Authorities and Direction for NOAA Mitigation Recommendations

additional benefit at the compensation site.

APPENDIX A: Additional Information on Compensatory Mitigation Mechanisms

Multiple administrative mechanisms are currently available to accomplish compensatory mitigation, and more may develop in the future. Currently the three most common mechanisms are proponent-responsible compensation; mitigation/conservation/restoration banks; and in-lieu fee programs.

Proponent-responsible compensation is compensation undertaken by the proponent of the project that requires compensatory mitigation. The project proponent is responsible for planning, completing, and monitoring the compensatory mitigation activities required by the authorizing agency. In these cases, the authorizing agency is responsible for ensuring compliance. Proponent-responsible compensation includes, for example, permittee-responsible mitigation as defined in the USACE and EPA 2008 CWA Mitigation Rule. Project proponents often work directly with authorizing and reviewing federal and/or state/territorial agencies in developing mitigation plans and monitoring mitigation sites.

A mitigation, conservation, or restoration bank is typically a site or suite of sites that has been restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts at other sites. The bank provides ecological functions and services expressed as credits that may be transferred or sold to offset impacts occurring elsewhere. In practice, we refer to “mitigation banks” as banks established to offset impacts to aquatic habitats under Section 404 of the Clean Water Act, “conservation banks” as banks established to offset impacts to species listed under the Endangered Species Act (ESA), and “restoration banks” as banks established for use under programs that seek compensation for damages incurred as a result of an oil spill, hazardous material release, or other incidents where federal laws such as the Oil Pollution Act are triggered. In addition, there are “combination or joint banks,” which are explained in the section above. For purposes of this policy, the term “banks” refers to all of these applications, unless noted otherwise.

In banks, responsibility for ensuring that compensatory mitigation activities are successfully completed may in some circumstances be transferred from the project proponent to the bank sponsor at the time of sale/transfer of credits. The compensatory mitigation and associated credits are typically generated in advance of the impacts for which they provide compensation¹⁰.

In-lieu fee mitigation occurs when a project proponent satisfies mitigation obligations by providing funds to a governmental, nonprofit, or for-profit entity that subsequently uses the funds for habitat restoration, establishment, enhancement, and/or preservation to generate credits. Like a mitigation bank, in-lieu fee mitigation typically provides offsetting mitigation

¹⁰ The exception is in NRDA, which is explicitly intended to be retrospective (i.e., it is not designed to compensate for authorized future impacts).

at a different site than the site where the impacts occurred. In-lieu fee programs resemble mitigation banks in that responsibility for ensuring that compensatory mitigation activities are successfully completed may in some circumstances be transferred from the project proponent to the in-lieu fee program operator at the time of sale/transfer of credits. In-lieu fee programs generally provide funds to perform compensatory mitigation after impacts have occurred. This contrasts with mitigation banks, where compensation activities are typically undertaken in advance of impacts, in order to generate mitigation credits that can be purchased to compensate for later impacts at other sites.

APPENDIX B: Definitions

The definitions in this section are for use in this Procedure and may not be identical to definitions in other documents.

Action - an activity or program implemented, authorized, or funded by federal agencies; or a non-federal activity or program for which NOAA has authority to make mitigation recommendations, specify mitigation requirements, or provide technical assistance for mitigation planning.

Avoid/Avoidance - not taking a certain action or parts of an action, or modifying the action to avert all impacts.

Bank - a site or suite of sites that provide ecological functions and services expressed as credits that are used to offset losses or injuries occurring elsewhere.

Compensate - replacing or providing equivalent substitute resources and/or environments. Providing additional benefit is a requisite of compensation.

Compensatory Mitigation - a method of offsetting adverse impacts to NOAA trust resources by replacing or providing equivalent substitute resources through the restoration, establishment, enhancement, or preservation of resources with commensurate functions and services. Providing additional benefit is a requisite of compensatory mitigation.

Condition - the relative state of a habitat, species, or other trust resource as characterized by its species composition, diversity, and functional organization comparable to reference resources in the region.

Conservation - a general term for the collective practices, plans, policies, and science that are used to manage NOAA trust resources.

Conservation Objective - a measurable expression of a desired outcome for a species or habitat. Population objectives are expressed in terms of abundance, trend, vital rates, or other measurable indices of population status. Habitat objectives are expressed in terms of the quantity, quality and spatial distribution of habitats.

Conservation Planning - the identification of strategies for achieving conservation objectives. Conservation plans include, but are not limited to, recovery plans, habitat conservation plans, watershed plans, green infrastructure plans, and others developed by federal, state/territorial, tribal or local government agencies or non-governmental organizations.

Credit - a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of ecological functions at a compensatory mitigation site.

Critical habitat - areas designated under Section 4 of the ESA, consisting of “(i) the specific

areas within the geographical area occupied by the species, at the time it is listed . . . on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed . . . upon a determination by the Secretary that such areas are essential for the conservation of the species.” 16 U.S.C. § 1532(5)(A). Designated critical habitat is listed in 50 CFR parts 17 or 226.

Cumulative Effects - the incremental environmental impact or effect of an action or proposed action, together with impacts of past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.¹¹

Debit - a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the loss of ecological functions at an impact or project site. The measure of ecological functions is based on the resources adversely affected or injured.

Durability - ability of a mitigation action to persist on the landscape or seascape and provide the desired ecosystem functions and services for as long as required to provide successful mitigation.

Enhancement - the manipulation of the physical, chemical, or biological characteristics of a natural resource to heighten, intensify, or improve a specific function(s). Enhancement results in the gain of selected natural resource function(s), but may also lead to a decline in other function(s).

Equivalent - corresponding or virtually identical in effect or function.

Establishment - the manipulation of the physical, chemical, or biological characteristics present to develop a specific natural resource on a site that did not previously have that resource.

Essential Fish Habitat - areas designated in fishery management plans under the MSA as “those waters and substrate necessary to federally-managed fish and shellfish for spawning, breeding, feeding or growth to maturity.” 16 U.S.C. §1802(10)

Evaluation Resources - a subset of species or habitats, or assemblages of species or habitats, selected for effects analysis and mitigation planning.

Human systems - human system refers to the way humans contribute in shaping and modifying the environment. Human systems include transportation, social services, the economy, and culture, among others.

Impact - a change (usually a decrease but this term can encompass an increase as well) in the

¹¹ This definition is similar to that provided by the Council on Environmental Quality (CEQ) regulations implementing NEPA. See 40 CFR 1508.7. It should be noted that this definition differs from the definition of “cumulative effects” provided in 50 CFR 402.02, which is the appropriate definition to be used in the context of implementing Section 7 of the ESA.

quality or quantity of NOAA trust resources.

Importance - the relative ecological significance of the affected natural resource, compared to other examples of a similar natural resource in the landscape or seascape, to achieving conservation objectives for NOAA trust resources.

In-lieu Fee - a third-party arrangement where governmental, nonprofit, or for-profit entities assume the compensatory requirement by receiving funds from a proponent for habitat restoration, establishment, enhancement, and/ or preservation to generate credits to compensate for a specific project impact.

Interim loss - the loss of natural resource functions or services associated with the time lag between T1 (the time at which the natural resource functions or services are lost due to injury or authorized impact) and T2 (the time at which the restored resources or compensatory mitigation have reached a functional level where they are replacing the functions or services lost). Also known as temporal loss.

Invasive species - a non-native organism whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health.

Landscape - a land area encompassing an interacting mosaic of ecosystems and human systems that is characterized by common management concerns. Relative to the Policy and this Procedure, such management concerns relate to conserving NOAA trust resources. Landscape is not defined by the size of the area, but rather the interacting elements that are meaningful to the conservation objectives for the resources under consideration.

Minimize - limiting the degree or magnitude of an impact, action, or the action's implementation.

Mitigation - measures taken to avoid, minimize, and compensate for adverse impacts to resources.

NOAA trust resources - living marine resources and their habitats, which are commercial and recreational fishery resources (marine and estuarine fish and shellfish, including diadromous fish species); endangered and threatened marine species (including diadromous fish species) and their designated critical habitats; marine mammals and marine turtles; marshes, mangroves, seagrass beds, coral reefs, and other coastal habitats; areas identified as essential fish habitat (EFH); marine habitats and resources associated with national marine sanctuaries, national marine monuments, and other protected places; and aquatic habitats and resources associated with the Great Lakes.

Non-Federal Match - the non-federal share of costs that the grantee or the grantee's partners are required to contribute to accomplish the purposes of a federal grant.

Offset - see "compensate."

Preservation – the removal of a threat to, or preventing the decline of, natural resources by an action usually in or near those resources. This term includes activities commonly associated with the protection and maintenance of natural resources through the implementation of appropriate legal and physical mechanisms.

Proponent-responsible compensation - mitigation for which the proponent of the project requiring compensatory mitigation is responsible for implementing and/or ensuring that the compensatory mitigation activities are completed and successful. While the project proponent is responsible for complying with the terms of the permit, compliance is legally placed on the federal action agency.

Project proponent – the entity proposing an action, and if applicable, any applicant(s) for agency funding or authorization to implement a proposed action.

Protection - with respect to compensatory mitigation sites and areas around those sites, the use of deeds, covenants, easements, or similar legal mechanisms to prevent harm to the site and its resources. In some cases physical measures such as fences, signs, and trash traps are also necessary.

Resilience - the ability of an ecosystem to maintain its normal patterns of nutrient cycling and biomass production after being subjected to an ecological disturbance.

Restoration - the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded resource.

Scarcity - the relative spatial extent (e.g., rare, common, or abundant) of the habitat type in the relevant context (e.g., landscape or seascape, species range).

Seascape - a marine, estuarine, tidal freshwater, or Great Lakes area encompassing an interacting mosaic of ecosystems and human systems that is characterized by common management concerns. Relative to this Policy, such management concerns relate to conserving NOAA trust resources. Seascape is not defined by the size of the area, but rather the interacting elements that are meaningful to the conservation objectives for the resources under consideration.

Suitability - the relative ability of the affected habitat to support one or more elements of the affected resources' (e.g., species') life history (e.g., reproduction, rearing, feeding, dispersal, migration, or resting from disturbance) stages compared to other similar habitats in the landscape or seascape context.

Temporal loss – see “interim loss.”

APPENDIX C: Authorities and Direction for NOAA Mitigation Recommendations

The following is a list of authorities, policies, and guidance documents that help to guide NOAA's mitigation work. This list is not considered exhaustive, and other laws, policies and guidance may be applicable. Nothing in this Procedure supersedes the statutes, guidance, or regulations listed below.

I. Statutes with mitigation provisions

Federal Water Pollution Control Act, 33 U.S.C. §§ 1251-1388 (Clean Water Act or CWA)

Section 404 (16 U.S.C. § 1344) of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into waters of the United States. The USACE issues permits to discharge dredged or fill material into waters of the United States subject to a number of regulations and guidelines. The jurisdiction of the CWA Section 404 program and the phrase "waters of the United States" have been interpreted by numerous court decisions. Areas included within the jurisdiction of CWA Section 404 often contain habitats of concern to NOAA.

Under CWA Section 404, there are three types of mitigation: avoidance, minimization, and compensatory mitigation. Compensatory mitigation is defined as "the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved." 33 CFR 332.2.

The USACE and EPA have issued regulations governing mitigation for CWA Section 404 permits. *See* 33 C.F.R. Part 332 Compensatory Mitigation for Losses of Aquatic Resources (2008 Mitigation Rule). Under the 2008 Mitigation Rule, the objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts (impacts that remain after avoidance and minimization) to waters of the United States authorized by permits issued by the USACE. Compensatory mitigation can take place through (in general order of preference) mitigation banks, in-lieu fee programs, permittee-responsible on-site and in-kind mitigation, and permittee-responsible off-site and/or out-of-kind mitigation. The Rule emphasizes the use of a watershed approach to compensatory mitigation planning in which the needs of the watershed drive the selection of compensatory mitigation projects. The 2008 Mitigation Rule makes an exception to the watershed approach, stating in 33 C.F.R. § 332.3(b) that the "site should be chosen to replace lost functions and services within the same marine ecological system (e.g., reef complex, littoral drift cell)."

NOAA participates in the CWA Section 404 permit process by reviewing project proposals and providing comments or approvals through the Fish and Wildlife Coordination Act (FWCA), NEPA, ESA, EFH, and other authorities discussed in the following sections. Under the CWA, NOAA has the ability to elevate specific permit decisions or policy issues

pursuant to Section 404(q) of the CWA.

Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801-1891d (MSA)

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), essential fish habitat (EFH) is defined as “those waters and substrate necessary to fish for spawning, feeding, breeding, or growth to maturity.” 16 U.S.C. §1802(10). This definition is further explained in regulations at 50 C.F.R. § 600.10. EFH is designated in fishery management plans prepared by Fishery Management Councils (Councils) and approved by the Secretary of Commerce. 16 U.S.C. §§ 1801(b)(5), 1852. These FMPs are required by the MSA to “describe and identify essential fish habitat for the fishery,” and to “minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat.” MSA § 1853(a)(7).

EFH regulations define an adverse effect to EFH as any impact that reduces quality and/or quantity of EFH. 50 C.F.R. § 600.910. The regulations further provide that adverse effects may include “direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.”

The MSA authorizes councils to comment on and make recommendations to NMFS and state and federal agencies concerning any activity they authorize, fund, or undertake that may affect EFH. 16 U.S.C. §1855(b)(3). If NMFS receives information from a council or a federal or state agency or otherwise determines that such an action would adversely affect EFH, NMFS will recommend measures to conserve the EFH. 16 U.S.C. § 1855(b)(4). Federal agencies are required to respond in writing to such comments, including a description of measures proposed for avoiding, mitigating, or offsetting the impact of the activity on the EFH, and explaining the reasons it is not following any of the recommendations. 16 U.S.C. §1855(b)(4)(B).

The MSA also requires consultation between federal agencies and NMFS regarding actions that may adversely affect essential fish habitat. (Section 305(b)(2), 50 C.F.R. §§ 600.905-930. The federal agency begins such consultation by providing NMFS with a written assessment of the effects of such actions on EFH, including proposed mitigation. 50 C.F.R. § 600.920(e)(3)-(4).

As outlined in regulations (50 C.F.R § 600.920(e)), an EFH assessment must include (1) a description of the proposed action, (2) an analysis of the potential adverse effects of the action on EFH and the managed species, (3) the federal agency’s conclusions regarding the effects of the action on EFH, and, (4) proposed mitigation, if applicable. If appropriate, the assessment should also include the results of an on-site inspection, the views of recognized experts on the habitat or species affected, a literature review, an analysis of alternatives to the

proposed action, and any other relevant information. Agencies may consolidate their EFH assessment and consultation with other environmental review procedures required by other statutes, such as NEPA, the Fish and Wildlife Coordination Act, Clean Water Act, ESA, and the Federal Power Act. 50 C.F.R. § 600.920(f).

NMFS will respond to an EFH assessment in writing, including EFH conservation recommendations where appropriate, which may include measures to minimize, mitigate, or offset adverse effects to EFH. 16 U.S.C. § 1855(b)(4)(A); 50 C.F.R. § 600.920(d), (k). As required by the MSA and regulations, an agency receiving such NMFS EFH conservation recommendations must then respond in writing, describing measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH, and must explain its reasons for not following any of the NMFS recommendations. 16 U.S.C. § 1855(b)(4)(A), 50 C.F.R. § 600.920(b).

If there is disagreement between the federal agency and NMFS, efforts to resolve the issue at the lowest level will be pursued. In the event resolution has not been reached through this process, the EFH regulations at 50 C.F.R. § 600.925(k)(2) allow for further review of decisions inconsistent with NMFS recommendations. If a federal agency decision is inconsistent with a NMFS EFH conservation recommendation, the Assistant Administrator for NMFS may request a meeting with the head of the federal agency, as well as with any other agencies involved, to discuss the action and opportunities for resolving any disagreements.

Some categories of action may not require an individualized EFH consultation, where NMFS has issued a “general concurrence.” A general concurrence identifies specific types of Federal actions that may adversely affect EFH, but for which no further consultation is generally required because NMFS has determined, through an analysis of that type of action, that it will likely result in no more than minimal adverse effects individually and cumulatively. 50 C.F.R. §§ 600.920(e), (g).

Endangered Species Act, 16 U.S.C. §§ 1531-1544 (ESA)

The Endangered Species Act (ESA) was enacted to conserve threatened or endangered species and the ecosystems upon which they depend. All federal agencies must, in consultation with and with the assistance of the National Marine Fisheries Service (NMFS), “utilize their authorities in furtherance of the” ESA “by carrying out programs for the conservation of endangered species and threatened species.” 16 U.S.C. § 1536(a)(1).

Under ESA Section 4 (16 U.S.C. § 1533), NMFS lists species as endangered or threatened, and also designates critical habitat necessary for the species’ survival and recovery. Critical habitat is defined by the ESA to include areas within the geographical area occupied by the species at the time of listing on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection. Critical habitat also includes areas outside the geographical area occupied by the species at the time of listing upon a determination that such areas are

essential for the conservation of the species.

Section 9 of the ESA (16 U.S.C. § 1538) prohibits the taking of endangered animal species, and such prohibitions may also be extended by regulation to threatened species. Taking is defined as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct” with respect to a listed species.

Under ESA Section 10(a), NMFS may permit taking by non-federal actors incidental to otherwise lawful activities (“incidental take”). In order to obtain such a permit, the applicant must submit a conservation plan, often referred to as a habitat conservation plan (HCP). NMFS must determine that the HCP will minimize and mitigate the impacts of such taking to the maximum extent practicable. See 16 U.S.C. § 1539(a); 50 C.F.R. § 222.307. Further guidance on ESA Section 10 incidental take permits and the use of mitigation in HCPs is provided in the NMFS and FWS joint Habitat Conservation Planning and Incidental Take Permit Processing Handbook (2016), available at https://www.fws.gov/endangered/esa-library/pdf/HCP_Handbook.pdf.

Under ESA Section 7(a)(2), Federal agencies must “insure,” in consultation with NMFS, that any action they fund, authorize, or carry out is not likely to jeopardize the continued existence of any listed species or destroy or adversely modify designated critical habitat. 16 U.S.C. § 1536(a)(2).

Whenever an action agency determines that its proposed action may affect a listed species, it must engage in a consultation process with NMFS under ESA Section 7(a)(2). Such consultation may take the form of either “formal” or “informal” consultation. See 50 C.F.R. §§ 402.01-48. Formal consultation is required if either the action agency or NMFS determines that the proposed action is “likely to adversely affect” a listed species or critical habitat. Formal consultation concludes with the issuance by NMFS of a biological opinion, in which NMFS assesses the likelihood of jeopardy to the species and whether the proposed action will result in destruction or adverse modification of critical habitat. If NMFS determines that the action is likely to jeopardize the continued existence of the species or result in destruction or adverse modification of critical habitat, it must determine whether any “reasonable and prudent alternatives” (RPAs) exist for the action that will not violate Section 7(a)(2). Such RPAs may include mitigation measures that help ensure that the action does not jeopardize the species or adversely modify critical habitat.

Informal consultation is a process in which NMFS assists the action agency in determining whether formal consultation is required. If during informal consultation the action agency determines, and NMFS concurs, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated and no further action is necessary.

In order to help comply with its ESA Section 7(a)(2) duties, the action agency may seek to proactively incorporate mitigation measures into its proposed actions, and may seek NMFS advice on such measures. The full range of potential mitigation measures, including compensatory mitigation, may be considered and incorporated by an action agency in order to facilitate compliance with its ESA Section 7(a)(2) duties. NMFS may include mitigation

measures as conservation recommendations to avoid, minimize, or mitigate adverse effects on listed species or critical habitat. Conservation recommendations are discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat.

As noted above, NMFS may also include compensatory mitigation in RPAs for proposed actions that are found to cause jeopardy to listed species and/or destruction or adverse modification of critical habitat. Similar to including compensatory mitigation in a proposed action, the analysis of an RPA can consider the beneficial effects of the compensatory mitigation in the effects analysis.

When a biological opinion finds that an action will take a listed species without jeopardizing that species, the opinion will be accompanied by an “incidental take statement” that specifies the impacts of such taking, and includes “reasonable and prudent measures” designed to minimize the impact of such taking, along with terms and conditions to implement those measures. Reasonable and prudent measures, along with the terms and conditions that implement them, cannot alter the basic design, location, scope, duration, or timing of the action and may involve only minor changes. 50 C.F.R. § 402.14. If the action agency complies with the requirements of the incidental take statement, including these minimization measures, it is exempted from the ESA Section 9 take prohibitions for such incidental take.

Reasonable and prudent measures can include mitigation, in appropriate circumstances, if such a measure minimizes the effect of the incidental take on the species, and as long as the measure is consistent with the interagency consultation regulations at 50 CFR 402.14. RPMs should also be commensurate with and proportional to the impacts associated with the action. NMFS should provide an explanation of why the measures are necessary or appropriate.

In addition to the consultation requirements under ESA Section 7(a)(2), described above, NMFS has broad authority to recommend mitigation measures to other Federal agencies under ESA Section 7(a)(1). Section 7(a)(1) states that all federal agencies, including NMFS, “shall, in consultation with and with the assistance of [NMFS], utilize their authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of endangered species and threatened species” 16 U.S.C. § 1536(a)(1). Such conservation efforts can include the full range of mitigation measures.

NMFS also develops recovery plans for listed species under ESA Section 4(f). These recovery plans provide conservation objectives and identify priority areas to protect and restore on a landscape or seascape scale, and thus can be a valuable resource when planning mitigation involving ESA-listed species and their habitats.

Federal Power Act, 16 U.S.C. §§ 791a–825r (FPA)

The Federal Energy Regulatory Commission (FERC) authorizes the licensing of non-Federal hydropower projects pursuant to the Federal Power Act (FPA), as amended in 2005. Projects are issued licenses for 30-50 years. NMFS participates in the licensing of non-federal

hydropower projects by FERC. Under FPA Section 18 (16 U.S.C. § 811), NMFS has authority to prescribe fish passage measures (“fishway prescriptions”) to ensure safe, timely, and effective fish passage. Such prescriptions are mandatory and must be included in the license issued by FERC, although licensees are entitled to request a formal adjudication of their factual basis. FPA Section 10(j) (16 U.S.C. § 803(j)) provides NMFS with authority to make recommendations for the “protection, mitigation, and enhancement” of fish and wildlife. In addition, FPA Section 10(a) makes it a condition of license issuance that the project be “best adapted to a comprehensive plan for improving or developing a waterway or waterways” for multiple uses including “the adequate protection, mitigation, and enhancement of fish and wildlife (including related spawning grounds and habitat).” NMFS can issue recommendations under Section 10(a) for FERC’s consideration. In issuing licenses, FERC must either include NMFS’s Section 10(j) and 10(a) recommendations as license conditions or explain its reasons for not doing so.

Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661–666c (FWCA)

The Fish and Wildlife Coordination Act (FWCA) requires federal agencies developing water-related projects to consult with NOAA, FWS, and the states regarding fish and wildlife impacts. Under the FWCA, NOAA reviews proposed projects and makes recommendations that “shall be as specific as is practicable with respect to features recommended for wildlife conservation and development, lands to be utilized or acquired for such purposes, the results expected, and shall describe the damage to wildlife attributable to the project and the measures proposed for mitigating or compensating for these damages.” 16 U.S.C. § 662(b). NOAA’s mitigation and enhancement recommendations are to be given full and equal consideration with other project purposes.

The FWCA also authorizes the acquisition of “land, waters, and interests therein ... for the wildlife conservation and development purposes of ... this title in connection with a project as reasonably needed to preserve and assure for the public benefit the wildlife potentials of the particular project area.” This language allows for the preservation of natural resources to accomplish the purpose of the Act, which includes compensating for project damage to wildlife.

Marine Mammal Protection Act, 16 U.S.C §§ 1371 et seq. (MMPA)

The MMPA prohibits the “take” of marine mammals, with certain exceptions, among which are the provisions allowing for the issuance of incidental take authorizations (ITAs). Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers¹² of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain

¹² The National Defense Authorization Act (Pub. L. 108–136) amended the MMPA to, among other things, remove the “small numbers” and “specified geographical region” limitations indicated above and amended the definition of “harassment” as it applies to a “military readiness activity.”

findings are made and either regulations are issued or, if the taking is limited to harassment, an incidental harassment authorization may be issued following notice and opportunity for public comment.

Authorization for incidental takings shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for taking for subsistence uses (where relevant). Further, NMFS must prescribe the permissible methods of taking and other “means of effecting the least practicable [adverse] impact” on the affected species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stocks for taking for certain subsistence uses (referred to in shorthand as “mitigation”); and set forth requirements pertaining to the monitoring and reporting of such takings.

ITAs may be issued as either: (1) regulations and associated Letters of Authorization (LOA) effective for a five-year period (seven years in the case of a military readiness activity); or (2) incidental harassment authorizations (IHA) effective for up to one year. An IHA can only be issued if the specified activity will not result in a potential for serious injury and/or mortality or where any such potential can be negated through required mitigation measures. Where the proposed activity has the potential to result in serious injury and/or mortality, only regulations and associated LOAs may be used to authorize take. Regulations may also be issued when mortality is not anticipated in order to provide longer incidental take coverage.

In order for NMFS to consider authorizing incidental take of marine mammals, a written request including the 14 pieces of information identified in NMFS’ MMPA implementing regulations (50 CFR § 216.104) must be submitted. The required information includes a detailed description of the specified activity, the anticipated amount of take and impacts for each species or stock, and the proposed mitigation and monitoring measures, among other things. NMFS evaluates the information provided by the applicant, along with the best available science, in the context of requirements of the MMPA and, if the statutory determinations can be made, develops and publishes a proposed rule or proposed IHA in the Federal Register for public comment. Following the consideration of public comment and the incorporation of any necessary changes, NMFS issues final regulations or a final IHA, provided the statutory standards can be met.

Specifically in the context of mitigation, NMFS must prescribe the “means of effecting the least practicable [adverse] impact on the affected species or stocks and their habitat.” NMFS works with applicants throughout the process to identify, evaluate, and refine mitigation measures to best satisfy MMPA requirements. Our evaluation of potential mitigation measures includes consideration of two primary factors:

- (1) The manner in which, and the degree to which, implementation of the potential measure(s) is expected to reduce adverse impacts to marine mammal species or stocks, their habitat, and their availability for subsistence uses (where relevant). This analysis considers such things as the nature of the potential adverse impact (such as likelihood, scope, and range), the likelihood that the measure will be effective if implemented, and

the likelihood of successful implementation; and
(2) The practicability of the measures for applicant implementation. Practicability of implementation may consider such things as cost, impact on activities, and, in the case of a military readiness activity, specifically considers personnel safety, practicality of implementation, and impact on the effectiveness of the military readiness activity.

Analysis of how a potential mitigation measure may reduce adverse impacts on a marine mammal stock or species, and consideration of practicability are not issues that can be meaningfully evaluated through a yes/no lens. Accordingly, these factors are considered along realistic scales, and the greater the likelihood that a measure will contribute to reducing the probability or severity of adverse impacts to the species or stock or their habitat, the greater the weight that measure is given when considered in combination with practicability to determine the appropriateness of the mitigation measure, and vice versa.

National Environmental Policy Act, 42 U.S.C. §§ 4321-4347 (NEPA)

The National Environmental Policy Act (NEPA) establishes a national environmental policy and provides a framework for environmental planning and decision making by federal agencies. NEPA directs Federal agencies, when proposing major federal actions, including planning projects or issuing permits, to conduct environmental reviews to identify, evaluate, and document the potential direct, indirect, and cumulative impacts on the environment by their proposed actions. The heart of the analysis is developing and assessing reasonable alternatives to the proposed action including a no action alternative and alternatives to mitigate adverse effects. The NEPA process requires interagency coordination and cooperation and public participation in project planning and decision making. NEPA also established the Council on Environmental Quality (CEQ), which is charged with the administration of NEPA and promulgates NEPA regulations (40 C.F.R. §§ 1500-1508) and guidance. NEPA requires governmental decision makers to evaluate environmental impacts informed by the public, federal, and state agencies and other stakeholders prior to making a decision. Although NEPA does require the identification of reasonable mitigation measures for certain actions, it does not compel an action agency to undertake that mitigation.

The CEQ regulations and NOAA's supplemental procedures in NAO 216-6 A, establish a three-tier process for evaluating environmental impacts. Federal agencies, with the approval of CEQ, identify categories of activities that will not have significant effects on the human environment and for which robust environmental review is not required. These are categorical exclusions (CEs). On the other hand, federal agencies must prepare an environmental impact statement (EIS) for major federal actions significantly affecting the quality of the human environment. These are detailed statements informed with substantial interagency coordination and public comments submitted on the draft EIS. Where a CE does not apply and the significance of environmental impacts is not apparent, a federal agency may prepare an environmental assessment (EA) to determine whether an EIS is required. An EIS must evaluate a reasonable range of alternatives, including "appropriate mitigation measures not already included in the proposed action or alternatives," and the final EIS must include a response to public comments. 40 CFR 1502.14(e), 1503.4.

The CEQ regulations define the term “mitigation” to include:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impact by replacing or providing substitute resources or environments. (40 C.F.R. § 1508.1(s)).

When an agency prepares an EA and determines that the impact of the proposed action may be significant but can be mitigated to a level below significance, a Finding of No Significant Impact (FONSI) may be prepared and an EIS avoided. This is known as a “mitigated FONSI.” CEQ has issued guidance explaining when preparation of a mitigated FONSI is appropriate.

Under NEPA, NOAA prepares an EIS for NOAA actions that significantly affect the quality of the human environment. NOAA may also be invited by other federal agencies to serve as a cooperating agency on their NEPA actions if we have subject matter expertise or we have jurisdiction by law over their project area. The federal action agency will provide an EIS that identifies and evaluates the direct, indirect, and cumulative impacts of the proposed action and reasonable alternatives; the adverse effects which cannot be avoided should the action be taken; alternatives to the proposed action; an analysis of short-term use and long-term productivity; and irreversible impacts on the resource should the action be implemented. NOAA is consulted to review the EIS and provide comments when the action affects resources under NOAA’s expertise or jurisdiction (NOAA trust resources). Through this consultation and coordination, NOAA provides expert advice and information to federal agencies on the effects of proposed actions as well as appropriate restoration, maintenance, enhancement, and other mitigation measures. The EIS process is concluded by preparation and execution of a record of decision (ROD) which must state whether all practicable means to avoid or minimize environmental harm from the selected alternative have been adopted and if not, why not. Agencies are responsible for adopting a mitigation monitoring and enforcement plan where appropriate 40 C.F.R. §§ 1505.2(a)(3)-1505.3.

The CEQ Regulations (40 C.F.R. §§ 1501.7-1501.8) also address cooperating agencies, which are Federal agencies other than a lead agency that have jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal or reasonable alternative. These regulations implement the NEPA mandate that Federal agencies prepare NEPA analyses and documentation “in cooperation with State and local governments” and other agencies with jurisdiction by law or special expertise. 42 U.S.C. §§ 4331(a), 4332(2). When prudent, NOAA requests cooperating agency status with the lead federal agency and assists with development of alternatives including providing recommendations to the agency on measures to avoid or minimize effects to natural resources pursuant to NOAA’s statutory

authorities. Federal agencies are responsible for identifying reasonable mitigation measures in their NEPA documents (i.e. EA or EIS) and then identifying those measures they are committing to implement in the corresponding decision document (i.e. FONSI or ROD). A subset of mitigation measures to which a Federal agency commits in the FONSI or ROD may have been developed through agency compliance with other Federal statutes imposing non-discretionary minimization and mitigation measures for protected resources such as species listed as threatened or endangered (ESA).

National Marine Sanctuaries Act, 16 U.S.C. §§ 1431 - 1445 (NMSA)

The National Marine Sanctuaries Act authorizes the Secretary of Commerce to designate as national marine sanctuaries areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or esthetic qualities. NOAA, as delegated by the Secretary, has authority to comprehensively manage uses of the National Marine Sanctuary System, and protect its resources through regulations, permitting, enforcement, research, monitoring, education and outreach. When issuing permits or other approvals, NOAA may require terms and conditions to avoid or mitigate the impact of a proposed activity. Through interagency consultation, NOAA may recommend reasonable and prudent alternatives for any federal agency action likely to injure sanctuary resources. Finally, any person who injures sanctuary resources may be held liable for those damages. The statutory and regulatory authorities by which sanctuaries can require mitigation are described below.

Permits and Approvals - A permit or other approval is required from NOAA when any entity wants to conduct an otherwise prohibited activity within a sanctuary (15 C.F.R. Part 922). There are four approval authorities for sanctuaries in the National Marine Sanctuary System: general permits, authorizations, certifications, and special use permits.

- A general permit may be issued for otherwise prohibited activities, if the activity would be conducted for certain purposes established in regulations (e.g., research, education, or management) and if it would meet regulatory permit review criteria.
- An authorization may allow the conduct of an activity prohibited by sanctuary regulations if such activity is specifically authorized by any valid federal, state, or local lease, permit, license, approval, or other authorization issued after the effective date of sanctuary regulations (15 C.F.R. § 922.49). Authority varies by sanctuary and is established in sanctuary regulations.
- NOAA may use certifications to require terms and conditions for any otherwise prohibited activity conducted under a lease, permit, license, or right that was in existence prior to the effective date of a new sanctuary designation or expansion (16 U.S.C. § 1434(c), 15 C.F.R. § 922.47).
- A Special use permit (SUP) may be issued for specified categories of uses, (typically concessionaire-type/commercial activities) that require access to the sanctuary to achieve a desired goal, are compatible with the purposes of the sanctuary, and do not injure sanctuary resources (16 U.S.C. § 1441). NOAA must provide public notice for SUP categories in the Federal Register. The current

categories may be found at 78 FR 25957 (May 3, 2013); 82 FR 42298 (Sept. 7, 2017).

NOAA may include terms and conditions in its permits and other approvals to avoid or minimize potential impacts to sanctuary resources, or to mitigate unavoidable impacts, in accordance with the purposes and policies of the NMSA and sanctuary regulations at 15 C.F.R. Part 922.

Interagency Consultation - Section 304(d) of the NMSA (16 U.S.C. § 1434(d)) requires federal agencies to consult with NOAA on any proposed actions internal or external to a national marine sanctuary that are “likely to destroy, cause the loss of, or injure a sanctuary resource.” Federal actions include direct activities and issuance of federal authorizations, licenses, and permits. In addition, federal agencies are required to consult on proposed actions in the vicinity of Stellwagen Bank National Marine Sanctuary that “may affect” the resources of this sanctuary (P. L. 102-587, November 4, 1992).

NMSA section 304(d) outlines the procedures for interagency sanctuary consultation. If a federal agency determines that a proposed action is likely to injure a sanctuary resource, the agency is required to submit a Sanctuary Resource Statement (SRS) to NOAA initiating sanctuary consultation. The SRS describes the proposed agency activity and the potential effects of the activity on any sanctuary resource. If NOAA finds that the proposed action is likely to destroy, cause the loss of, or injure a sanctuary resource, it must propose reasonable and prudent alternatives, which may include conduct of the action elsewhere that will protect sanctuary resources (“recommended alternatives”). Upon receipt of the recommended alternatives, the federal action agency is required to consult with NOAA regarding plans for incorporating these recommendations into the proposed action. If the agency decides not to follow the alternatives, the agency head must provide NOAA a written statement explaining the reasons for that decision and if the action results in the destruction of, loss of, or injury to a sanctuary resource, the head of the federal action agency must promptly prevent and mitigate further damage and restore or replace the sanctuary resource in a manner approved by NOAA.

Section 312 Liability - Section 312 of NMSA (16 U.S.C. § 1443) is a liability provision that authorizes NOAA to seek damages from those responsible for injuring sanctuary resources. The Act directs NOAA to “restore, replace or acquire the equivalent” of injured resources. This may mean repairing a coral reef after a vessel grounding or working to restore seabird colonies after an oil spill. As a trustee for sanctuary resources, NOAA can pursue civil action against any person or vessel who destroys or injures sanctuary resources, including a claim for recovery of the costs of response and assessment, restoration of the injured site and compensatory damages.

Natural Resource Damage Assessment (NRDA) under the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §9601 et seq. (CERCLA) and the Oil Pollution Act, 33 U.S.C. §2701 et seq (OPA)

CERCLA (42 U.S.C. §§ 9601-9675) authorizes natural resource damage assessments and restoration to address injuries resulting from the release of hazardous substances. Trustees for natural resources, such as NOAA, may assess and recover damages for injury to natural resources from releases of hazardous substances and use the damages for restoration, replacement, or acquisition of equivalent natural resources.

OPA (33 U.S.C. §§ 2701-2762) creates a liability framework for the cleanup of spills and the recovery of damages for restoration, rehabilitation, replacement or the acquisition of the equivalent of the injured resources. OPA authorizes trustees of natural resources to present a claim for, and to recover damages for, injuries to natural resources for each responsible party for a vessel or facility from which oil is discharged, or which poses a substantial threat of discharge of oil, into or upon navigable waters of the United States, adjoining shorelines, or the exclusive economic zone. Like CERCLA, OPA authorizes natural resource damage assessments and restoration to address injuries resulting from an incident.

When an oil spill or the release of hazardous substances occurs, natural resource trustees may initiate NRDA. The NRDA process is applied differently under CERCLA and OPA but the primary NRDA steps and concepts are similar. Trustees use the stepwise NRDA process to work with the responsible party for an incident to identify the injuries to natural resources and lost recreational uses resulting from the incident. Trustees determine the extent of injuries, and—with public input—the best methods, amounts, and locations for restoration activities.

There are four basic steps to this process:

- Assess the Injury: quantify injuries to natural resources, including lost recreational uses, by conducting scientific and economic studies
- Plan the Restoration: develop a restoration plan that identifies projects and outlines the best methods to restore the injured resources
- Hold Polluters Accountable: ensure that responsible parties pay the costs of assessing injuries and restoring the environment
- Restore the Environment: implement projects to restore habitats and resources to the condition they would have been in had the pollution not occurred

At the conclusion of the assessment phase, the trustees present to the responsible party a written claim for the cost of addressing the damage. The responsible party is required to acknowledge and respond to the claim within a specified amount of time. If the responsible party declines to accept the claim, the trustees may bring a civil action in court. Trustees and the responsible party may also resolve the matter through a settlement.

The objective of restoration is to restore natural resources to the condition in which they would have been but for the incident. Restoration includes the replacement or acquisition of the equivalent of the natural resources and compensation for the loss of services from the

time of the incident to the point of full recovery.

II. NOAA Policy and Guidance

- Handbook on Coral Reef Impacts: Avoidance, Minimization, Compensatory Mitigation, and Restoration (U.S. Coral Reef Task Force, 2016)
- Memorandum of Understanding Concerning Mitigation and Conservation Banking and In-Lieu Fee Programs in California (NMFS, other federal and state agencies, 2011)
- NOAA Damage Assessment, Remediation, and Restoration Program (DARRP) Guidance for Recognition and Use of Restoration Banks in Natural Resource Damage Assessments (Adopted December 1, 2016; Updated June 2021)
- Policy Regarding Controlled Propagation of Species Listed Under the Endangered Species Act (NMFS and Fish and Wildlife Service, 2000)