

Compensatory Mitigation Considerations for the U.S. Army Corps of Engineers, Alaska District Regulatory



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Introduction

Adverse impacts to waters of the United States (WOTUS) that result from activities authorized under Section 404 of the Clean Water Act (33 U.S.C. 1344) and/or Section 10 of the Rivers and Harbors Act (33 U.S.C. §§ 401, 403) may require compensatory mitigation. The Regulatory Division of the U.S. Army Corps of Engineers (Corps) is responsible for determining the need for compensatory mitigation as well as the nature and extent of compensatory mitigation on a case-by-case basis during the permit review process. These determinations must follow relevant regulations and guidance, which generally offer flexibility with mitigation requirements. Flexibility is crucial in Alaska due to the challenges posed by widespread wetlands and other waters with relatively high degree of ecological integrity, scarce opportunities for compensation, short growing seasons, rough terrain and remoteness. Nonetheless, the Alaska District has identified certain criteria for determining when serious consideration should be given to requiring compensatory mitigation and what factors should be considered when determining the adequacy of a compensatory mitigation plan (CMP).

This document supplies the Alaska District with the statutory support and rationale for determining when to require compensatory mitigation and what factors should be considered when reviewing plans for compensatory mitigation. Specifically, the document 1) briefly describes compensatory mitigation, 2) provides considerations for determining whether project impacts should require compensatory mitigation, 3) provides considerations for determining what approaches to compensatory mitigation are appropriate and practicable, and 4) addresses aspects of documenting decisions regarding compensatory mitigation.

Section 1: What is Compensatory Mitigation?

Compensatory mitigation as defined in 33 CFR §332.2 is “the restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources (e.g., wetland, estuaries, streams, rivers, and other waterbodies) for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.” “The term practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 40 CFR 230.3(l). The objective of compensatory mitigation is to offset environmental losses resulting from discharges of dredged or fill material into waters of the United States.

The Section 404(b)(1) Guidelines (40 CFR §230) require that the permit applicant take all appropriate and practicable steps to mitigate proposed impacts according to the following sequence: avoidance, minimization, compensation. The applicant must first avoid and minimize impacts to waters of the U.S. (WOTUS) to the maximum extent practicable (33 CFR §332.1(c)(2)). Avoidance means constructing a project in a manner that would not result in a temporary or permanent adverse impact or discharge of fill into WOTUS. For example, instead of bridge abutments constructed below ordinary high water, a bridge could be constructed to

completely span the river, avoiding direct impacts. Minimization means modifying project scope or size to reduce the direct and indirect impacts while still allowing the project to achieve its purpose. Minimization may include changes in methods, materials, or timing of construction. An example of minimizing direct impacts is reducing the extent of a fill pad within wetlands whereas an example of minimizing indirect impacts is implementing erosion control practices to limit sedimentation of waters. Potential project modifications to avoid and minimize adverse impacts should be discussed with the applicant at pre-application meetings and during application processing. Any unavoidable impacts that cannot be minimized below the level of significance may need to be offset via compensatory mitigation.

Section 2: Determining When to Require Compensatory Mitigation

The decision whether to require compensatory mitigation is the responsibility of Corps Regulatory personnel in consideration of the applicable regulations and guidance. This Section summarizes administrative requirements relevant to determining whether compensatory mitigation should be required. It also offers considerations specific to the Alaska District on factors to consider when making this decision. See Appendix A for an outline of steps taken to determine whether compensatory mitigation should be required. Appendix B discusses compensatory mitigation considerations for the different types of authorizations issued by the Corps.

A. Regulations and Guidance

Regulations and guidance applicable to the Clean Water Act Section 404 program provide the framework for determining when compensatory mitigation must be required. Below is a summary of the regulations and guidance that forms the framework. The U.S. Environmental Protection Agency (EPA) supports a comprehensive website containing information and links to regulations, guidance, and training resources pertinent to compensatory mitigation that is available at: <https://www.epa.gov/cwa-404/background-about-compensatory-mitigation-requirements-under-cwa-section-404>.

i. **Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material (33 CFR §230) and No Net Loss**

The Section 404(b)(1) Guidelines, originally established in 1980 by the EPA in conjunction with the Corps, is a set of regulations that constitute the substantive environmental criteria used in evaluating activities regulated under Section 404 of the Clean Water Act (CWA). The Guidelines are set forth in 40 CFR Section 230 and primarily accomplish the following:

- 1) identify the conditions that must be satisfied to determine whether a proposed discharge of dredged or fill material may be permitted,
- 2) provide guidance for appropriately and practicably avoiding and minimizing adverse impacts to WOTUS, and
- 3) establish some requirements and considerations for offsetting environmental losses resulting from unavoidable impacts to WOTUS.

The Guidelines state that compensatory mitigation “may be required to ensure that any activity requiring a section 404 permit complies with the Section 404(b)(1) Guidelines.” Compensatory mitigation must be required when there are unavoidable adverse impacts that would remain after all appropriate and practicable minimization has been implemented and compensatory mitigation is practicable. When avoidance and minimization measures reduce the adverse impact to below the level of significance or compensatory mitigation is not practicable, then compensatory mitigation should not be required.

The Guidelines prohibit the discharge of dredged or fill material that will cause or contribute to significant degradation of the Nation’s waters (40 CFR §230.10(c)). Determinations regarding significant degradation are based on an analysis of the direct, secondary, and cumulative impacts of the proposed discharges on the aquatic system. Such determinations require consideration of the effects on the physical, chemical, and biological components of aquatic ecosystems including, the magnitude or size of the impact, the quality of the resource (e.g., the existing functions, the potential severity of functional impairment, the uniqueness and/or rarity of those functions), and the persistence or permanence of the impact. Furthermore, determinations of significant degradation must consider effects of the discharge on the following: 1) human health and welfare, 2) life stages of aquatic life and other wildlife dependent on aquatic ecosystems, 3) aquatic ecosystem diversity, productivity, and stability, and 4) recreational, aesthetic, and economic values (45 Fed Reg. 85348).

Although the regulations do not identify the degree of impact that constitutes ‘significant degradation’, the preamble to the Guidelines states that significance is “more than trivial” and should be considered in the conceptual rather than the statistical sense (45 Fed Reg. 85343). The regulations do not require any specific quantitative analysis to make determinations regarding significant degradation and do not include any formulas or defined thresholds for determining significance (e.g., all fills >10 acres are significant). Therefore, determinations regarding significant degradation are to be made on a case-by-case basis using factual site-specific information, and the level of analysis and documentation should correspond to the scope and scale of the impacts (LaCroix 2018).

“No net loss” of wetlands was first adopted as a national goal in 1977 under the Executive Order 11990 and was affirmed through the Memorandum of Agreement (MOA) regarding Mitigation under CWA Section 404(b)(1) Guidelines, established in 1990. The no net loss policy holds that government agencies will not only strive to offset unavoidable adverse impacts to existing aquatic resources, but for wetlands, the agencies will strive to balance losses of values and functions with adequate offsets. Note that although this policy explicitly recognizes the special significance of wetlands, it does not in any manner diminish the value of other waters. Moreover, all WOTUS will be accorded the full measure of protection under the Guidelines, including the requirements for appropriate and practicable mitigation.

Thus, the Guidelines compel the Corps to require compensatory mitigation on a case-by-case basis and the no net loss policy compels the Corps to generally require compensatory mitigation nationwide. Although compensatory mitigation is the primary means by which the Section 404 regulatory program achieves no overall net loss of wetlands, the 1990 Mitigation MOA

recognizes that compensatory mitigation may not be warranted for every authorized discharge and that potential projects to appropriately offset the impact may not be practicable.

ii. General Policies for Evaluating Permit Applications (33 CFR §320.4)

33 CFR §320.4(r) states that mitigation generally fits into one of three categories:

- 1) project modifications to avoid and minimize impacts,
- 2) measures required to ensure compliance with the 404(b)(1) Guidelines, and
- 3) measures required to ensure the project is not contrary to the public interest.

The Public Interest Review focuses on impacts resulting from the discharge of fill into WOTUS and involves an analysis of the foreseeable effects, both benefits and detriments, on 21 specific factors (33 CFR §320.4). These public interest factors are wide-ranging and include aesthetics, flood hazards, shore erosion and accretion, recreation, etc.

For individual permits, compensatory mitigation must be required for resource losses that are more than minimal, specifically identifiable, reasonably likely to occur, and of importance to the human or aquatic environment in accordance with 33 CFR §320.4(r)(2) and §325.4(a)(3). For general permits, compensatory mitigation may be required to reduce the adverse impacts so that they are no more than minimal per 33 CFR §330.1(e)(3).

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest (33 CFR §320.4(a)(1)). Although certain wetland impacts may individually constitute only a minor change, the cumulative effect of numerous piecemeal changes can result in a major impairment of aquatic resources. Thus, a particular wetland site subject to regulated actions must be evaluated with the recognition that it may be part of a complete and interrelated aquatic ecosystem (33 CFR §320.4(b)(3)).

iii. Compensatory Mitigation for Losses of Aquatic Resources (33 CFR § 332)

33 CFR § 332, the regulations that embody the Compensatory Mitigation for Losses of Aquatic Resources (Mitigation Rule), do not provide additional guidance or requirements for determining when or why compensatory mitigation should be required. Instead, the main purposes of the Mitigation Rule are to improve the efficiency and predictability of the mitigation process and facilitate achievement of the “no net loss” policy elucidated in Executive Order 11990.

The Mitigation Rule explains the different forms of compensatory mitigation and the considerations that must be made once it has been determined that compensatory mitigation is required. Further, the Mitigation Rule establishes a set of standards that all forms of compensation must satisfy to improve the planning, implementation, and management of compensatory mitigation projects. The Mitigation Rule specifies the components of a complete CMP including assurances of long-term protection of compensation sites, financial assurances, and identification of the parties responsible for specific project tasks. It also emphasizes a watershed approach in selecting compensatory mitigation site locations, requires enforceable ecological performance standards tied to project objectives, and mandates regular monitoring for

all types of compensation. The major components of the Mitigation Rule are explained further in Section 3 of this document.

B. Type and Extent of Impacts to WOTUS

“The fundamental objective of compensatory mitigation is to offset environmental losses resulting from unavoidable impacts to waters of the United States” authorized by Department of the Army permits. (33 CFR §332.3(a)). For every proposed project where impacts may occur, the Regulatory Division must identify the unavoidable impacts to WOTUS, including those aquatic resource functions and services that would be permanently lost or temporarily reduced. Functions include the physical, chemical, and biological processes that occur in ecosystems. Services are the benefits that the human environment receives from performance of these functions.

The Corps may request submittal of a functions or conditions assessment to provide a more scientific, defensible description of natural resource functions and services. Functions assessment methods typically evaluate a variety of hydrologic, physicochemical, and ecological functions and services such as flood protection, water quality maintenance, habitat support, aesthetics, and sustenance. These assessments enable more definitive determinations of functional losses from construction activity and functional gains from compensatory mitigation activity. See Appendix C for a list of functions assessments most commonly used in the five regions of the state as well as those used by each compensatory mitigation bank (Bank) and in-lieu fee (ILF) program currently in operation.

Although direct impacts to WOTUS are what typically triggers Corps Regulatory review and comprises the predominant form of impact in most situations, the Corps must also clearly identify the indirect and cumulative impacts to aquatic resources. The following are operational definitions of each impact type in the context of regulation under CWA Section 404.

Direct Impacts include permanently or temporarily eliminating aquatic areas (e.g., via fill placement) or converting one water type to another. Temporary impacts must be restored within a reasonable period of time or they must be evaluated as permanent. A reasonable period of time is determined on a case-by-case basis. Generally, in the Alaska District, a reasonable period of time is within one growing season or as long as three years after the initial impact.

Indirect (Secondary) Impacts include the reduced performance of aquatic resource function and/or services that occurs later in time or in areas away from the site of direct impact. Although “reasonably foreseeable”, they are not as reliably quantifiable as direct impacts; indirect impacts attenuate at highly variable rates with time since and distance from the direct impact.

Cumulative Impacts involve effects of an action in combination with other human-caused effects upon a particular place and within a particular time. The 404(b)(1) Guidelines found in 40 CFR §230.11(g) state that “cumulative impacts are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material.” NEPA regulations found at 40 CFR §1508.7 indicate that cumulative impacts result from “the incremental impact of the action when added to the other past, present, and reasonably

foreseeable future actions regardless of what agency or person undertakes such actions.” The cumulative impact assessment entails review of possible effects of the perceived direct and indirect impacts in the context of ongoing degradation within the surrounding watershed.

In essence, compensatory mitigation must reduce the adverse impacts stemming from discharges of fill or dredged material on the aquatic ecosystem so that the overall impact of a given project falls below the level of significance. Although it is typically driven by the nature and extent of direct impacts to aquatic resources, compensatory mitigation may also be necessary to offset indirect and/or cumulative impacts if they are perceived to be more than minimal. Compensatory mitigation may also be required to ensure that impacts to WOTUS are not contrary to the public interest and do not cause or contribute to a violation of water quality standards.

Although the regulations do not identify the degree of impact that constitutes significant degradation, the preamble to the Guidelines state that significance is “more than trivial”. Therefore, determinations regarding significant degradation must be made on a case-by-case basis using site-specific information, and the level of analysis and documentation should correspond to the scope and scale of the impacts (LaCroix 2018).

C. Alaska-specific Considerations for Requiring Compensatory Mitigation

The decision whether to require compensatory mitigation is complicated by the challenging conditions commonly occurring in Alaska. As recognized by the Alaska-specific MOA concerning mitigation signed by the EPA and the Corps on June 15, 2018, and discussed in Section 3.C of this document, avoiding wetland impacts may not be practicable where wetlands and other waters comprise a large portion of the surrounding watershed or region, which is a common occurrence in most regions of the state. In addition, the loss of jurisdictional aquatic resources in most parts of Alaska is much less likely to cause the same level of impact to watershed function as it would in places where aquatic resources are far less common and their functional performance has been compromised by historical or ongoing sources of degradation.

As required by 40 CFR §230.91(c)(3) and 33 CFR §332.3(a), compensatory mitigation must be practicable. Relatively pristine ecological conditions, remoteness, rough terrain and/or underlying permafrost tend to greatly limit the potential for finding practicable means of conducting adequate compensatory mitigation via restoration, establishment (creation), or enhancement. Further, the vast majority of wetlands in Alaska are peatlands (i.e., fens and bogs), which are typically very difficult to restore or replicate due to the limited capacity to propagate native species, the difficulty of replacing organic soils, and the difficulty of restoring permafrost or seasonal frost once it has been lost or degraded. Thus, preservation is the most common form of compensatory mitigation in Alaska despite the limited capacity for this method to fully offset unavoidable impacts. However, preservation as compensatory mitigation is only allowed for aquatic resources that are both important to watershed function and are under imminent threat of destruction – a relatively uncommon combination, even in Alaska.

i. Criteria for Consideration

Although there are no specific criteria for deciding whether compensatory mitigation must be required, the Alaska District has identified certain criteria for determining when serious consideration should be given to requiring compensatory mitigation. These criteria correspond to the capacity of and opportunity for jurisdictional aquatic resources that are targeted for impact to perform important functions and services. Note that satisfaction of one or more of these criteria should not serve as automatic triggers for requiring compensation. The Alaska-specific criteria for when compensatory mitigation should be given serious consideration are as follows:

1. Direct and indirect impacts to wetlands or other waters known to support species listed under the Endangered Species Act or are within critical habitat designated under the Endangered Species Act, wetlands or other waters within Important Bird Areas (Audubon Alaska 2024), wetlands or other waters within or adjacent to National Wild and Scenic River segments, wetland types identified in Wetlands of Conservation Concern in Alaska according to Wetlands across Alaska: Statewide wetland map and Assessment of rare wetland ecosystems (Flagstad et al. 2018), and wetlands or other waters with exceptionally high performance of functions or services. Exceptionally high performing wetlands or other waters are those that receive high ratings or scores for at least two grouped functions or several individual functions as indicated by a regionally appropriate functions assessment method.
2. Direct and indirect impacts to tidal waters or tidally influenced waters that are special aquatic sites or are adjacent to special aquatic sites. Tidally influenced waters are subject to the ebb and flow of the tides though they are positioned above the mean high-water mark of tidal waters. Special aquatic sites are defined as sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes (see 40 CFR §230.40 through §230.45).
3. Direct and permanent impacts to waters including wetlands that fish are known to inhabit or are likely to inhabit at least periodically.
4. Direct and permanent impacts to >1/10 of an acre of wetlands and/or other waters or >3/100 of an acre of stream where the encompassing subwatershed (12-digit Hydrologic Unit Code (HUC)), 14-digit HUC, or other appropriately sized review area is significantly degraded or under imminent threat of becoming significantly degraded.

Significant degradation within a HUC-12, HUC-14 or similar-sized area may be indicated by one or more of the following factors (note that there may be other indicators not listed here):

- Waters within the encompassing area are listed as impaired (Category 4 or 5) by the Alaska Department of Environmental Conservation under CWA Section 303(d).
- Cover of impervious and nearly impervious surfaces such as paved and gravel roads, building foundations, laydown areas, etc. is >5 percent (NOAA 2022, Schueler et al. 2009, Ourso and Frenzel 2003, Booth and Jackson 1997, Kim et al. 2016, Kaplan and Ayers 2000).

- Extensive mining, logging, farming, or other resource extraction that has not been significantly mitigated via reclamation or watershed restoration.

ii. Landscape Context

Corps regulators should review, and modify when warranted, what has been determined by the applicant as an appropriately sized area encompassing proposed activities to provide context for understanding their impacts to the surrounding landscape. Considering the location and significance of direct, indirect, and cumulative impacts at the landscape scale is necessary to determining whether the impacts would be important to the human or aquatic environment, a criterion for determining whether compensatory mitigation must be required when reviewing proposals that would be authorized under an individual permit. Understanding landscape context also serves the goal of preventing net loss of wetland functions given that functions operate on a large scale (e.g., flow moderation, biogeochemical cycling, wildlife habitat support, etc.).

Selecting an area for assessing impact significance should be primarily predicated upon the geographic extent of project impacts, including cumulative impacts, and the homogeneity of environmental conditions including climate, topography, vegetation, artificial disturbance, etc. Too small of a review area could unfairly inflate the project impacts whereas one that is too large could unfairly dilute the magnitude of impacts.

The default landscape for assessing impact significance is the watershed. Watersheds have been delineated at various scales throughout the country by the U.S. Geological Survey (USGS). They are identified by Hydrologic Unit Code (HUC), which generally range from 2-digit to 14-digit numbers that uniquely identify watersheds at eight levels of classification. Alaska is encapsulated by a single HUC-2. In contrast, there are well over ten thousand HUC-12 watersheds (termed ‘subwatersheds’ by the USGS) in the state, ranging from a few hundred acres to over 20,000 acres in size (Figure 1). The only portions of Alaska that the USGS has mapped HUC-14 watersheds is the Chugach and Tongass National Forests.

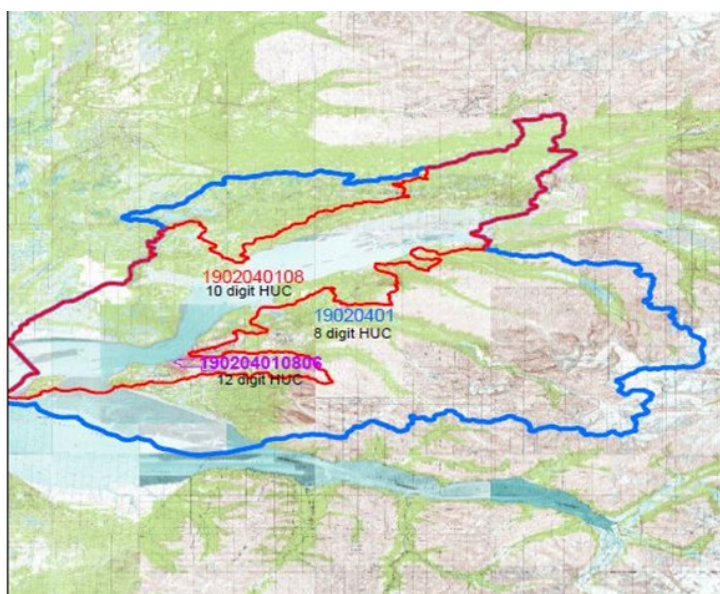


Figure 1

Typically, the impact significance review area will be a HUC-12 (subwatershed), though it may be smaller. Most of the supporting research correlating percent impervious surface with stream degradation have been conducted at the subwatershed scale (LaCroix 2018) though the only one conducted in Alaska assessed twelve drainages in Anchorage ranging from 0.8 to 16.6 square miles (Ourso and Frenzel 2003), which is approximately at the HUC-14 scale. The EPA (2024) asserts that land use planning is best conducted at the HUC-14 scale.

If the HUC encompassing a project activity is not appropriately sized or shaped to capture the extent of the impacts, then another area encompassing the proposed activity and abiding relevant topographic, hydrological and/or ecological factors may be used. When compensating for impacts to marine resources, the location of the compensatory mitigation site should be chosen to replace lost functions and services within the same marine ecological system (e.g., inlet, sound, etc.). Level III ecoregions of Alaska, derived from a synthesis of various environmental factors and described by Nowacki et al. (2001), may also be used as assessment areas on their own or as a means to stratify watersheds when ecological differences within watersheds are substantial.

When reviewing impacts on an oceanic island, the HUC should be clipped to the boundaries of the island or the drainage within the island. Drainage basins not mapped by the USGS or some other authority may be delineated based on contours. Areas below mean high water including subtidal areas may also be included, especially where there are sensitive offshore aquatic resources such as coral reefs.

The review area may be coincident with the area delineated and assessed in preparation of a watershed plan. As discussed in Section 3.D.1 of this document, watershed plans are typically prepared with stakeholder involvement to describe historical and ongoing impacts as well as identify opportunities to improve watershed health including through protection and restoration of aquatic resources. Several watershed plans have been prepared in Alaska. These range in scale and scope from the Lower Jordan Creek Watershed Management Plan, which covers a 2.6-square mile area (14-digit HUC) and focused on managing and reducing sediment transport from the urbanized part of the watershed (Southeast Alaska Watershed Coalition 2021), to the Watershed Resource Action Plan for the Chena River, which covers a 2,115-square mile area (8-digit HUC) and identified objectives for improving stream health and mapped the watershed according to estimated ecological integrity and artificial threats (Tanana Valley Watershed Association 2015).

Information about the review area pertinent to the assessment of direct, indirect, and cumulative impacts can be derived from assessing aerial imagery, the National Wetland Inventory (NWI), the National Hydrography Dataset (NHD), the Web Soil Survey, the National Land Use Cover Database, the Alaska Mapper, the Alaska Fish Resource Monitor, the Alaska DEC Impaired Waters, the Alaska DEC Contaminated Sites, and other online mappers and databases. The National Regulatory Viewer (NRV), available in OMBIL Regulatory Module (ORM), enables access to land use and natural resources information as well as cultural resources and historic properties data. The NRV also offers a Cumulative Effects Analysis Report tool to determine percent impervious cover and existing impact areas of wetlands and other waters. An additional resource is a watershed analysis conducted by Crawford et al. (2016), with support from the National Fish Habitat Partnership, that rated fish habitat degradation of all HUC-12's in the

nation based on presence and magnitude of urban development, agricultural activities, fish passage barriers, etc.

Current guidance encourages flexibility, and limited opportunities often mandate flexibility, in determining acceptable locations for conducting compensatory mitigation via permittee-responsible mitigation (PRM) or accessing credits available through mitigation banking and in lieu fee mitigation. In Alaska, if there are no bank or in lieu fee mitigation credits available within the 6-digit HUC where an impact would or has occurred and there is an opportunity to conduct PRM within the same 4-digit HUC that would suitably offset the impact, whether in-kind or out-of-kind, then the PRM should be considered.

iii. Two Main Questions

Two main questions must be considered when determining whether compensatory mitigation should be required in the Alaska District:

1. Are the impacts more than minimal, specifically identifiable, reasonably likely to occur, and important to the human or aquatic environment? (See 33 CFR §320.4(r)(2) and §325.4(a)(3))
2. Is there any compensatory mitigation that would be practicable and capable of offsetting the aquatic resource functions to be lost as a result of the permitted activity? (see 33 CFR §332.3(a)(1) and 40 CFR §230.93(a)(1))

Addressing these questions is critical to ensuring that the decision whether to require compensatory mitigation will comply with relevant regulations and guidance. If the answer to the first question is in the negative (including ‘probably not’), then the Corps is compelled to determine that compensatory mitigation is not warranted. Impacts that cannot be avoided or minimized below the level of significance must be compensated. If the answer to the first question is affirmative, and the next question is answered in the negative, then the Alaska District should determine whether there are other opportunities to further avoid and minimize the proposed impacts and/or broaden the scale within which compensatory mitigation may be conducted including PRM within the encompassing 4-digit HUC as discussed above. Authorization may be issued once the practicable opportunities for further avoidance, minimization, and compensation have been exhausted as long as the proposed discharge would not cause or contribute to significant degradation of jurisdictional waters or violate any other requirements of the 404(b)(1) Guidelines or other relevant laws and regulations.

Section 3: Determining the Nature and Extent of Compensatory Mitigation

The Corps must determine the nature and extent of the compensatory mitigation to be required based on what is practicable, environmentally preferable, and capable of compensating for the aquatic resource functions that would be lost as a result of the permitted activity (33 CFR §332.3(a)(1)). Further, the scale and scope of the proposed mitigation must be commensurate with the scale and scope of the impacts (33 CFR §332.3(a)(1)).

A. Methods and Mechanisms

There are four methods of implementing compensatory mitigation for impacts to jurisdictional wetlands and other waters: i) restoration, which includes re-establishment and rehabilitation, ii) establishment, iii) enhancement, and iv) preservation.

- **Restoration** is 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 aquatic resource (e.g., wetlands, streams, estuaries, etc.). For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.
 - o **Re-establishment** is the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource.
 - o **Rehabilitation** is the manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource.
- **Establishment** (Creation) is the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site.
- **Enhancement** is the manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s) but may also lead to a decline in other aquatic resource function(s).
- **Preservation** is the removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms.

The methods above can be conducted via the following mechanisms: i) Banks, ii) ILF programs, and; iii) permittee-responsible mitigation (PRM).

- **Banks** entail a site, or suite of sites, where aquatic resources are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts authorized by Department of the Army (and other agency) permits. Typically, a Bank sells mitigation credits to permittees who must compensate for authorized impacts occurring within the Bank's service area. The obligation to provide compensatory mitigation is thus transferred to the Bank sponsor. As will be discussed in the next section credits are units of measure representing the accrual of aquatic functions at a compensatory mitigation site. The number of credits generated by a Bank is determined by quantifying the function uplift of the aquatic resources in combination with the area restored, created, enhanced and/or preserved.
- **ILF Programs** are similar to Banks in that they generate mitigation credits through the restoration, establishment, enhancement, and/or preservation of aquatic resources and sell those credits to permittees who need to compensate for their authorized impacts. Unlike Banks, ILF programs can only be operated by a public agency or non-profit organization

and the implementation of the mitigation projects generally occurs during and after a permittee purchases credits, not beforehand.

- **PRM** is an aquatic resource restoration, establishment, enhancement, and/or preservation activity undertaken by the permittee (or an authorized agent or contractor) to provide compensatory mitigation for which the permittee retains full responsibility.

The Mitigation Rule (33 CFR §332) established a preference hierarchy for compensatory mitigation mechanisms ([33CFR 332.3\(b\)](#)) as follows:

1. Purchase of Bank credits
2. Purchase of ILF program credits
3. PRM under a watershed approach
4. On-site and/or in-kind PRM
5. Off-site and/or out-of-kind PRM

When permitted impacts occur within the service area of an approved Mitigation Bank or ILF program that has the appropriate amount and resource type of credits available, these compensatory mitigation mechanisms should be utilized. Applicants and regulators should visit [RIBITS](#) (Regulatory In-lieu Fee and Bank Information Tracking System), <https://ribits.ops.usace.army.mil/>, a publicly available website with information about approved Banks and ILF mitigation programs, including the geographic extent and location of their service areas and the amounts and types of credits available. If credits from Banks or ILF programs are not available, then PRM is the only option. The resource type and location for the required PRM should be determined using the principles of a watershed approach, which is discussed below in Section 3.B. If a watershed approach is not feasible, then the siting of the PRM may be conducted in a more opportunistic manner.

Although the Mitigation Rule establishes a preference for on-site and/or in-kind mitigation, off-site and/or out-of-kind mitigation is acceptable, especially in places like Alaska where compensatory mitigation opportunities are often scarce. Off-site mitigation occurs at a location that is not within the same property encompassing the impact site, though it must occur within the same basin or watershed as the impact site. Out-of-kind mitigation is improvement and/or preservation of a resource of a different structural and functional type from the impacted resource.

The compensatory mitigation hierarchy should be followed in most cases, but determining which mechanism would most effectively offset the impact must be done on a case-by-case basis. If an option lower on the hierarchy is proposed despite the availability of one or more higher ranking options (e.g., PRM rather than purchase of Bank credits), then the proposal could only be considered if a convincing rationale explaining why the lower ranking option is environmentally preferable. Such rationale could be developed with assistance from the Corps and other agencies and should rely upon the Alaska-specific guidance outlined above and the considerations for reviewing CMPs discussed in Section 3.D. of this document. When appropriate, a combination of different mitigation options may be used.

B. Debits and Credits

Debits are the units of measure for quantifying the unavoidable adverse impacts that construction activities have on jurisdictional wetlands or waters. Debits are offset by purchasing or generating credits. Credits are the unit of measure (e.g., a functional or area-based measure or other suitable metric) for quantifying the beneficial effects of compensatory mitigation activities.

Methods for determining debits and credits vary, but generally they are predicated upon resource size and/or functionality. Compensatory mitigation has traditionally focused on the area needed to offset the loss of area or degradation of functions. Regulatory agencies have commonly used area-based ratios ('mitigation ratios' or 'compensation ratios') to account for authorized impacts and compensation because they are easily calculated. However, debits based entirely on aquatic resource size and type (e.g., Cowardin class) may neglect the environmental integrity of aquatic resources involved and thereby lead to inappropriate and/or insufficient compensatory mitigation.

As stated in the 404(b)(1) Guidelines (40 CFR §230.93(f)), "the amount of required compensatory mitigation must be, to the extent practicable, sufficient to replace lost aquatic resource functions. Compensatory mitigation requirements must be commensurate with the amount and type of impact that is associated with a particular Department of the Army permit (33 CFR §332.3(a)(1)). In cases where appropriate functions or conditions assessment methods or other suitable metrics are available, these methods should be used where practicable to determine how much compensatory mitigation is required." As described in 33 CFR §332.3(f) of the Mitigation Rule, "If a functional or condition assessment or other suitable metric is not used, a minimum one-to-one acreage or linear foot compensation ratio must be used." Thus, compensatory mitigation may be approved even when the mitigation area is less than the impact area (i.e. <1:1 mitigation ratio in regard to area) if functions or conditions assessment demonstrates that it would result in a 1:1 offset in regard to functional performance. Where preservation is the only or predominant form of compensation, the mitigation ratio in regard to area should always be greater than 1:1. In fact, mitigation ratios for preservation-only compensation may be as much or even greater than 10:1.

In Alaska and elsewhere, the Corps is increasingly reliant upon functional assessments as a primary basis for determining both debits and credits. With this approach, debit calculation is primarily based on the results of a functional assessment combined with the size of the aquatic resource impacted. Adjustments to debit determination may be made based on the nature and extent of impacts including indirect impacts to offsite waters. In contrast, credits generated by a compensatory mitigation project are generally determined by the expected gain in functional performance (i.e., functional lift) combined with the size of the resources restored, established, enhanced and/or preserved.

Adjustments to credits earned may be made based on certain factors. The two main approaches for credit adjustment used in Alaska include the Alaska Credit Debit Methodology (Alaska District 2016)¹ and The Anchorage Debit-Credit Method (Alaska District et al. 2011).

¹ The Alaska District Credit Debit Methodology is currently undergoing revision.

The Alaska Credit Debit Methodology relies upon results of a functions or conditions assessment as a basis for determining credits with adjustment upon consideration of the following:

- i) ecological significance
- ii) risk of failing to attain the proposed conditions
- iii) threats to sustaining functions in the long term
- iv) lag time between functional loss and replacement of functions (temporal loss)

The Anchorage Debit Credit Method identifies a functional assessment method for wetlands and another for waterways, but only requires their use under certain circumstances. Credits are adjusted based on several factors, the selection of which are primarily dependent upon the method(s) by which compensatory mitigation would occur.

These approaches to determining debits and credits are recommended, but not required. They each provide a scientifically supported framework for considering complex issues related to adverse impacts and compensatory mitigation. Their intent is to inform decisions on compensatory mitigation in a manner that maximizes consistency, robustness, and defensibility. The existence of these procedures, however, does not preclude the use of other approaches for determining the appropriate nature and extent of compensatory mitigation.

No matter what method is used to calculate credits, the Corps generally prefers that the methods for debit determination be the same as those used in credit determination. Apples-to-apples comparisons for debit and credit determination should be made for every compensatory mitigation decision.

When a Department of the Army permit is issued, requiring purchase of credits from an approved Bank or ILF, the permit will specify the number and resource type of credits to be purchased. It is the responsibility of the permittee to provide proof of the purchase of these credits prior to initiating any impacts or authorized work within wetlands and waterways.

C. Memorandum of Agreement with the Environmental Protection Agency (EPA)

Decisions regarding the type and extent of compensatory mitigation in Alaska should follow the tenets of the MOA concerning mitigation signed by the EPA and the Corps on June 15, 2018. This Alaska-specific MOA updates and replaces the EPA and Army memorandum entitled Clarification of the Clean Water Act Section 404 Memorandum of Agreement on Mitigation, dated January 24, 1992, and the memorandum entitled Statements on the Mitigation Sequence and No Net Loss of Wetlands in Alaska, dated May 13, 1994. While the 2018 MOA does not dictate when compensatory mitigation should be required, it does provide additional guidance regarding flexibilities that exist in the mitigation requirements for CWA Section 404 permits, and how those flexibilities can be applied in Alaska given the state's abundant aquatic resources and unique circumstances. The Alaska Mitigation MOA recognizes the following:

- Avoiding wetlands may not be practicable where there is a high proportion of land in a watershed or region comprised by jurisdictional wetlands.

- Restoring, establishing, or enhancing wetlands for compensatory mitigation may not be practicable due to limited availability of sites and/or technical or logistical limitations.
- Compensatory mitigation options over a larger watershed scale may be appropriate given that compensation options are frequently limited at a smaller watershed scale.
- Where a large proportion of land is under public ownership, compensatory mitigation opportunities may be available on public land.
- Out-of-kind compensatory mitigation may be appropriate when it better serves the aquatic resource needs of the watershed.
- Applying a less rigorous permit review for small projects with minor environmental impacts is consistent with the Section 404 program regulations.

D. Considerations for Reviewing Compensatory Mitigation Plans (CMPs)

As documented by various studies dating back to the 1980's, the planning, implementation, and management of compensatory mitigation is fraught with uncertainty and risk. Careful review of compensatory mitigation proposals by the Corps, and sometimes with help from the EPA, is crucial to reducing the uncertainty and improving the chances of successfully offsetting impacts to WOTUS. Thus, conducting thorough, technical review is paramount to implementing the Corps' responsibilities under the Clean Water Act, and specifically, the No Net Loss policy and the Mitigation Rule.

Each mitigation plan must possess the elements required by the Mitigation Rule. The expected contents of each of these elements is briefly described in 33 CFR §332.4(c)(2) through (c)(14) of the Mitigation Rule. Third party mitigation providers and PRM providers are responsible for submitting complete mitigation plans for each mitigation site.

For PRM, the plans must be approved by the Corps prior to issuance of individual permits. For verification of general permits that require compensatory mitigation, a final mitigation plan must be approved before the permittee commences work within WOTUS. If no mitigation plan is submitted, but compensation is warranted, then the Corps may address key elements (e.g., objectives, performance standards, etc.) through special conditions attached to the permit. For permittees who intend to fulfill their compensatory mitigation obligations by securing credits from approved Banks or ILF programs, mitigation plans need to include only baseline information about the impact site and the number and resource type (if applicable) of credits to be secured and how this was determined (see 33 CFR §332.4(c)(5) and (c)(6)). Alternatively, this information may be submitted as a determination of debits. In either case, the method for determining credits needed or debits incurred must be the same as that used to determine the amount of credits planned for use as compensation. Sponsors of Banks and ILF programs must prepare a complete mitigation plan for each individual compensatory mitigation project site that generates credit.

When evaluating proposed compensatory mitigation, the Corps must assess the overall benefit to aquatic resources as well as consider the mitigation mechanism hierarchy and other applicable regulatory requirements. The Corps must also carefully review CMPs, including all 12 components required by 33 CFR §332.4(c), to determine whether they are technically feasible and/or practicable. CMPs should demonstrate a watershed approach whereby landscape position and resource types have been considered to maximize the chances of providing the desired aquatic resource functions and ensuring their sustainability over time. Other considerations for evaluating the watershed approach for compensatory mitigation are discussed in 33 CFR §332.3(c).

A few key factors integral to compensatory mitigation success should be considered during review of CMPs and prospectuses of Banks and ILFs. Some of these same factors are considered by established protocols for adjusting mitigation credits, as discussed in Section 3.B. These factors are divided into two groups where: i) the first four listed below are solely based on the proposed compensation and ii) the last three listed below are influenced by the nature, extent and/or location of the impact; these last three factors are only considered when assessing PRM.

i. Ecological significance (importance of certain functions and services within the watershed)

A watershed approach to planning mitigation is required for ILF programs and preferred for Banks and PRM. The goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites. The significance of certain functions and services that may be lacking in the assessment area (known as watershed needs) are identified and used to prioritize locations and types of compensatory mitigation projects.

Where available, the watershed approach should be based on a watershed plan that describes historical and ongoing impacts and identifies opportunities to improve watershed health including through protection and restoration of aquatic resources. These plans are typically devised with involvement from a variety of stakeholders. Examples of watershed plans include special area management plans, advance identification programs, and wetland management plans. Currently, there are a few wetland management plans in Alaska including the Anchorage Wetlands Management Plan:

(<https://safe.menlosecurity.com/doc/docview/viewer/docN81AED5FF4A12300933afac49ed6294b151e986a492665edf7c91cd04465c4e8bbe16a75b909>),

the Mat-Su Wetlands Management Plan:

(<https://safe.menlosecurity.com/doc/docview/viewer/docN0CF31244347Fc97bf2bb57fb8153b0b016c5ae65cf10192f9a5d991c064c59b940b65338bbd2>), and

the Juneau Wetlands Management Plan:

(<https://safe.menlosecurity.com/doc/docview/viewer/docN0CF31244347Fc26e49f986f80ad86dc98e452b4573d97efc31baf39167b29dee4b7793c7c4a3>).

Where no watershed plan is available, the watershed approach should be based on information provided by the applicant, the Bank sponsor, or the ILF sponsor. The information provided should answer the following questions:

- a. What are the historical and/or ongoing impacts to watershed health that could be addressed by restoration, creation, enhancement and/or preservation of aquatic resources?
- b. What aquatic functions are lacking or compromised within the watershed and to what extent would they be restored by the proposed mitigation?
- c. How would the local, regional, and national public benefit? For instance, to what degree would enhancing and preserving a floodplain wetland reduce flood risk to nearby properties?

Although it may not offset the functions and services lost by a particular impact, out-of-kind compensatory mitigation can adequately offset impacts by improving functions and services identified as lacking in the watershed. Out-of-kind mitigation may be more justifiable than in-kind mitigation when there are certain, critical watershed needs that could be met through the restoration, establishment, enhancement and/or preservation of aquatic resources.

Preservation of high-functioning, rare or otherwise valuable aquatic resources may be used as compensation when certain criteria are met (See 33 CFR §332.3(h)(1)). To the extent appropriate and practicable, preservation should be accomplished in conjunction with aquatic resource restoration, establishment, and/or enhancement. However, preservation without implementation of other mitigation methods is generally acceptable in Alaska due to the limited availability and potential for the other mitigation methods.

ii. Risk of failing to meet performance standards

The Final Mitigation Rule defines performance standards as “observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives.” 33 CFR §332.5 of the Mitigation Rule requires that performance standards are included in each CMP and relate to the plan’s stated objectives. Performance standards must be met during the monitoring period, which typically lasts 5 to 10 years after initial implementation of the compensatory mitigation project whether it be via restoration, establishment, enhancement, and/or preservation. Performance standards should be specific, measurable, achievable, relevant, and time-bound, which together forms the acronym, “SMART”.

Performance standards should reflect at least some attributes of an aquatic resource predicted to improve as a result of the proposed compensatory mitigation. These improvements may be identified by use of functions assessment methods or less formalized analysis such as comparison with reference aquatic resources of similar type and landscape position. In either case, performance standards should reflect conditions within the range of variability exhibited by the regional class of aquatic resources as determined by natural processes and anthropogenic disturbances. Only preservation sites should have performance standards that emulate conditions exhibited by the reference standard, which is defined as resources exhibiting the highest levels of function attainable given relatively undisturbed conditions. Where practicable, performance standards should take into account the expected stages of the aquatic resource development process (e.g., forest succession, stream evolution, etc.) to facilitate early identification of potential problems and thereby expedite adaptive management actions to address the problems.

Sources of risk of failing to meet performance standards are many and varied. Common sources of risk include ill-suited or unclear mitigation design, incorrect or incomplete implementation of design, and unforeseen site disturbance such as fire, flood, or vandalism. In addition, performance standards may themselves be inappropriate by not being sufficiently specific, measurable, achievable, relevant, and/or time-bound. Occasionally, it may be advisable to revise performance standards during the monitoring period to improve their 'SMARTness' as long as it does not result in success thresholds that would not effectively offset the permitted impacts and allows the site to meet its stated objectives.

Restoring, establishing, enhancing and/or preserving buffers along the edges of the mitigation site can improve the chances of meeting performance standards and help maintain long-term viability of aquatic resources. Buffers may include uplands and/or wetlands on the drier end of the spectrum capable of protecting or enhancing the targeted functions of the other portions of the compensatory mitigation site. Buffers should serve to suppress erosion and sedimentation, sequester pollutants, and obstruct human influence or intrusion. Determination of buffer adequacy should also be contingent upon its susceptibility to natural and artificial disturbances, the potential for current and foreseeable land uses to cause disturbances, and the size and ecological integrity of the area designated as the buffer. Mitigation credit must be awarded for buffers in amounts commensurate with the estimated degree of protection provided by those upland areas determined essential for maintaining the ecological viability of the adjoining aquatic resources as stated in 33 CFR §332.3(o)(8).

iii. Financial assurance

Financial assurances are typically necessary to instill a high level of confidence that compensatory mitigation projects will be successfully implemented and managed in the short term. Financial assurances guarantee that sufficient money will be available for use to complete, replace, or improve the required mitigation in the event that the mitigation provider is unable or unwilling to meet these obligations. Alternative mechanisms, such as a documented commitment from a government agency, may substitute for financial assurances with approval from the Corps as stated in 33 CFR §332.3 (n)(1).

The project applicant (and subsequently the permittee) is financially responsible for compensatory mitigation required for the associated impacts, whether by purchasing Bank or ILF credits or by bearing the cost of PRM. The prices of mitigation Bank credits and ILF credits are determined by their respective sponsors.

The amount of the required financial assurance must be proposed by the applicant and approved by the Corps. The amount must be based on the expected cost of the compensatory mitigation as influenced by numerous factors including land acquisition, planning and design, construction, materials, labor, legal fees, administration, monitoring, and remediation or adaptive management activities. Other factors that must be considered include size and complexity of the compensatory mitigation project, logistical and technical challenges, and the past performance of the project sponsor.

Financial assurances may be in the form of performance bonds, escrow accounts, casualty insurance, letters of credit, legislative appropriations for government sponsored projects, or other appropriate instruments. Once all performance standards have been met, the financial assurance for the project is released to the sponsor. For more information, see the (Scodari et al. 2016) guidance entitled, “Implementing Financial Assurance for Mitigation Project Success”.

Financial assurances should be phased out or reduced once the project has been demonstrated to be functioning and self-sustaining in accordance with performance standards/success criteria. Further, as stated in Regulatory Guidance Letter 05-01, “Special conditions should provide the permit applicant and/or financial assurance provider with an adequate chance to correct deficiencies with the compensatory mitigation project. In some cases, release of the financial assurance can be keyed to stages demonstrated with achievement of mitigation project performance standards or other special conditions.”

iv. Threats to long-term sustainability

Given that mitigation sites must be issued long-term protection through real estate mechanisms or other available means, the environmental conditions affecting mitigation sites must be conducive to furthering or maintaining the gains in ecological integrity achieved during the monitoring period. Hence, compensatory mitigation sites should be in locations where they will likely remain sufficiently protected from off-site pressures that could substantially reduce functional performance over the long term. Typically, there should be only a limited need to sustain functional performance through maintenance activities such as culvert debris clearing, non-native invasive plant removal and active patrolling to prevent squatting, vandalism, etc.

As required by 33 CFR §332.7(d), a long-term management plan must be developed that describes how the mitigation site will be managed after performance standards have been achieved to ensure the sustainability of the resource. The long-term management plan must also describe long-term financing, identify the legal and physical property protections, and name the party responsible for protecting and managing the site.

Establishing a defined source of funding for long-term management of compensatory mitigation projects is often necessary, especially for sites expected to face challenges related to structural maintenance, non-native invasive species management, trespassing, and approved activities such as hiking, fishing, etc. The project sponsor should identify anticipated costs of long-term stewardship and set up an interest-bearing account to adequately support stewardship activities in perpetuity. Long-term stewardship costs are inherently difficult to predict and are often underestimated, which elevates the risk of the mitigation site becoming degraded over time. Long-term planning must be done very carefully as the amount of long-term stewardship money set aside for a property is decided during the project approval phase, and there is no mechanism to demand or request additional funds from the project sponsor after the project has transitioned to long-term management.

v. Similarity of functions lost from impacts with those to be provided by mitigation

Compensatory mitigation should replace the suite of aquatic resource functions to be lost by the proposed project unless it is demonstrated that there are no feasible options for doing so and/or there is an opportunity to alleviate historical and/or ongoing impacts to watershed health via

out-of-kind mitigation. Typically, replacement of lost aquatic resource functions is achieved by restoration, creation, enhancement and/or preservation of a resource that is similar to the impacted resource in regard to landscape position, hydrologic regime, habitat structure and functional performance.

A clear path to achieving in-kind mitigation is producing and/or sustaining aquatic resources with the same classification as those that would be eliminated by the proposed construction. For wetlands, the classification system with the strongest implications for functional performance is the Hydrogeomorphic (HGM) classification system (Brinson 1993; NRCS 2008), which separates wetlands by water source, hydrodynamics, and landscape position. The other commonly used classification system for wetlands, the Cowardin classification system (Cowardin et al. 1979), is predicated upon landscape position and ground cover type with modifications for water regime. Wetlands of the same HGM class tend to perform functions at similar levels, especially when there are similarities in habitat structure, as indicated by Cowardin class and/or the Alaska Vegetation Classification System (Viereck et al. 1992), as well as similarities in historical and ongoing disturbances, both artificial and natural. For streams, similarity of structure and the associated functional performance should be determined by application of the U.S. Forest Service Channel Type or the Rosgen Stream Classification System.

Assessment of functional performance to be lost by the impacted wetlands and that which would be gained by the mitigation wetlands is best achieved using a scientific, defensible, and regionally specific functional assessment such as the Wetland Ecosystem Services Protocol (WESPAK), the Alaska Wetlands Assessment Method (AKWAM), or the Wetland Functional Assessment Guidebook. Assessing functional performance using one of these methods requires more effort than classifying waters, but it enables quasi-quantitative analysis of specific functions and services and the numbers generated can be fed into the Alaska Credit Debit System or a similar system to quantify losses from impacts and gains from compensatory mitigation. In certain regions of Alaska, the Stream Quantitative Tool (SQT) may be used to determine functional performance of ‘wade-able’ streams and could serve as a guide for assessing the functionality of larger waterways. As with the wetland function assessments, this method can be used to compare proposed impacts with proposed mitigation in a more reliably scientific, defensible, and regionally specific manner (See Appendix C).

vi. Temporal loss of aquatic function

Temporal losses refer to temporary deficit in aquatic resource function caused by any delay in implementing compensatory mitigation and/or realizing its full benefits. Typically, there is some delay between the time when project construction eliminates or reduces aquatic resource function and the time when an equivalent amount of function is provided via compensatory mitigation. The credit release schedule for third party mitigation may provide for an initial debiting of a limited number of credits once the instrument is approved and other appropriate milestones are achieved. Banks, for example, generally sell credits after certain ecological criteria have been met, which results in compensation with no time lag relative to the permitted loss.

Biological, physical, and chemical processes associated with nutrient cycling, hydric soil development, and community development and succession in relation to the type of compensatory mitigation should be considered when determining the magnitude of temporal loss

expected from a proposed project. In Alaska, restoring or establishing structure and functionality of wetlands and riparian areas may take decades given the limited growing season, specific requirements of climax plant communities, and slow pace of soil development. In contrast, although it does not achieve the goal of no net loss, preservation of intact, highly functional wetlands and other waters provides the benefits of compensation without delay.

vii. Location of the compensation site relative to the impact site

Although on-site mitigation is generally preferred over off-site mitigation, opportunities for on-site mitigation are uncommon and often come with difficulties that preclude its use or make it less desirable than off-site mitigation. When reviewing on-site mitigation possibilities, the Corps must consider the practicability of the proposed mitigation, the capacity for offsetting the proposed functional losses, and the compatibility with the landscape changes that would result from the proposed project construction and operation.

Off-site compensatory mitigation without benefit from a watershed approach may be warranted when there are no on-site mitigation opportunities and little potential to strategically site mitigation within the watershed due to limited information and/or limited opportunities. As with any type of compensatory mitigation, off-site mitigation should only be permitted if it can adequately offset the proposed impacts or adequately offset historical or ongoing impacts within the watershed.

PRM should generally be conducted within the same basin (HUC-6) as the proposed impact. However, in Alaska, PRM outside of the basin may be appropriate when there are no Bank or ILF credits available, no suitable sites for compensation available within the basin and the applicant has identified a promising mitigation opportunity in the same subregion (HUC-4). In contrast, Bank and ILF credits may only be used within their defined service areas.

Section 4: Documenting the Decisions and Justifications

The administrative record should document actions that would be taken to avoid and/or minimize any potential detrimental effects from construction. Such actions may include the selection or modifications to the fill material and/or the fill footprint as well as best management practices implemented during construction such as marking project boundaries and restoring temporarily disturbed ground. Further, the decision document must explain why compensatory mitigation is necessary despite the documented avoidance and minimization. More specifically, the decision document must provide a rationale for determining whether compensatory mitigation is required, and if it is required, the rationale for selecting the type, amount, and location of the compensatory mitigation.

The decision to require compensatory mitigation must be documented in the appropriate sections within the Individual Permit combined decision document or the General Permit combined decision document. The requirement to conduct compensatory mitigation must be justified based upon the regulations and guidance discussed in Section 2 of this document.

In decision documents for individual permits where compensatory mitigation is required, it should be explained that the project impacts are specifically identifiable, reasonably likely to occur, and of importance to the human or aquatic environment (33 CFR §320.4(r)). In decision documents for general permits where compensatory mitigation is required, it should be explained that compensatory mitigation is necessary to reduce the adverse impacts so that they are no more than minimal (33 CFR §330.1(e)(3)).

The discussion in the combined decision document must address the hierarchy of compensatory mitigation mechanisms outlined in 33 CFR §332.3(b)(2)-(6). For projects proposing relatively extensive impacts and compensatory mitigation that does not conform to the preferred order, an analysis of other compensatory mitigation options is warranted. This analysis should explain why certain options may have been determined to not be practicable and why any practicable options were not selected.

The decision document should include a concise, but informative description of those elements of the aquatic environment that would be affected by the proposed activity and why the nature and extent of the impacts warrant compensatory mitigation. As discussed in Section 2.B., regulators must document the known functions and services that exist on the site based on best available information. The anticipated direct, indirect, and cumulative impacts to aquatic resources should be clearly described and evaluated for their magnitude and severity. Any prior evaluations, chemical and biological tests, scientific research, and experiences that relate to the discharge should be incorporated into the discussion and cited. Further, the rationale for the required type, amount and location of compensatory mitigation must be clearly described.

The level of analysis and documentation should be commensurate with the level of impacts of the proposed project. Therefore, for most General Permits and Individual Permits with relatively limited impacts, the explanation for why compensatory mitigation is needed should be very brief (i.e., generally no more than a couple paragraphs). For more complicated IPs resulting in greater impacts, the documentation would need to be more detailed.

For Banks and ILF programs, credit developments and exchanges must be documented in RIBITS. Although this is currently handled by regulators in the Alaska District, Bank and ILF sponsors may eventually be allowed to record their ledgers in RIBITS directly. RIBITS was developed by the Corps with support from EPA and the U.S. Fish and Wildlife Service to warehouse basic information on individual Banks, ILF programs, and conservation banks across the country. RIBITS allows users to access information on the types and numbers of mitigation and conservation bank and ILF program sites, associated documents, mitigation credit availability, service areas, as well information on national and local policies and procedures that affect mitigation and conservation bank and ILF program development and operation.

References

- Audubon Alaska. 2024. Important Bird Areas of Alaska, v.3
<http://databasin.org/datasets/f9e442345fb54ae28cf72f249d2c23a9>
- Booth, D.B. and Jackson, C.R. 1997. Urbanization of aquatic systems: degradation thresholds, stormwater detection, and the limits of mitigation. *Journal of the American Water Resources Association*. Vol. 33, No. 5
- Brinson, M.M. 1993. A hydrogeomorphic classification for wetlands, Technical Report WRP–DE–4, U.S. Army Corps of Engineers Engineer Waterways Experiment Station, Vicksburg, MS.
<http://el.erdc.usace.army.mil/wetlands/pdfs/wrpde4.pdf>
- Cowardin, L.M., V. Carter, F.C. Golet., and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior. U.S. Fish and Wildlife Service. Office of Biological Services. Washington, D.C.
http://www.fws.gov/nwi/Pubs/Reports/Class_Manual/class_titlepg.htm
- Crawford, S., Whelan, G., Infante, D.M., Blackhart, K., Daniel, W.M., Fuller, P.L., Birdsong, T., Wieferich, D.J., McClees-Funinan, R., Stedman, S.M., Herreman, D., and Ruhl, P. 2016. Through a Fish’s Eye: The Status of Fish Habitats in the United States 2015. National Fish Habitat Partnership. <http://assessment.fishhabitat.org/>
- EPA (U.S. Environmental Protection Agency). 2024. 8 Tools of Watershed Protection in Developing Areas. https://cfpub.epa.gov/watertrain/moduleFrame.cfm?parent_object_id=1280#
- Flagstad, L., M. A. Steer, T. Boucher, M. Aisu, and P. Lema. 2018. Wetlands across Alaska: Statewide wetland map and assessment of rare wetland ecosystems. Alaska Natural Heritage Program, Alaska Center for Conservation Science, University of Alaska Anchorage. 151 pages.
- Hall, J. Powell, J., Carrick, S., Rockwell, T., Hollands, B., Walter, M.T., and White, J. 2003. Wetland Functional Assessment Guidebook Operational Draft Guidebook for Assessing the Functions of Slope/Flat Wetland Complexes in the Cook Inlet Basin Ecoregion, Alaska, using the HGM Approach. State of Alaska, Department of Environmental Conservation. Juneau, Alaska.
- Kaplan, M. and Ayers, M. 2000. Impervious surface cover concepts and thresholds. Rutgers University. <https://rucore.libraries.rutgers.edu>
- Kim, H., Jeong, H., Jeon, J. and Bae, S. 2016. The impact of impervious surface on water quality and its threshold in Korea. *Water* 2016, 8(4) <https://www.mdpi.com/2073-4441/8/4/111>
- LaCroix, M. 2018. Technical review of a threshold-based approach for determining significant degradation in Alaska. U.S. Environmental Protection Agency. Anchorage, Alaska.

NOAA (National Oceanic and Atmospheric Administration). 2022. How to use land cover data as a water quality indicator. NOAA Office for Coastal Management. Last modified: 11/30/2022. <https://coast.noaa.gov/howto/water-quality.html>

National Research Council. 2001. Compensating for Wetland Losses Under the Clean Water Act. Washington, DC: The National Academies Press. <https://doi.org/10.17226/10134>.

NRCS (Natural Resources Conservation Service). 2008. Hydrogeomorphic Wetland Classification System: An Overview and Modification to Better Meet the Needs of the Natural Resources Conservation Service. <https://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=18537.wba#:~:text=The%20HGM%20classification%20system%20was,result%20of%20the%20HGM%20conditions>.

Ourso, R.T. and Frenzel, S.A. 2003. Identification of linear and threshold responses in streams along a gradient of urbanization in Anchorage, Alaska. *Hydrobiologia* 501, 117-131. <https://link.springer.com/article/10.1023/A:1026211808745>

Powell, J., D'Amore, D., Thompson, R., Brock, T. Huberth, P., Bigelow, B., Walter, M.T. 2003. Wetland Functional Assessment Guidebook Operational Draft Guidebook for Assessing the Functions of Riverine and Slope River Proximal Wetlands in Coastal Southeast & Southcentral Alaska using the HGM Approach. State of Alaska, Department of Environmental Conservation. Juneau, Alaska.

Salcha Delta Soil & Water Conservation District, Adamus, P. and U.S. Fish and Wildlife Service. 2021. Wetland Ecosystem Services Protocol for Interior Alaska (WESPAK-INT) Version 1.0. Delta Junction, Alaska.

Schueler, R., Fraley-McNeal, L., Cappiella, K. 2009. Is Impervious Cover Still Important? Review of Recent Research. *Journal of Hydrologic Engineering*. 309-315

Scodari, P., Martin, S., Willis, A. 2016. [Implementing Financial Assurance for Mitigation Project Success](#). Institute for Water Resources and U.S. Army Corps of Engineers. Alexandria, VA.

Southeast Alaska Watershed Coalition. 2021. Lower Jordan Creek Watershed Management Plan. Stormwater management and riparian restoration for sediment, PAH, and metals. Juneau, Alaska.

U.S. Army Corps of Engineers Alaska District. 2016. Alaska District: Credit Debit Methodology, Version 1.0. U.S. Army Corps of Engineers, Alaska District. SPN-2016-00187_21Sep2016.

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. June 15, 2018. "Memorandum of Agreement between The Department of the Army and The Environmental Protection Agency concerning Mitigation Sequence for Wetlands in Alaska under Section 404 of the Clean Water Act".

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. January 24, 1992. "Clarification of the Clean Water Act Section 404 Memorandum of Agreement on Mitigation".

U.S. Army Corps of Engineers and U.S. Environmental Protection Agency. May 12, 1994. "Statements on the Mitigation Sequence and No Net Loss of Wetlands in Alaska".

U.S. Army Corps of Engineers Alaska District, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and Municipality of Anchorage. 2011. The Anchorage Debit-Credit Method. US Army Corps of Engineers, Alaska District.

United States Geological Survey Water Resources of the United States,
<http://water.usgs.gov/GIS/huc.html>

Viereck, L.A., C.T. Dyrness, A.R. Batten, and K.J. Wenzlick. 1992. The Alaska Vegetation Classification. PNW-GTR-286. United States Department of Agriculture. U.S. Forest Service. Pacific Northwest Research Station. Portland, Oregon.
https://www.geobotany.uaf.edu/library/pubs/ViereckLA1992_USFS_PNWGTR286.pdf

Watershed Resource Action Plan for the Chena River. 2015. Tanana Valley Watershed Association. Fairbanks, Alaska.

Appendix A: Steps to Determine Compensatory Mitigation Requirements

Below are the three potential permitting scenarios regarding compensatory mitigation and the actions that must be taken by the applicant and by the Corps regulator:

1. The proposed project does not require compensatory mitigation beyond avoidance and minimization:
 - a. The regulator must review document, request more information as appropriate and document avoidance and minimization measures;
 - b. When completing the individual permit process, the public notice must state their rationale as to why no compensatory mitigation has been proposed and the applicant's rationale for not proposing any or their initial proposal for mitigation and the rationale for why they believed mitigation was appropriate and practicable.
 - c. The applicant must provide rationale as to why they are not proposing compensatory mitigation for their proposed project; and
 - d. In the decision document (and possibly in a memorandum for record), the Corps regulator must document avoidance and minimization measures and rationale for not requiring compensatory mitigation.
2. The proposed project requires compensatory mitigation, but the applicant does not propose any:
 - a. The regulator must review document, request more information as appropriate, and document avoidance and minimization measures.
 - b. When completing the individual permit process, the public notice must state that no compensatory mitigation has been proposed and the applicant's rationale for not proposing any.
 - c. When reviewing the application, the Corps regulator must inform the applicant that compensatory mitigation is warranted and required. The regulator should also inform the applicant about existing Bank and/or ILF credits and/or any potential off-site opportunities for conducting PRM.
 - d. If the applicant proposes PRM during the permit review process, they must submit a CMP. The regulator must review it to determine whether it complies with the requirements of 33 CFR §332. The regulator should verify whether Bank or ILF Program credits, or potentially other PRM opportunities, are available and potentially appropriate as compensatory mitigation.

- e. Components of a mitigation plan may be addressed through permit conditions if no plan is submitted or the plan is deficient (see 33 CFR 332.4(c)(ii)).

In the decision document the Corps regulator must document acceptance of avoidance and minimization measures and rationale for requiring the type and amount of compensatory mitigation. Regulators are not responsible for the preparation of CMPs, but they are responsible for the review and approval of CMPs.

- 3. The proposed project is submitted with a mitigation statement proposing compensatory mitigation:
 - a. The regulator must review document, request more information as appropriate, and document avoidance and minimization measures.
 - b. The regulator must review the mitigation proposal for adequacy in light of applicable regulations and guidance. If inadequate, the regulator must work with the applicant to establish a CMP that meets the requirements of 33 CFR §332.
 - c. For applicants who intend to fulfill their compensatory mitigation obligations by securing credits from approved Banks or ILF programs, their mitigation plans need to include only the items described in paragraphs 33 CFR 332.4(c)(5) and (c)(6), and either a statement of intent to use a Bank or ILF program or the name of the specific Bank or ILF program to be used.
 - d. If the applicant proposes PRM, then they must submit a CMP and the regulator must review it to determine whether it meets the requirements of 33 CFR §332. The regulator should also determine whether Mitigation Bank or ILF Program credits, or potentially other PRM opportunities, are available and better suited as compensatory mitigation.
 - e. In the decision document, the regulator must document acceptance of avoidance and minimization measures and rationale for requiring the type and amount of compensatory mitigation. Regulators are not responsible for the preparation of CMPs, but they are responsible for the review and approval of mitigation plans.

Appendix B: Compensatory Mitigation Considerations for Different Types of Corps Authorization

General Permits

Nationwide permits (NWP) and regional general permits (RGPs) are Department of the Army permits that authorize activities that are similar in nature and cause only minimal adverse environmental impacts to aquatic resources, separately or on a cumulative basis. If the Corps determines that proposed impacts are more than minimal, then the applicant must either apply for an Individual Permit or propose compensatory mitigation sufficient to reduce adverse impacts to a minimal level (33 CFR §330.1(e)(3)). However, compensatory mitigation cannot be used to enable authorization of a discharge via general permits with losses beyond the acreage limits of those general permits that have such limits. Compensatory mitigation can and should be used to ensure that an activity already meeting the established acreage limits of an NWP or RGP also satisfies the requirement that the activity would have no more than minimal impact upon aquatic resources.

As found in General Condition 23(b) of the NWPs, compensatory mitigation “will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.” General Condition 23 also states that mitigation is required for all wetland losses greater than 1/10th of an acre and all stream losses greater than 3/100ths of an acre. These requirements may be waived if the Corps Regulatory, also denominated as District Engineer), determines that the adverse impacts would be no more than minimal and provides an activity-specific waiver. Conversely, it is possible to require compensatory mitigation for impacts below these quantitative thresholds when impacts are determined to be more than minimal.

A general permit may be verified with a draft permittee responsible CMP, but work may not commence in WOTUS until a final plan incorporating the required elements has been approved by the Corps (33 CFR §332.4(c)). If no mitigation plan is submitted, but compensation is warranted, then the Corps may address key elements (e.g., objectives, performance standards, etc.) through special conditions attached to the permit.

Letters of Permission (LOPs)

Proposed projects that do not fit within an existing general permit and would have less than minimal impacts to WOTUS are typically processed as an LOP. For activities authorized by general permits or letters of permission, the review and approval process for compensatory mitigation proposals and plans must be conducted in accordance with the terms and conditions of those permits and applicable regulations.

Individual Permits

Proposed projects that do not fit within an existing general permit and would have more than minimal impacts to WOTUS are typically processed as an individual permit. As required by 33

CFR §325.1(d)(7), the applicant must submit a statement describing how impacts would be avoided, minimized, and compensated. If the applicant asserts that the impacts would be minimal, then the statement should justify this assertion and declare that compensatory mitigation is not necessary. It is the Corp's responsibility to determine what mitigation is appropriate for the proposed project, including any compensatory mitigation. Compensatory mitigation should only be required to offset more than minimal, unavoidable adverse aquatic resource impacts that remain after all avoidance and minimization have been achieved.

The applicant must indicate whether the compensatory mitigation would be accomplished by utilizing an approved Bank or ILF program, or whether it would be implemented by the applicant (permittee-responsible compensatory mitigation). At minimum, the applicant must submit a conceptual mitigation plan as part of their compensatory mitigation statement if they are proposing permittee-responsible mitigation. A detailed mitigation plan meeting all the applicable requirements must be submitted and approved prior to permit issuance (33 CFR §332.4(c)). The approved final mitigation plan must be incorporated into the individual permit by reference; this is typically achieved by a special condition requiring the permittee to implement the approved plan. Alternatively, the Corps may address any of the items required in a mitigation plan individually as permit conditions.

For permittees who intend to fulfill their compensatory mitigation obligations by securing credits from approved Banks or ILF programs, their mitigation plans need include only the items described in paragraphs 33 CFR §332.4(c)(5) and (c)(6), and the name of the specific Bank or ILF program to be used.

Appendix C: Functions Assessment Methods in Alaska

Table 1. Functions Assessment Methods Most Commonly Used by Region

Alaska Regions	Functions Assessment Method Most Commonly Used
Southeast	Wetland Ecosystem Services Protocol for Southeast Alaska (WESPAK-SE) http://southeastalaskalandtrust.org/wp-content/uploads/45yI789N/2012/02/A-Short-Guide-to-Using-WESPAKse.pdf
South Central	<p>Anchorage Debit Credit Method (ADCM)¹ https://safe.menlosecurity.com/doc/docview/viewer/docN13FFCDC561340cf2976ffdcc02393bed0f76ca4a50341a32b10d255ea0e2310eb5ef4c4d3a81</p> <p>Wetland Functional Assessment Guidebook, Operational Draft Guidebook for Assessing the Functions of Slope/Flat Wetland Complexes in the Cook Inlet Basin Ecoregion, Alaska using the HGM Approach (Hall et al. 2003)</p> <p>Wetland Functional Assessment Guidebook, Operational Draft Guidebook for Assessing the Functions of Riverine and Slope River Proximal Wetlands in Coastal Southeast & Southcentral Alaska using the HGM Approach (Powell et al. 2003)</p>
Interior	<p>Alaska Wetland Assessment Method (AKWAM) https://dot.alaska.gov/stwddes/desenviron/assets/pdf/nwp/akwam1_0.pdf</p> <p>Wetland Ecosystem Services Protocol for Interior Alaska (WESPAK-INT) Version 1.0 (Salcha Delta Soil & Water Conservation Service et al. 2021) https://www.salchadeltaswcd.org/wespak-int/</p>
Western	<p>Alaska Wetland Assessment Method (AKWAM) https://dot.alaska.gov/stwddes/desenviron/assets/pdf/nwp/akwam1_0.pdf</p>
North Slope	<p>Operational Draft Regional Guidebook for the Rapid Assessment of Wetlands in the North Slope Region of Alaska - ERDC/EL TR-17-14 https://wetlands.el.ercd.dren.mil/pdfs/trel17-14.pdf</p>

¹ The ADCM is most frequently used within the Municipality of Anchorage and does not necessarily entail functions assessment. Instead, it identifies situations when functions assessment is necessary and provides the Anchorage Wetlands Assessment Method and the Waterway Assessment Method for Anchorage (WAMA) as a means for conducting the assessment.

Table 2. Functions Assessment Methods Used by each Bank

Mitigation Bank	Bank Status	Alaska Region	Aquatic Resource Improved/ Preserved	Functions Assessment Method Used	POA #
Charles Etok Edwardsen Mitigation Bank	Approved	North Slope (Arctic Coastal Plain)	Palustrine wetlands	North Slope Rapid Assessment Method	2019-00156
Diamond Willow Mitigation Bank	Approved	South Central	Palustrine wetlands; stream	Operational Draft Guidebook for Cook Inlet Hydrogeomorphic (HGM) Slope-Flat & HGM Riverine	2017-00407
Harmany Ranch Wetland Mitigation Bank	Approved	South Central	Palustrine wetlands; stream	Anchorage Debit Credit Method (ADCM)	2007-01756
James Toman Mary Redmond Reserve Umbrella Mitigation Bank	Approved	South Central	Estuarine/ Marine	Anchorage Debit Credit Method (ADCM)	2006-01931
Natzuhini Bay Mitigation Bank	Approved	Southeast	Estuarine & Palustrine wetlands; stream	Modified HGM	2006-00349
Pioneer Reserve Wetland Mitigation Umbrella Bank	Approved	South Central	Palustrine & Riverine wetlands	HGM Regional Guidebook for Cook Inlet Slope/Flat Wetlands	2010-00147
Portage Reserve Mitigation Bank	Approved	South Central	Palustrine wetlands	Anchorage Debit Credit Method (ADCM)	2017-00055
Su-Knik Mitigation Bank, Fish Creek Parcel	Approved	South Central	Palustrine & Riverine wetlands	HGM Regional Guidebook for Cook Inlet - Coastal	2006-01608
Tanana River Watershed Umbrella Mitigation Bank	Approved	Interior	Palustrine wetlands	Alaska Wetlands Assessment Method (AKWAM) and Wetland Ecosystem Services Protocol for Interior Alaska (WESPAK-INT)	2009-01211
Trillium Mitigation Bank	Approved	Southeast	Estuarine & Palustrine wetlands; Riverine	Wetland Ecosystem Services Protocol for Southeast Alaska (WESPAK-SE)	2013-00395

Table 3. Functions Assessment Used by In-lieu Fee (ILF) Program

In-lieu Fee Mitigation Program	ILF Status	Alaska Region	Aquatic Resource Improved/ Preserved	Functions Assessment Method Used	POA #
Great Land Trust- Anchorage Service Area	Approved	South Central	Riverine, Palustrine & Estuarine wetlands; stream	Anchorage Debit Credit Method (ADCM)	2006-00545
Great Land Trust- Matsu Service Area	Approved	South Central	Riverine, Palustrine & Estuarine wetlands; stream	Operational Draft Guidebook for Cook Inlet HGM Slope-Flat & HGM Riverine	2006-00545
Southeast Alaska Land Trust	Approved	Southeast	wetlands & streams	Wetland Ecosystem Services Protocol for Southeast Alaska (WESPAK-SE)	2010-00123
Southeast Alaska Mitigation Fund	Approved	Southeast	wetlands & streams	Wetland Ecosystem Services Protocol for Southeast Alaska (WESPAK-SE), Nearshore Assessment Tool for Alaska- Southeast (NATAK-SE) and Stream Credit Debit Method (SCDM)	2012-00138