HOOD CANAL COORDINATING COUNCIL
IN-LIEU FEE PROGRAM INSTRUMENT

Technical Appendices and

Compensation Planning Framework - Final

Submitted by:

Hood Canal Coordinating Council

With Technical Assistance from:

Environmental Science Associates

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LIST OF ACRONYMS

AMU	Assessment and Mitigation Units (in marine areas)
BMP	Best Management Practice
CFR	Code of Federal Regulations
DA	Department of the Army (usually indicating Corps permits)
DE	District Engineer
DNR	Department of Natural Resources
DOI	Degree of Impact
EPA	Environmental Protection Agency
ESA	Endangered Species Act
HCCC	Hood Canal Coordinating Council
ILA	Inter-local Agreement
ILF	In-lieu fee
IRT	Inter-agency Review Team
IWMP	Integrated Watershed Management Plan
NRC	National Research Council
NOAA	National Oceanic and Atmospheric Administration
NMFS	National Marine Fisheries Service
OHWM	Ordinary High Water Mark
PSNERP	Puget Sound Nearshore Ecosystem Restoration Project
RCW	Revised Code of Washington
SPU	Shoreline process unit
TLF	Temporal Loss Factor
US	United States
USFWS	United States Fish and Wildlife Service
WA	Washington
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WRIA	Watershed Resource Inventory Area

APPENDIX A PROGRAM OVERVIEW

A.1. Introduction

Collectively, the Basic Agreement, these appendices, and the exhibits that follow constitute the In-Lieu Fee Program (ILF) Instrument for the Hood Canal Coordinating Council (HCCC). The Basic Agreement lays the legal framework for the operation of the program and establishes the terms of the "contract." These appendices describe the program and its operation in greater detail.

The HCCC ILF Program is an interlocal agency and non-profit sponsored "in-lieu fee" mitigation program. The proposed program structure and processes for completing mitigation projects are based upon guidance outlined in a federal rule issued in April 2008 by the U.S. Army Corps of Engineers (Corps) and U.S. Environmental Protection Agency (EPA) [33 CFR Part 332 and 40 CFR Part 230] ("the federal rule"). Hood Canal Coordinating Council (the "Sponsor") seeks to "certify" the HCCC ILF Program under the federal rule. This instrument has been generated under the authority of the federal rule. Nothing in this HCCC ILF Program Instrument shall be held to contradict or override the federal rule; in the case of any ambiguity, the federal rule shall control.

The federal rule defines an *in-lieu fee program* as "a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements... Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor."

The proposed HCCC ILF Program seeks to address historic inadequacies associated with conventional compensatory mitigation by creating a comprehensive, equitable, and consistent in-lieu fee program that includes all elements and phases necessary to ensure mitigation success among small and large projects, including: rigorous baseline conditions analysis; thorough assessment of impacts; seamless and transparent fee transaction processes; ecologically based mitigation site selection criteria aligned with critical watershed needs; professional project design and implementation; and long-term commitment to adaptive management, maintenance, monitoring, and stewardship to ensure no net loss of ecological functions and values.

The HCCC ILF Program is intended primarily to serve permit applicants in the Hood Canal drainages of Kitsap County, Jefferson County, and Mason County whose project triggers compensatory mitigation for unavoidable impacts to aquatic resources. The HCCC ILF Program will enable mitigation monies generated as a result of these projects to be directed toward the top conservation and restoration priorities in the Hood Canal watershed, as guided by the Instrument and that are commensurate with the type and amount of impacts generating the mitigation monies. As such, the HCCC ILF Program provides an additional means of accomplishing multiple Hood Canal watershed goals

efficiently and compensates for the loss and degradation of ecological functions and values resulting from permitted activities.

The HCCC's member organizations include Jefferson, Kitsap and Mason counties, the Port Gamble S'Klallam Tribe, and the Skokomish Tribe. The member organizations formed the HCCC in 1985 to coordinate their activities with each other and with other federal, state, tribal, and local governments with jurisdiction over land and resource management in Hood Canal. The HCCC is responsible for evaluating ecosystem conditions and prioritizing the most important actions to restore the Hood Canal watershed to health. The HCCC accomplishes these tasks in part through review and coordination of existing land use plans, watershed plans, species recovery plans, and prioritized actions from other entities. The HCCC also serves an accountability and environmental outcome monitoring function for the Hood Canal watershed. The HCCC excels at coordinating restoration efforts and bringing together representatives from all levels of government agencies and non-government organizations.

In addition to the HCCC, a second entity will play a significant role in the HCCC ILF Program: representatives from a group of agencies making up an "Interagency Review Team" (IRT). The District Engineer (DE) for the Corps Seattle District, or designee, serves as chair of the IRT. The Washington Department of Ecology (Ecology) will co-chair the IRT. Other members include tribes and federal, state, and local agencies. The IRT reviews documentation for, and advises the district engineer and Ecology on, the establishment and management of the HCCC ILF Program.

This Instrument has been developed following review of a prospectus by the IRT and the public. On October 18, 2011, the Corps and Ecology completed their review of the HCCC ILF Program Prospects and determined that the Program is "ecologically appropriate and has potential to provide appropriate compensatory mitigation." This determination authorized HCCC to move forward with development of this Instrument.

Once the HCCC ILF Program is certified and operational (i.e., when the Instrument is signed by the Corps' District Engineer, Ecology, and the Sponsor, after consultation with the IRT), the HCCC ILF Program can begin selling "credits" and implementing compensatory mitigation projects. The IRT will play an integral role in reviewing and recommending approval of proposed mitigation "receiving sites" and Mitigation Plans. The IRT will provide oversight in an advisory role to the Corps and Ecology for the HCCC ILF Program actions, including future amendments to this instrument. Agencies and tribes represented on the IRT may change through time.

A.2. Program Start-up

The HCCC's primary mission is to protect and enhance Hood Canal's environmental and economic health and HCCC is committed to implementing an ILF program that makes a positive contribution to the health and sustainability of the watershed. HCCC recognizes that as a "first-of-its-kind" mitigation alternative for the Hood Canal watershed, the HCCC ILF Program must be implemented and operated in a way that does not

inadvertently facilitate undesirable types or levels of development and/or associated degradation. The HCCC and its member governments intend to initiate the HCCC ILF Program gradually, in a measured fashion as they build internal operational capacity, institutional capability, and community trust and confidence. The HCCC proposes five specific safeguards to ensure the HCCC ILF Program is phased-in in a way that contributes to and does not detract from its conservation goals:

- Requesting a small number of "advanced credits" from the Corps and Ecology sufficient to offset a limited number of development projects.
- Providing to the Corps and Ecology annual programmatic reviews/ledgers/audits that are described in the Instrument. The district engineer has the authority to curtail, modify, assume, or de-authorize the HCCC ILF Program if it is not meeting its goals and objectives.
- Beginning with larger marine and freshwater projects that have a federal and state permitting nexus where mitigation of unavoidable impacts would significantly benefit from a regional program. As the HCCC ILF Program and its member governments build functional capacity, credibility and trust over time and decide to further utilize the ILF Program, they may choose to expand into smaller scale projects (some of which are likely to lack a federal mitigation nexus such as shoreline development projects that require only local permits). If the counties so choose to further utilize the ILF Program, IRT members, as stakeholders at the county level, will have the opportunity to consult during their legislative processes.
- Providing a transparent and collaborative forum for ensuring that all projects considered for inclusion in the HCCC ILF Program have followed either federal guidelines for mitigation sequencing (including avoidance and minimization of all permitted impacts) or protocols developed to verify mitigation sequencing has occurred in a manner consistent with those guidelines (where appropriate) that will meet HCCC ILF Program goals and objectives.
- Retaining the right to refuse payment associated with projects that pose a significant or dire conflict with the HCCC's organizational mission. In determining whether to accept a payment for any impact, the HCCC may consider various factors in its discretion, including but not limited to: (a) the adequacy of the impact assessment by the applicant or regulatory or oversight agencies, (b) the effect of the impact(s) on the HCCC's conservation priorities, and/or (c) the HCCC's ability to mitigate for the impacts in the watershed.

A.3. Regulatory Oversight and Authority

The HCCC ILF Program will be used for compensatory mitigation for unavoidable impacts to waters of the United States, waters of the State of Washington, or waters of tribal reservations that result from activities authorized under Section 404 and/or 401 of the

Clean Water Act, Section 10 of the Rivers and Harbors Act (33 U.S.C. § 403), and/or the Revised Code of Washington 90.48, Governor's Executive Order No. 89-10, Protection of Wetlands (December 1989), among others, including, but not limited to, other state and local government regulations.

Mitigation credits approved under the HCCC ILF Program may be sold to fulfill state and/or local requirements, even when no Department of the Army (DA) permit is required. Nothing in the HCCC ILF Program affects the permitting requirements or enforcement authority of state or local permitting entities over any permits conditioned on HCCC ILF Program use. Such permitting entities may still enforce the individual requirements of permits granted under the HCCC ILF Program.

Member jurisdictions may choose to work with the Hood Canal Coordinating Council to determine the need for, and their policy intent to, update their regulations and administrative guidance to enable the voluntary use of the HCCC ILF Program as a means of complying with permitting and regulatory requirements for compensatory mitigation.

Nothing in the HCCC ILF Program relieves or displaces government to government consultation obligations between the federal government and affected tribal governments within all service areas of the HCCC ILF Program.

Projects that impact Endangered Species Act (ESA) listed species or their habitat will be considered on a case-by-case basis and the agencies that are considering approval of such projects will need to consult with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) and US Fish and Wildlife (USFWS) in addition to the other permitting agencies.

To reduce losses of "difficult-to-replace resources", the HCCC ILF Program will work with the regulatory agencies and the IRT to reduce risk from development activities associated with these resources. The HCCC ILF Program interprets the federal register to suggest that bogs, fens, springs, streams, and mature forested wetlands are "difficult-to-replace." As stated in § 332.3(e)(3) [§ 230.93(e)(3)], in cases where further avoidance and minimization is not practicable, the required compensatory mitigation for these resources must be provided through in-kind rehabilitation, enhancement or preservation to the extent practicable. Appendix H also requires higher risk factors to be applied in the credit/debit calculation of both freshwater and marine impacting projects for "difficult-to-replace" resources.

Additionally, in the Hood Canal service areas, the sponsor, resource agencies, and tribes, believe the following habitats are also "difficult-to-replace." Mitigating these habitats through in-kind rehabilitation, enhancement or preservation must be considered and higher risk factors will be applied when calculating credits/debits. These may include, but are not limited to, freshwater peat wetlands, high and medium risk river and stream channel migration zones for rivers and streams, seeps and springs, and certain bio/geo/chemical processes such as hydrology in slope, headwater, and floodplain habitats. These may also include, but are not limited to, tidally-influenced and vegetated

wetlands/channels, eelgrass and kelp habitats, subtidal habitats, native shellfish beds, and forage fish (e.g., herring, sand lance, surf smelt) spawning areas. This list of difficult-to-replace habitats may be updated as more information becomes available and watershed needs are defined. The IRT and the HCCC ILF Program recognizes the importance of adequately compensating for impacts to ecological processes (e.g. sediment processes at drift cell scales) that maintain these habitats.

A.4. Goals

The primary goal of the HCCC ILF Program is to replace functions and values of aquatic resources and associated habitats that have been degraded or destroyed as a result of activities conducted in compliance with or in violation of Section 404 of the Clean Water Act of 1972 and/or Section 10 of the River and Harbor Act of 1899. The HCCC ILF Program is also intended to uphold no net loss goals and meet wetland mitigation requirements of Washington State (Revised Code of Washington 90.48, Governor's Executive Order No. 89-10, Protection of Wetlands December 1989), among other, including but not limited to, state and local government regulations.

The HCCC ILF Program will provide compensatory mitigation through a variety of strategies (e.g., enhancement, restoration, establishment, preservation) to ensure there is no net loss of aquatic resource functions and values within the area served by the HCCC ILF Program (Exhibit 1). Furthermore, the HCCC ILF Program will implement mitigation in a watershed context as required by the federal rule (Appendices H to V) (see 33 CFR 332.3(c)).

The following are additional goals of the HCCC ILF Program, consistent with the requirements of the federal rule:

- Provide a viable option to ensure the availability of high-quality mitigation for unavoidable, site-specific impacts to freshwater wetlands, streams, lakes, buffers, and marine/nearshore aquatic resources in the Hood Canal watershed to ensure, at a minimum, no net loss of aquatic functions and values in Hood Canal.
- Utilize scale efficiencies by combining the impacts from individual projects within a service area into mitigation at larger sites.
- Meet federal, state, tribal, and local regulatory requirements by creating an efficient mechanism for fulfilling compensatory mitigation requirements.
- Develop, in cooperation with environmental regulatory partners, an ecologically based site selection process and associated tools to identify the most appropriate freshwater and marine/nearshore mitigation options (e.g. aquatic resource type, amount, location, and mitigation strategy) that result in greater ecological benefit to the Hood Canal watershed than could be achieved through permittee-responsible mitigation.

- Develop a self-sustaining HCCC ILF Program that identifies, prioritizes, and completes mitigation projects that collectively produce "no net loss" of aquatic functions and values at appropriate scales (e.g. drift cell, assessment and mitigation unit (AMU), sub-basin, watershed, and service areas) over time, and strives for "net resource gain.
- Provide an effective and transparent accounting structure for collecting in-lieu fees, disbursing project funds, and compliance reporting, as required under 33 CFR § 332.8.
- Meet the goals and aspirations of the Hood Canal Integrated Watershed Management Plan (IWMP).
- Work in an efficient and transparent manner with the IRT, co-chaired by the Corps and Ecology, to review, analyze, and implement mitigation projects and enact amendments to the HCCC ILF Program Instrument.
- Ensure "difficult-to-replace" habitats are conserved and restored by working with the IRT and with regulatory agencies at local, state, federal, and tribal levels.
- Select the best mitigation receiving sites for the HCCC ILF Program through a rigorous analysis by a group of professional resource managers and local experts, drawing from local knowledge and best available science and analyses for a particular basin, watershed, or marine area.

APPENDIX B DEFINITIONS

There are terms used in the mitigation banking industry and in-lieu fee programs that may have different meanings than their colloquial usage would suggest. There are also differences in the legal definitions used by HCCC and the federal agencies. Many of the terms described below are definitions used by the Regulatory Program of the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency [33 CFR Parts 320-331; 40 CFR Part 230] and are adopted by HCCC for the HCCC ILF Program.

Adaptive management means the development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to optimize performance. It includes the selection of appropriate measures that will ensure that the aquatic resource functions are provided and involves analysis of monitoring results to identify potential problems of a compensatory mitigation project and the identification and implementation of measures to rectify those problems.

Advance credits means any credits of an approved in-lieu fee program that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan. Advance credit sales require an approved in-lieu fee program instrument that meets all applicable requirements including a specific allocation of advance credits, by service area where applicable. The instrument must also contain a schedule for fulfillment of advance credit sales.

Applicant means an entity seeking a permit for a development project that will create impacts to aquatic resources. Use of the term applicant indicates that a permit has not yet been issued.

Aquatic Resources, including "wetlands" and "aquatic areas." To be considered a wetland, the aquatic resource must meet Corps of Engineers Wetland Delineation Manual (1987) standards. These wetlands include isolated wetlands that may not be regulated by the Corps and EPA.

The Washington State Wetland Identification and Delineation Manual defines *wetlands* as:

“Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

For the purposes of the HCCC ILF Program, a wetland is not an *aquatic area*. The HCCC ILF Program separately defines *aquatic area* as:

Aquatic area: any non-wetland water feature including all shorelines of the state, rivers, streams, marine waters, inland bodies of open water including lakes and ponds, reservoirs and conveyance systems and impoundments of these features if any portion of the feature is formed from a stream or wetland. Aquatic areas are regulated by federal, state, and/or local regulations and typically require mitigation when impacted.

Assessment and Mitigation Unit (AMU) means the sub-geography at which the Program will assess and mitigate resource impacts in the marine/nearshore service area. Each AMU displays a range of geography, land use, historic and future impacts, geology, patterns of littoral drift, oceanography and habitat complexes, but do not display clear distinctions at their boundaries or in all characteristics.

Buffer means an upland and/or riparian area that protects and/or enhances aquatic resource functions associated with wetlands, rivers, streams, lakes, marine, and estuarine systems from disturbances associated with adjacent land uses.

Channel Migration Zone (CMZ) means the area along a river within which the channel(s) can be reasonably predicted to migrate over time as a result of natural and normally occurring hydrological and related processes when considered with the characteristics of the river and its surroundings. High risk CMZs are those non-disconnected portions of the channel that are likely to migrate within a 50-year timeframe, while medium risk CMZs are those non-disconnected portions of the channel that are likely to migrate within a 50- to 100-year timeframe.

Compensatory mitigation means 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.

Credit means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the accrual or attainment of aquatic functions at a compensatory mitigation site. The measure of aquatic functions is based on the resources restored, established, enhanced, or preserved.

Credit Fees are fees paid by a permittee to purchase HCCC ILF Program mitigation credits. Credit Fees are used to pay for all aspects of implementing and managing mitigation projects, as well as Long Term Management duties. Credit Fees are one component of a *Mitigation Fee*, the other being *Land Fees*.

Cumulative impact means the summation of impacts on a habitat, species, or resource resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

Debit means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the loss of aquatic functions at an impact or project site. The measure of aquatic functions is based on the resources impacted by the authorized activity.

Decouple means to take apart or separate the link between.

Direct impact means those adverse effects caused by project activities that occur contemporaneous with the action.

Enhancement means 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). Enhancement does not result in a gain in aquatic resource area.

Establishment (creation) means the manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area and functions.

Establishment phase (also *performance period*) means the period of time from project construction until all mitigation credits associated with a project have been released, i.e. when a mitigation project is still "earning" mitigation credit. The end of the establishment phase marks the beginning of the *long-term management phase.*

Exhaust means to prove by examining all individual cases*.*

Fulfillment of advance credit sales of an in-lieu fee program means application of credits released in accordance with a credit release schedule in an approved mitigation project plan to satisfy the mitigation requirements represented by the advance credits. Only after any advance credit sales within a service area have been fulfilled through the application of released credits from an in-lieu fee project (in accordance with the credit release schedule for an approved mitigation project plan), may additional released credits from that project be sold or transferred to permittees. When advance credits are fulfilled, an equal number of new advance credits is restored to the program sponsor for sale or transfer to permit applicants.

Function (in ecosystems) means any performance attribute or rate function at some level of biological organization (e.g. green plants capturing light energy and converting it into chemically stored energy) (NRC 1992). Functions are formed and maintained by the physical, chemical, and biological processes and structures that occur in ecosystems.

Impact means adverse effect.

Indirect impact means those adverse effects caused by project activities that are reasonably certain to occur, but occur later in time or at some distance from the project site.

Initial physical and biological improvements means that the majority of physical and biological actions (e.g. grading and planting) approved in the Mitigation Plan have been implemented.

In-kind means a resource of a similar structural and functional type to the impacted resource.

In-lieu fee program means a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits, as well as other federal, state, tribal, and local permits. Similar to a mitigation bank, an in-lieu fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu program sponsor. However, the rules governing the operation and use of in-lieu fee programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an in-lieu fee program are governed by an in-lieu fee program instrument.

In-lieu fee program instrument means the legal document for the establishment, operation, and use of an in-lieu fee program.

Instrument means in-lieu fee program instrument.

Interagency Review Team (IRT) means an interagency group of federal, tribal, state, and/or local regulatory and resource agency representatives that reviews documentation for, and advises the district engineer and Ecology on, the establishment and management of an in-lieu fee program.

Land fees are fees paid by a permittee using the HCCC ILF Program to account for the land costs associated with implementing a mitigation project. Land Fees may be used by the HCCC ILF Program to acquire new Roster sites, or to refund acquisition funding sources for Mitigation Sites in cases where the original funding source disallowed use of a property for mitigation purposes.

Long term management phase means the period beginning at a site when the final credits are released from a mitigation project. During the long term management phase, the monitoring and maintenance will continue according to long term management plans contained in reviewed and approved Mitigation Plans for a site.

Mitigation fees are all fees paid by a permittee using the HCCC ILF Program to purchase mitigation credits including land fees, and credit fees to be used in implementing mitigation projects.

Native shellfish beds means crabs, bivalves, and shrimp endemic to Hood Canal and their habitats, with a particular emphasis on Olympia oysters, littleneck clams, butter clams, horse clams, cockles, and Dungeness crabs.

Net resource gain means a mitigation policy goal aiming to not only prevent and offset degradation of wetlands, other aquatic resources and their buffers, but to increase these resources over time.

Nexus of proportionality means that when governments impose permit conditions there must be “rough proportionality” both in nature and extent between the condition’s requirements and the impacts of the development.

No net loss means a mitigation policy goal aiming to prevent and offset the destruction or degradation of wetlands, other aquatic resources and their buffers

Off-site means an area that is neither located on the same parcel of land as the impact site, nor on a parcel of land contiguous to the parcel containing the impact site.

On-site means an area located on the same parcel of land as the impact site, or on a parcel of land contiguous to the impact site.

Out-of-kind means a resource of a different structural and functional type from the impacted resource.

Performance standards are observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives.

Permittee means an entity which has been issued a permit by one or more regulatory agencies.

Permittee-responsible mitigation means 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.

Preservation means 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. Preservation does not result in a gain of aquatic resource area or functions.

Rare means very uncommon or scarce.

Receiving site refers to the area where the compensatory mitigation project will be constructed, or simply "mitigation site". In the context of the HCCC ILF Program, it refers to a site of available natural lands where mitigation will be implemented.

Re-establishment means 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. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Reference aquatic resources are a set of aquatic resources that represent the full range of variability exhibited by a regional class of aquatic resources as a result of natural processes and anthropogenic disturbances.

Rehabilitation means 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. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Release of credits means a determination by the district engineer, in consultation with the IRT, that credits associated with an approved mitigation plan are available for sale or transfer, or in the case of an in-lieu fee program, for fulfillment of advance credit sales. A proportion of projected credits for a specific in-lieu fee project may be released upon approval of the mitigation plan, with additional credits released as milestones specified in the credit release schedule are achieved.

Restoration means 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. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riparian areas are lands adjacent to streams, rivers, lakes, and estuarine-marine shorelines. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality.

Service area means the geographic area within which impacts can be mitigated at a specific in-lieu fee program, as designated in its instrument.

Sponsor means any public entity responsible for establishing, and in most circumstances, operating an in-lieu fee program.

Temporal loss is the time lag between the loss of aquatic resource functions caused by the permitted impacts and the replacement of aquatic resource functions at the compensatory mitigation site. Higher compensation ratios may be required to compensate for temporal loss. When the compensatory mitigation project is initiated prior to, or concurrent with, the permitted impacts, the district engineer may determine that compensation for temporal loss is not necessary, unless the resource has a long development time.

Watershed means a land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean.

Watershed approach means an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by DA permits, as well as other federal, state, tribal, and local permits. The watershed approach may involve consideration of landscape scale, historic and potential aquatic resource

conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for DA permits.

Watershed plan means a plan developed by federal, tribal, state, and/ or local government agencies or appropriate non-governmental organizations, in consultation with relevant stakeholders, for the specific goal of aquatic resource restoration, establishment, enhancement, and preservation. A watershed plan addresses aquatic resource conditions in the watershed, multiple stakeholder interests, and land uses. Watershed plans may also identify priority sites for aquatic resource restoration and protection. Examples of watershed plans include special area management plans, advance identification programs, and wetland management plans.

Waters of Tribal Reservations means any *aquatic resources*, *wetlands*, or *aquatic areas*, as each is defined in Appendix B, found within the boundaries of a Tribe's reservation. The term also includes surface waters of a reservation and all other waters of the community.

APPENDIX C MITIGATION SEQUENCING AND PARTICIPATING AGENCIES

The existence of the HCCC ILF Program does not change the requirement for permit applicants to adhere to the "mitigation sequence" required by federal, state, tribal, and local agencies. The HCCC ILF Program only becomes an option *after* a project proponent meets all requirements of prior steps in the mitigation sequence and all requirements of appropriate federal, state, tribal and local agency requirements. There are stringent requirements under the Clean Water Act to demonstrate that all avoidance and minimization measures have been taken before a determination that remaining impacts are unavoidable [40 CFR Part 230.10]. Once a determination is made that impacts are unavoidable, compensatory mitigation is required.

C.1. Mitigation Sequencing

Local, state, tribal, and federal governments all adhere to regulations requiring mitigation sequencing for proposals that otherwise would adversely affect wetlands, other aquatic resources, and/or their buffers. Mitigation sequencing refers to a series of steps permit applicants must follow to eliminate or decrease the negative effects of a proposed action. A 1990 Memorandum of Agreement between the EPA and the Corps defines the mitigation sequence under the Clean Water Act Section 404(b)(1) Guidelines (40 CFR part 230) as being composed of the following steps:

(1) Avoiding the impact altogether by not taking a certain action or parts of an action;

(2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps to avoid or reduce impacts;

(3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;

(4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action;

(5) Compensating for the impact by replacing, enhancing, or providing substitute resources or environments; and/or

(6) Monitoring the impact and taking appropriate corrective measures (WAC 197-11-768).

Nothing in this Instrument affects the requirement that all DA permits subject to section 404 of the Clean Water Act comply with applicable provisions of the Section 404 (b)(1) Guidelines.

The following steps show how the HCCC ILF Program would fit into the mitigation sequence:

- Work with the project proponent to avoid creating the impact.
- Minimize the impact to the extent possible.
- Implement onsite mitigation to the extent possible and ecologically feasible. The HCCC ILF Program can be an appropriate mitigation vehicle for onsite mitigation.
- Determine whether some or all of the impact can be mitigated most effectively offsite.
- Review all mitigation options with applicant (e.g., mitigation banks, in-lieu fee program, permittee-responsible). The HCCC ILF Program becomes an option in the sequence only when the applicant can demonstrate, and regulatory agencies concur, that offsite mitigation alternatives offer greater ecological value and greater ecological benefits in the sub-basin, marine assessment and mitigation unit (AMU), watershed, or service area (as determined by Appendix H and I) than can be achieved through onsite mitigation. Project applicants can only formally participate in the HCCC ILF Program after applicable regulatory agencies have documented this mitigation sequence and the role of the HCCC ILF Program in the appropriate permits.

The federal rule [33 CFR 332.3(b) and 40 CFR 230] mandates considering the use of mitigation banks prior to the use of in-lieu fee mitigation programs prior to the use of permittee-responsible mitigation. However, the Corps' District Engineer may override the preference for mitigation banks when considerations are applicable, including where an in-lieu fee program has released credits available from a specific approved mitigation project, or involve a larger more ecologically valuable parcel or more rigorous scientific analysis [33 CFR 332.3(b)(2)].

The steps for documenting mitigation sequencing and the role of the HCCC ILF Program include the following actions:

- The applicant completes data collection and a preliminary site and impacts assessment and provides to the applicable regulatory agencies and permitting entities for review.
- The applicable regulatory agencies and permitting entities review the proposed development project to ensure impacts are avoided and minimized to the maximum extent practicable and all onsite mitigation options are exhausted.
- The permitting agencies determine if the HCCC ILF Program provides the best option for compensating for unavoidable impacts; if so then the applicant, in cooperation with the Program Sponsor, completes the site and impacts assessment to determine the amount of credits needed to offset the impact (or debit). This constitutes the ILF Use Plan (Exhibit 2). The Program Sponsor reviews and confirms the ILF Use Plan, and informally consults with the IRT if appropriate. The ILF Use Plan is then provided to the applicable regulatory agencies and permitting entities.

- The agencies will approve or deny the permit conditioned on purchasing credits from the HCCC ILF Program for mitigation.
- Applicant pays mitigation fee to the HCCC ILF Program to buy credits to offset the project's unavoidable impacts (Appendix F).
- Statement of sale (Exhibit 9) sent to Corps, Ecology, and any other applicable regulatory or permitting entities which issued the permit conditioned upon purchasing credits from the HCCC ILF Program.

After mitigation sequencing steps have occurred and mitigation has been assigned to the HCCC ILF Program, the following steps (covered in detail in subsequent appendices of the Instrument) describe how mitigation will be implemented:

- HCCC ILF Program reviews impacts and ecological needs at the appropriate, nested scale (Appendices H and I).
- HCCC ILF Program proposes mitigation sites and project concepts (Appendices H and I), along with draft Spending Agreement (Exhibit 10), to the Corps and Ecology.
- In consultation with the IRT, the Corps and Ecology review and approve the sites and conceptual plans, and sign the Spending Agreement.
- HCCC ILF Program develops draft and final mitigation plan(s) (Appendix K) and site protection instrument(s) (Appendix P).
- In consultation with the IRT, the Corps and Ecology review and approve final mitigation plan(s) and final site protection instrument(s).
- HCCC ILF Program implements the mitigation project(s).
- All subsequent steps related to credit fulfillment, site maintenance, monitoring/reporting, adaptive management, and site protection are listed and discussed in Appendices K to P.

For projects that do not involve wetlands or aquatic resources that are subject to the Clean Water Act or other Corps authority (i.e., when only local and/or State permits are required), the mitigation options may not necessarily be the same order listed in 33 CFR 332.3(b).

C.2. Permitting Agencies

For any permitted unavoidable impact, there will be one or more regulatory agencies with permitting authority and jurisdiction, which will be determined on a case-by-case basis. For example, for "isolated" wetlands, local jurisdictions would have regulatory authority under applicable critical areas ordinances and Ecology would also have authority as provided under RCW 90.48. The Corps has authority for determining whether a wetland or other aquatic resource is "isolated" for purposes of establishing federal Clean Water Act jurisdiction.

Given the complex regulatory climate, and the predicted variability of permitted impacts and mitigation receiving projects, determinations of which local, state, tribal, and federal agencies have jurisdiction (i.e., regulatory authority) will be made on a case-by-case basis at the time the applicant seeks a permit.

APPENDIX D CREDITS AND DEBITS

The standard unit of measure used to quantify an impact is a "debit" and lift at a mitigation site is measured in "credits". Generally speaking, the HCCC ILF Program will use the terms "debit" and "credit" when speaking about impacts and mitigation projects, respectively.

The HCCC ILF Program will offer applicants the ability to mitigate unavoidable impacts to the following types of waters of the United States, waters of the State of Washington, and/or waters of tribal reservations, and their buffers:

- Freshwater aquatic habitats, including but not limited to wetlands, lakes, and streams,
- Marine/nearshore aquatic habitats, including but not limited to sub-tidal, tidal, intertidal, and riparian habitats

Applicable regulatory agencies will determine the appropriate number of debits associated with an impact project in consultation with the HCCC and the permit applicant. If regulatory agencies issuing permits for an impact project agree that the HCCC ILF Program is the most practicable way for the applicant to meet their compensatory mitigation need, the mitigation requirements must be quantified and approved prior to permit issuance. If not all regulatory agencies initially agree to the use of the HCCC ILF Program, then the Program Sponsor will work with those agencies to determine how to address their concerns and incorporate them into the permitting and mitigation process, if possible.

Credits sold will be tracked carefully in the Credit Ledger (Appendix G) according to aquatic resource type (e.g., wetland, marine/nearshore, buffer), function (i.e., habitat, hydrology, water quality) and according to regulatory jurisdiction (i.e., state, federal, tribal and/or local jurisdiction). Mitigation plans proposed by HCCC to fulfill HCCC ILF Program credits must be reviewed and approved by the Corps and Ecology in consultation with the IRT.

D.1. Quantifying Freshwater Wetland Debits and Credits

Freshwater wetland debits and credits will be quantified using the method *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington – Final Report, Publication #10-06-011,* which is referred to throughout this document as "the wetland tool" (Exhibit 3). This method will be used to provide a basis for quantifying functions lost at an impact site (debits) and lift in functions at mitigation projects (credits).

When quantifying an impact to a freshwater wetland system, the debits will be divided into three parts based on wetland functions: (1) habitat debits, (2) hydrology debits and (3) water quality debits. The wetland tool quantifies debits by rating functions and values of the wetland that will be impacted, multiplying the scores by the area of the

impact, and then multiplying the result by a temporal loss factor (TLF). The TLF accounts for time lag between when an impact occurs and when replacement functions are achieved in full by mitigation.

> *Debits = [Functions & Values of Wetland Being Impacted] x [Area of Impact] x [Temporal Loss Factor]*

Once the number of debits has been determined and been approved by the applicable regulatory agencies, then the permittee can purchase a commensurate number of credits from the HCCC ILF Program to offset the debits.

Mitigation sites will "earn" credits based on the level of improvement in each of the three wetland functions (habitat, hydrology, and water quality). The wetland tool calculates credits by rating functions and values of a wetland to be enhanced, restored, established, or preserved before and after mitigation (using project plans to estimate mature conditions assumed for the site) and multiplying the difference in scores by the area of mitigation treatment. To account for risk of project failure, the result is then multiplied by a risk factor. The risk factor considers when the mitigation project is conducted (e.g., advance versus concurrent), if Ecology's guide for selecting mitigation sites using a watershed approach is used, and what type of mitigation activities (e.g., establishment, enhancement) will be performed to specific habitat types (e.g., emergent wetland or a site without adequate hydrologic data).

> *Credits = ([Wetland Functions & Values after Mitigation] - [Wetland Functions and Values Before Mitigation]) x [Area of Mitigation] x [Risk Factor]*

A site that provides a high level of function in the "pre-mitigation condition," will only yield credits in the functional category(ies) that are improved (i.e., only when the wetland tool calculates a lift in functions as a result of the project).

The steps used in applying the wetland tool are summarized as follows:

1. Classify the freshwater wetland unit at the impact site using the HGM classification system;
2. Score the water quality, hydrology and habitat functions of the wetland at the impact site using the Wetland Tool;
3. Estimate the amount of mitigation needed to replace the functions lost by calculating the basic mitigation requirement and factoring in temporal losses of function (as appropriate);
4. Select an appropriate mitigation-receiving site and develop a plan for wetland establishment, re-establishment, rehabilitation, enhancement, and or preservation;
5. Score the expected future functions at the mitigation site by determining which functions would be present when all the goals for mitigation site have been achieved. If the mitigation site is already a wetland and the mitigation plan

proposes re-habilitation or enhancement, the functions for the existing conditions must be scored first to estimate the net change in functions following mitigation;

6. Identify the risk factors that could reduce the effectiveness/success of the mitigation, as outlined in the wetland tool (e.g. advanced, meets established criteria, concurrent, consideration of larger scale environmental processes and plans, climax wetland community type, mitigation strategy (creation vs. restoration)). The estimated number of credits available is multiplied by a factor of 0.5 to 1.0 to discount for risk. The risk factors are set on a case-by-case basis depending on the type of mitigation proposed (e.g., establishment versus enhancement) and other consideration that could affect the ability of the proposed mitigation to achieve its goals.

In all cases, determinations of debits (and thereby an applicant's credit requirement) must be approved by regulatory agencies permitting an impact. The number of debits associated with the impact as determined by the wetland tool may be adjusted for site-specific variables such as on-site mitigation or implementation of best management practices. Permitting agencies may issue a special condition with the permit requiring the applicant to provide proof of purchase of HCCC ILF Program credits commensurate to the number of debits associated with the impact project before any construction activities may commence.

The HCCC ILF Program shall also retain the ability to establish freshwater debit/credit requirements for other freshwater aquatic and riparian habitats, on a case-by-case basis as approved by the Corps and Ecology in consultation with the IRT using existing approved methods (e.g., area-based ratios). This process is discussed in detail in Section D.3, below.

D.2. Quantifying Marine/Nearshore Credits and Debits

The HCCC ILF Program is working with a broad array of partners, including members of the IRT, to develop a detailed marine/nearshore functional assessment methodology and a credit/debit tool for mitigating impacts to the marine/nearshore ecosystem. The tool will analyze the type and severity of impacts to marine/nearshore ecological processes, functions, and structures at the reach and site scales. It will also be used to determine the amount of required mitigation and the credits required to be purchased by the permittee to offset those impacts. The credit/debit tool development team is developing the initial framework of these products, with calibration efforts scheduled for summer 2012. A draft is anticipated for further vetting in 2012 or 2013. The HCCC would seek authorization to amend this Instrument to incorporate the detailed marine/nearshore functional assessment methodology once it has been accepted by the resource agencies. In the meantime, the HCCC proposes to evaluate marine/nearshore credits and debits on a case-by-case basis using an interim approach described below. The HCCC will provide the IRT the opportunity to assess and evaluate the specifics of the debit determination approach each time a new type (for this Program) and/or

substantive marine/nearshore project seeks to use the ILF Program while the interim approach is in place. There will be no more than 30 days to implement this advisory role in order to remain consistent with permit review timelines.

The interim approach is loosely based on Ecology's peer-reviewed and calibrated Credit/Debit Methodology for Freshwater Wetlands in that impact sites are scored based on the potential of the site to provide certain functions, the potential of the landscape to maintain each function at the site scale, and the value each function may have for society. Because of the complexity, and its associated higher risk, inherent in adapting this type of system to marine/nearshore environments, HCCC as Program Sponsor, will be closely involved in the application of the interim approach. The project applicant will be able to use the Sponsor's technical skills and familiarity with the habitats of the Hood Canal marine/nearshore environment and to help ensure correct application. The project applicant and Sponsor will also coordinate with the applicable regulatory agencies to make certain that area and functions lost due to the development project are accurately accounted for. It is important to note that while the wetland tool denotes credits/debits in points (not area), the HCCC interim nearshore approach denotes credits/debits in acres, which are referred to as acre debits/credits.

The interim approach will be used for three (3) years post-instrument approval or until the marine/nearshore functional assessment methodology and credit/debit tool are approved, whichever comes first. Biennial programmatic reviews will occur as detailed in this instrument.

During the interim phase, the HCCC ILF Program intends to provide in-kind mitigation for marine/nearshore impacts to the extent feasible and practicable, but if in-kind mitigation is not the most appropriate option (because there are no suitable mitigation receiving sites to replace impacted functions or, if functions are not deemed critical to the ecological needs of the marine AMU, another type of habitat and associated functions has been deemed more critical for replacement based on the analysis described in Appendices H and I), the Program will select out-of-kind mitigation sites that effectively replace priority function, process, or structure deficiencies that have been identified using the nested-scale approach (Appendix H) in the context of the watershed approach, as outlined in the federal rules. The selection of the mitigation site will be made in consultation with the IRT, as guided by Appendices H and I, to ensure that it fully offsets the types of impacts and achieves the greatest possible ecological benefits for the service area.

During the interim phase, the HCCC ILF Program will perform mitigation in close proximity to the impacting site, when appropriate, as guided by Appendices H and I, and in consultation with the IRT. If a mitigation site is not available close by the impacting site (e.g. within the marine drift cell), the Sponsor will methodically expand the search to adjacent surrounding areas until an appropriate mitigation site(s) is located, as guided by Appendices H and I. This is referred to as the nested scale approach, and is outlined mechanistically in Appendix H.

In all cases, marine/nearshore mitigation requirements associated with development projects must be reviewed and approved by applicable regulatory agencies and governments, and in all cases the amount and type of marine/nearshore mitigation credit generated by mitigation projects must be reviewed and approved by the Corps and Ecology in consultation with the IRT.

Costs per habitat class acre credit will be based on actual mitigation costs per acre of the most closely associated activity type (Exhibit 5, Part 2). Costs will be updated periodically to reflect full cost accounting and financial assurances, including but not limited to land, design, construction, maintenance, monitoring, contingency, long-term management, and administrative costs.

Implementation of minimization measures, or best management practices, result in decreased impacts to aquatic resources, and must be implemented to minimize impacts.

D.2.1 Calculating Credits/Debits

When determining how much mitigation will be needed to replace lost or damaged functions (i.e., how many credits are required), the Program Sponsor will consider all of the following:

- The Type and Amount of Habitat being impacted by the development project; and
- The Degree of Impact associated with the development project; and
- The Risk of being able to effectively replace the functions and to do so in a timely manner.

To facilitate determining credits/debits, the cost of purchasing acre credits and the required amount of mitigation (Appendix D.2.2), a worksheet has been developed to document all relevant calculations (Exhibit 4).

Type and Amount of Habitat

Development projects have the potential to affect a wide range of habitats and resources within the nearshore/marine environment, and each different habitat class and sub-class provides a somewhat unique range of functions determined by their controlling processes and structure. The interim approach attempts to tally impacts by habitat type and amount so that the functions can be effectively replaced through mitigation.

The draft functional assessment methodology has been couched within the Shipman (2008) Puget Sound Nearshore geomorphic classification of systems (rocky coast, beaches, embayments, and river deltas) and landforms to recognize that broader, landscape-level, physical, chemical, and biological processes are the dominant controlling factors in creating these habitats. Both the draft methodology and the interim approach identify four basic types of habitat classes (subtidal, tidal wetland, intertidal non-wetland, and riparian), with additional sub-classes being identified on an

as-needed, case by case basis from the classification system. This will support a transition to the functional assessment methodology sometime in the future when appropriate. The definitions of the habitat classes include:

- Subtidal – Areas below the intertidal zone that include habitats such as eelgrass, kelp, and consolidated and unconsolidated bottom. This habitat can be further characterized as vegetated or non-vegetated sub-classes, and includes presence or absence of native shellfish beds.
- Tidal Wetland – Vegetated wetlands with vascular marsh, shrub, and woody plants under tidal influence as defined as the upstream extent of tidal influence. Sub-classes could include tidal swamp, scrub-shrub, high marsh, and low marsh.
- Intertidal Non-wetland – This includes all non-wetland areas within the intertidal zone including gravel, mud flats, oyster and other shellfish beds, eelgrass beds, and algae dominated sites. Sub-classes could include rocky/sandy ramp/platform, berm, beach face, low tide terrace, and tidal flats/channels.
- Riparian – Vegetated and non-vegetated, non-wetland habitats within 200 ft of the OHWM. Sub-classes could include terrestrial edge, bluff face, rock face, supralittoral, and alluvial floodplain, noting vegetated and non-vegetated areas.

The distinctions between habitat classes and sub-classes may not always be well defined, so HCCC as Program Sponsor will use discretion in proposing how to delineate habitat classes and subclasses. Impacts will be assigned to the class that best matches the overall habitat characteristics, with input from resource agencies with permitting authority.

The HCCC and the IRT recognize that tidally influenced scrub-shrub wetlands are covered by both the freshwater wetland tool and the HCCC interim nearshore approach. In this case, there is some discretion as to which tool to use, but the preference would be to use the HCCC interim nearshore approach where applicable, in consultation with the IRT.

The amount in acres of each habitat class and subclass impacted by the proposed development project will be reviewed and confirmed by the regulatory agencies.

Degree of Impact

The Degree of Impact of the proposed development project on these habitats is a factor in determining mitigation requirements (Table 1), and is presented as a range of possible values. The Degree of Impact Factor synthesizes the direct, indirect and cumulative impacts of a development project. The HCCC, as Program Sponsor, will assess each development project to propose the Degree of Impact based upon the guidelines in this section. Impacts, for the purposes of the HCCC ILF Program, are evaluated in terms of their intensity, duration and cumulative effects.

Direct impacts are those adverse effects caused by project activities that occur contemporaneous with the action.

Indirect impacts are adverse effects caused by project activities that are reasonably certain to occur, but occur later in time or at some distance from the project site (e.g., a bulkhead project would eventually affect sediment recruitment, transport, or deposition at the site and "down drift" within the drift cell and adjacent drift cells). All development projects have indirect impacts.

Cumulative impacts are the summation of impacts on a habitat, species, or resource resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. All development projects contribute to cumulative impacts in some way, but there are no documented or accepted methods for quantifying cumulative impacts, especially using a rapid assessment approach. To attempt to account for cumulative impacts the Program Sponsor will identify zones within the marine/nearshore service area that are at increased risk of cumulative impacts (e.g., areas where there is a proliferation of overwater structures might be considered at increased risk of impacts from a new dock/piers; a bay with water quality problems might be at increased risk of impacts from a marina or aquaculture facility).

Permanent impacts are semi-irreversible (e.g., such as placement of a bulkhead or pier). Long-lasting impacts take longer than five growing seasons to restore (e.g., clearing a forested wetland). In contrast, **temporary** impacts are those typically associated with construction activities (e.g., road access through an emergent tidal wetland), and further described in DA nationwide permits as occurring in 6 months. Temporary impacts and their temporal effects can usually be restored within five growing seasons from implementation of mitigation activities.

HCCC will select a Degree of Impact within the range of possible values based on a synthesis of the following guidelines:

1) **Duration:** If the direct, indirect, and cumulative impacts of a development project have permanent impacts, the Degree of Impact Factor should be selected from the top one-third of the range (in Table 1). Development projects with long-lasting impacts should have the Degree of Impact Factor selected from the middle one-third of the range. Temporary impacts should have Degree of Impact Factors selected from the bottom one-third of the range. Duration should account for 1/2 of the Degree of Impact Factor.

2) **Intensity:** Intensity is a measure of the strength of an impact, both direct and indirect. Within the area of impact, the relative intensity of a proposed development project will determine the Degree of Impact Factor. If the intensity is relatively higher than a typical development activity, the Degree of Impact Factor should be selected from the top one-third of the range (in Table 1). If the intensity is relatively similar to a typical development activity, the Degree of Impact Factor should be selected from the middle one-third of the range. If the intensity is relatively lower than a typical development activity, the Degree of

Impact Factor should be selected from the bottom one-third of the range. The Program sponsor recognizes the relative nature of any single proposed development to a "typical" development activity is subjective, but will use recent development projects and best professional judgment to propose the Degree of Impact Factor. Intensity should account for 1/3 of the Degree of Impact Factor.

3) **Cumulative:** The Sponsor will, in conjunction with the regulatory agencies, assess each development project to determine if it is occurring in a cumulative impact 'area of concern', as identified above. For development projects within a cumulative impact 'area of concern' the Degree of Impact Factor should be selected from the top one-third of the range (in Table 1). Development projects near the 'area of concern' should have Degree of Impact Factors selected from the middle one-third of the range. Development projects well removed from the cumulative impact 'area of concern' should have Degree of Impact Factors selected from the bottom one-third of the range. Cumulative should account for 1/6 of the Degree of Impact Factor.

Risk

Risk is the ability to replace the affected habitat and resources to fully compensate for the range of functions, processes, and structures damaged by the development project. The Risk Factor is represented as a range of values that is multiplied by the area of impact. The range of values in Table 1 was developed by habitat class in collaboration with the IRT based on three primary considerations:

1) The time frame typically needed to replace the habitat type. Habitat types that take a long time to replace (e.g., mature riparian forest) have a higher range of Risk Factor values than habitats that can be replaced more quickly (e.g., early successional riparian forest). Regardless of the Risk Factor, all mitigation projects must meet federal requirements where initial physical and biological improvements must be completed by the third full growing season after the first advance credit in that service area is secured by a permittee.

2) The level of knowledge, experience and success mitigation practitioners have had in replacing the habitat type. Some habitat types are better understood than others, consequently scientists have a better track record of being able to restore them. Habitat types that we expect can be successfully replicated (e.g., riparian forests) have a lower range of Risk Factor values than more difficult to replace habitat types (e.g., eelgrass beds and tidally influenced forested wetlands).

3) The rarity of the impacted habitat and suitable mitigation projects to replace that habitat and its functions. Rare habitats by definition are highly risky to mitigate and are often difficult to mitigate given the lack of similar mitigation alternatives. Additionally, even mitigating an impact to a common habitat (e.g.,

subtidal eelgrass) can be difficult since potential mitigation projects in discrete locations with a high likelihood of success are limited.

The HCCC, as Program Sponsor, will assess each project to determine the Risk Factor based upon the guidelines in this section. HCCC will select a value within the specific range based on a synthesis of the following guidelines:

1) **Type of Habitat:** Not all habitat classes and sub-classes provide the same level and criticality of function, nor do they have the same level of success or timeliness in replacing them. First, the four, broad habitat classes described above have been further subdivided into six habitat classes by expanding subtidal and intertidal non-wetland habitats into both vegetated and non-vegetated classes (Table 1). Second, within those six classes, sub-classes are noted and can be assigned Risk Factor using the three considerations presented above. For example, an intertidal non-wetland vegetated habitat class with eelgrass would have a higher Risk Factor than one with no eelgrass but dominated by algae, given our knowledge of eelgrass mitigation and history of success. In addition, the temporal loss in replacing a tidally-influenced forested marsh is different than replacing a salt marsh. Type of habitat should account for 1/2 of the Risk Factor.

2) **Quality of Habitat:** The degree to which the existing habitat (at the impact site) is performing functions (i.e., quality of habitat). Quality of habitat is broken into three groups: high, medium and low. A permit applicant should consult with the HCCC ILF Program Sponsor or with a private consultant for technical expertise to assess this consideration. Knowledge of how marine/nearshore habitats function in the landscape and the use of best professional judgment are required to properly determine how well a particular habitat class is performing functions (e.g., high functional performance versus low functional performance). A high functional performing habitat class should correspond to a Risk Factor in the upper one-third of the range; a medium functional performing habitat class should receive a Risk Factor in the middle one-third of the range, and a low functional performing habitat class should receive a Risk Factor in the bottom one-third of the range. Quality of habitat should account for 1/6 of the Risk Factor.

3) **Habitat Connectivity:** The degree of project area connectivity to other habitats at both site and landscape scales. Risk Factor values from the upper one-third of the range should be selected for habitats that have relatively intact connectivity to relatively functional habitats. Risk Factor values from the middle one-third of the range should be selected for habitats that have relatively intact connectivity to relatively disturbed habitats or relatively poor connectivity to relatively functional habitats. Risk Factor values from the lower one-third of the range should be selected for habitats that have relatively poor connectivity to relatively disturbed habitats. Habitat connectivity should account for 1/6 of Risk Factor.

4) **Imperiled Species:** The degree to which the project area contributes to the protection and/or recovery of rare, threatened, or endangered species (both state and federal) and their habitats. Much of the Hood Canal marine/nearshore environment provides valuable habitat and functions for listed species, including but not limited to salmon and trout, marbled murrelet, northern spotted owl, marine mammals, rock fish, amphibians, and plants. Most of these species have been mapped, their habitats assessed, and listing/limiting factors prioritized, many in adopted recovery plans. Where information exists, it will be used to assess project area overlaps of magnitude and function. A high spatial overlap with a high impact to a critical listing factor should correspond to a Risk Factor in the upper one-third of the range. A high spatial overlap or a high impact to a critical listing factor (but not both) should correspond to a Risk Factor in the middle one-third of the range. Where there is neither a high spatial overlap nor a high impact to a critical listing factor there should be a Risk Factor in the bottom one-third of the range. Imperiled species should account for 1/6 of Risk Factor.

Table 1 provides the Degree of Impact Factor and Risk Factor values associated with each habitat class to be used to determine the number of habitat class acre debits required for a given area of impact.

Table 1. Conversions for Project Impact to Debits by Marine/Nearshore Habitat Class

Marine/Nearshore Habitat Classes	Area of Impact in Acres	Degree of Impact Factor	Risk Factor	Number of Habitat Class Acre Debits
Subtidal Non-vegetated	TBD	1.2 to 2.0	1.2 to 3.0	TBD
Subtidal Vegetated (eelgrass, kelp)	TBD	1.2 to 2.0	1.2 to 5.0	TBD
Tidal Wetland (tidal swamp, low marsh, high marsh, scrub-shrub, forested)	TBD	1.2 to 2.0	1.2 to 3.0	TBD
Intertidal Non-wetland Vegetated (eelgrass, algae dominated sites, vegetated berm)	TBD	1.2 to 2.0	1.2 to 5.0	TBD
Intertidal Non-wetland Non-vegetated (mudflats, oyster and other native shellfish beds, tidal flats/channels, low tide terrace, beach face, berm, rocky or sandy ramp/platform)	TBD	1.2 to 2.0	1.2 to 2.0	TBD
Riparian (terrestrial edge, bluff/rock face, supralittoral, and alluvial floodplain)	TBD	1.2 to 2.0	1.2 to 3.0	TBD
Total	**TBD**			**TBD**

The steps for determining the number of marine/nearshore mitigation habitat class acre debits using this interim approach will be as follows (incorporating site and impact assessments required by the regulatory agencies (see Appendix C)):

1. Determine which nearshore habitat classes/sub-classes are present at the impact site. Confirm determination with regulatory agencies with permitting authority and record on ILF ledger.
2. Determine the area of impact in acres to each habitat class/sub-class resulting from the development project, as defined above. Confirm determination with regulatory agencies with permitting authority and record on ILF ledger.
3. Determine the Degree of Impact to each habitat class/sub-class resulting from the development project, as defined above, on a scale of 1.2 to 2.0. Confirm determination with regulatory agencies with permitting authority and record on ILF ledger.
4. Determine the Risk Factor to each habitat class/sub-class resulting from the development project, as defined above, on a scale as indicated in Table 1. Confirm determination with regulatory agencies with permitting authority and record on ILF ledger.
5. For each habitat class/sub-class impacted by the development project, the area of impact in acres is multiplied by the Degree of Impact Factor and the Risk Factor to obtain the number of habitat class/sub-class acre debits that must be offset by acre credits purchased by the applicant to satisfy their mitigation requirements. Confirm determination with regulatory agencies with permitting authority and record on ILF ledger.

Area of Impact X Degree of Impact Factor X Risk Factor = Number of Habitat Class Acre Debits

D.2.2 Calculating Area of Mitigation Required

Once the permittee has purchased the appropriate number of habitat class acre credits from the HCCC ILF Program to offset their debits, as determined above, the Program will select a mitigation site that can generate an equal number of credits after performance standards are achieved. Table 2 will be used by the HCCC ILF Program to convert credits to the number of acres of mitigation required, based on the mitigation strategy proposed (see definitions in Appendix B) and its conversion factor. The IRT will review and the Corps and Ecology will approve the proposed conversion factor to ensure that sufficient mitigation is provided to offset the impacts and ensure no net loss of marine/nearshore ecological functions and values. Out-of-kind mitigation conversion factors will be determined on a case-by-case basis by the Corps and Ecology in consultation with the IRT.

Required Number of Acre Credits X Proposed Conversion Factor = Number of Acres of Mitigation

Table 2. Converting Acre Credits to Acres of Mitigation Required by Mitigation Strategy

If the Mitigation Strategy is:	Required Acre Credits (equals debits from Table 1)	Conversion Factor	Number of Acres of Mitigation
Restoration (rehabilitation and re-establishment)	TBD	1.0 to 1.3	TBD
Establishment (creation)	TBD	1.2 to 2.0	TBD
Enhancement	TBD	1.5 to 3.0	TBD
Preservation	TBD	2.0 to 5.0	TBD
Total	**TBD**		**TBD**

The conversion factors are scaled similarly to ratios in the wetland tool (Appendix D.1) based on the mitigation strategy (e.g. restoration has less risk than establishment, or preservation does not replace degraded area), but have relatively low magnitudes given that a majority of the risks associated with mitigation were already considered in the Risk Factor in Table 1. The proposed conversion factors are subject to adjustment by the Sponsor and the Corps and Ecology in consultation with the IRT within the range provided during mitigation action planning efforts dependent on factors such as temporal loss, site conditions, and perceived effectiveness (or risk) of the proposed mitigation strategy (e.g., a commonly implemented mitigation technique, rather than an un-tested approach, may justify lower conversion factors).

D.3. Determining Credits and Debits for Buffers and Other Types of Resources

The HCCC ILF Program reserves the right to provide compensatory mitigation alternatives for projects that impact resources other than freshwater wetlands and marine/nearshore habitats, including but not limited to, streams or rivers, buffers, and other aquatic bed environments.

If unavoidable impacts to these resources have been approved and applicable permitting agencies have determined that mitigation through the HCCC ILF Program is an appropriate means of fulfilling the mitigation obligations, debits and credits will be determined on a case-by-case basis; all other requirements of the Program would apply. These credits would be specified as acres, linear feet, or other suitable metrics as determined by the applicable permitting agencies (e.g., WDFW, NMFS, USFWS, Tribes). These determinations will be made in close coordination with members of the IRT and applicable regulatory authorities and require approval by the Corps and Ecology. The

HCCC ILF Program will track and report impacts and mitigation for these projects on a separate ledger (Appendix G).

Aquatic area and buffer impacts will be handled on a case-by-case basis according to the following process:

1. Regulatory agencies reviewing a proposed impact to aquatic areas and/or aquatic area buffer:
    a. work with applicants to avoid and minimize impact;
    b. determine all on-site mitigation options and require on-site mitigation to the extent possible;
    c. identify impacts that cannot be mitigated on-site;
    d. review off-site options and select one of the options (e.g., mitigation bank, HCCC ILF Program, permittee-responsible); and
    e. if HCCC ILF Program is the chosen off-site option, lead regulatory agency or project proponent notifies HCCC ILF Program of desire to use the Program to mitigate for aquatic resource and/or aquatic resource buffer impacts.
2. Regulatory agencies suggest the quantity and type of mitigation to be completed off-site based on impacts and temporal lag associated with in-lieu fee mitigation (This will not constitute a detailed Mitigation Plan, but rather an estimate to be used in establishing a fee if the HCCC ILF Program is chosen).
3. The HCCC ILF Program reviews the type and location of the impact and the suggested quantity and type of mitigation and then reviews availability of mitigation sites in the service area that may provide appropriate mitigation.
4. If the HCCC ILF Program determines one or more suitable sites are available to meet the mitigation need that also address watershed needs, the Program requests permission from the Corps and Ecology, in consultation with the IRT, to accept aquatic area/buffer impacts. The following will accompany this request:
    a. Description of proposed impact project, including steps taken to avoid and minimize impacts, on-site mitigation considered;
    b. Description of the proposed impacts to be mitigated through the HCCC ILF Program (this excludes impacts being mitigated on-site); and
    c. Description of mitigation sites with potential for projects that would meet mitigation needs.

Note: For case-by-case review of mitigation proposals related to aquatic area and buffer impacts, HCCC will submit for IRT review and Corps and Ecology approval the ILF Use Plan that outlines the rationale for using the HCCC ILF Program to meet the mitigation need.

5. HCCC ILF Program notifies the lead regulatory agency of the decision.

6. If affirmative, HCCC ILF Program sets the mitigation fee on a case by case basis, accepts the mitigation fees, and issues a Statement of Sale.
7. The HCCC ILF Program and the Corps and Ecology, in consultation with the IRT, will select the mitigation site and approach as outlined in Appendix H.
8. The mitigation will occur according to the credit fulfillment steps outlined in Appendix K.

All aquatic area resource and aquatic area buffer impacts and mitigation relevant to this subsection of the Instrument and handled by the HCCC ILF Program will be tracked on the Aquatic Areas Ledger.

Non-aquatic resources can only be used as compensatory mitigation for impacts to aquatic resources when the Corps and Ecology determine that those resources are essential to maintaining the ecological viability of adjoining aquatic resources.

D.3.1 Public Rights of Way and Existing Easement Exclusions

In cases where a mitigation site is traversed by a public right-of-way (e.g., utility easement or trail) or other easements or restrictive covenants that allow access or activities that would compromise ecological functions provided by mitigation projects, these areas and an appropriate buffer shall be excluded from generating mitigation credit. Appropriate buffers between these easements and HCCC ILF Program mitigation projects will be determined in consultation with the IRT during the mitigation planning process.

D.3.2 How Mitigation Relates to Other Restoration Projects

Mitigation credit can only be earned once. The HCCC ILF Program may derive credit from any project(s) that has been planned or designed with salmon recovery funds, or other local, state or federal monies. If the ILF Program implements the project(s) to generate credit, the Program will reimburse monies to the appropriate entities that were used to plan and/or design the mitigation project(s), and ensure returned funds are spent on other high priority salmon projects within the watershed. If the original funding entity cannot or will not accept replaced funds, the HCCC or an approved third-party will ensure funds are spent on other high priority salmon projects. If this requirement cannot be met, the HCCC will not proceed with the mitigation project in question, but will instead proceed with an alternative mitigation project, as outlined in this instrument. In addition, when the HCCC ILF Program selects projects for mitigation that have been identified in salmon recovery or aquatic resources recovery plans, HCCC ILF Program staff will work with agencies, tribes, and other organizations to help identify

additional salmon recovery or aquatic resources recovery projects to supplement project lists.

The HCCC ILF Program will not derive credit from any project(s) already fully funded or implemented to meet a permit condition or any project(s) or components of projects already funded or implemented with Salmon Recovery Fund money or other local, state or federal funding. To avoid the potential for "double-counting" mitigation or restoration acreage or credit, when a proposed ILF mitigation site is adjacent to or near an existing or proposed restoration/mitigation site, the Mitigation Plan (Appendix K) will clearly show areas of existing restoration/mitigation (where no ILF credit is available) and areas where ILF mitigation credit can be generated.

The HCCC ILF Program mitigation fees may be used to implement a salmon recovery project or other recovery plan project, when all of the following conditions are met:

1. The project is not already fully funded;
2. There is not a restriction related to the funding used to acquire a site where the project will occur (e.g., a project that requires federal funding only);
3. The project is not a requirement associated with a previously issued permit (e.g., a mitigation project for an impact project that did not use the HCCC ILF Program); and
4. If any preliminary components of the project (e.g. project design or permitting) were funded by other recovery funds, those funds are reimbursed by the Program or additional work is completed of similar value.

APPENDIX E ADVANCE CREDITS

The federal rule [33 CFR Part 332.2] defines *advance credit* as "any credits that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan." A secured mitigation site is not required nor does the mitigation plan need to be approved before advance credits are sold. Once all of the advance credits are sold however, no more advance credits can be sold "until an equivalent number of credits, tied to a specific site and mitigation plan, has been released in accordance with an approved credit release schedule."

Advance credits are not in any way tied to prior mitigation activities conducted by HCCC or to projects that are planned for completion to meet prior mitigation obligations. As described in the federal rule (33 CFR 332.8.D.6.iv.D), the HCCC ILF Program sponsor may request advance credits from the Corps and Ecology within each service area based on the projected volume of development activity occurring in that service area, the loss of habitats and future needs of those habitats as outlined in the compensation planning framework, the sponsor's past performance for implementing habitat activities in the service area(s), and the project financing necessary to begin planning and implementing ILF projects.

E.1. Advance Credit Request and Rationale

Advance credits are sold to generate ILF Program funds that are used to implement mitigation projects. These mitigation projects will fulfill the advance credits as performance standards are achieved and credits are released by the Corps and Ecology, in consultation with the IRT. The intent of the HCCC ILF Program is to have fulfilled credits equal or exceed the advance credits initially allotted by the Corps and Ecology. The HCCC has requested a limited number of advance credits for each service area based primarily on expected development activity anticipated to occur in each service area and recent development pressures in these areas.

Permit data provided by the Corps for freshwater and marine/nearshore impacting projects documents approximately 210 impacting projects in Jefferson, Kitsap, and Mason counties within the Hood Canal watershed since 2004. The largest numbers of larger projects were undertaken by the U.S. Navy, Washington State Department of Transportation, and county governments, in addition to restoration practitioners; however private landowners widely account for the majority of permits issued. Since 2007, data indicates that approximately 56 percent of the impacting projects were to the marine/nearshore environments and 37 percent were to freshwater resources. Less than 22 of the roughly 210 impacting projects were assigned mitigation; resulting in approximately 18 acres (13 of which was conducted by the Navy in the freshwater environment) and 5,400 linear feet of mitigation outputs. There was not a consistent trend in the number of permits issued by year since 2004.

Based on past Corps permit information, projections of future permit requests, the size of each service area, and the relative distribution of development activity around Hood Canal, the HCCC ILF Program is requesting a total of 165 advance freshwater credits and 50 advance marine/nearshore credits as shown in Table 3 below.

Table 3. Advance Credits Requested by Service Area

Service Area	Habitat Credits	Hydrology Credits	Water Quality Credits	Total
Marine/Nearshore				50
WRIA 16/14b	20	20	20	60
WRIA 15	20	20	20	60
WRIA 17	15	15	15	45
TOTAL ADVANCE CREDITS REQUESTED	55	55	55	215

Since there has not been any significant use of the wetland tool in the HCCC operating area and thus no information available to apportion permit activities across the three wetland functions of habitat, hydrology, and water quality, the freshwater advanced credit requests were based on those in the King County ILF Instrument. Additionally, assuming that past permit volume can be used to predict future development pressure, the number of advanced credits requested for WRIA 16/14b and WRIA 15 were increased given recent Corps permit information.

Marine/nearshore advanced credits were estimated based on the projected need of U.S. Navy development activities in the next 3 years and other projected nearshore development in the service area, constituted mostly of riparian degradation, docks, fencing, bank stabilization, and dredging impacts. Unlike freshwater advanced credits, marine/nearshore advanced credits are based on acres of habitat class impacted/mitigated as defined in Appendix D.2. It is estimated that a majority of these impacts will be riparian buffer, and not direct aquatic impacts.

When credits are sold to an applicant, they shall be debited from the total number of credits advanced to the HCCC ILF Program by the Corps and Ecology. These credits will be used to offset unavoidable impacts that are likely to occur in Hood Canal and its drainages as defined in Appendices H and I.

E.2. How Advance Credits Relate to Amount of Allowed Impacts

The number of requested advance credits does not directly translate into the number of acres of impact that could be allowed in the process of “drawing down” advance credits. The advance credit balance shrinks as credits are “withdrawn” to meet mitigation needs related to impacts, but the balance (i.e., the pool of available advance credits) also *grows* as mitigation projects are implemented and credits (of functional lift) are earned or fulfilled. The ILF Program intends to have the balance of advance credits replenished

by implementing mitigation projects prior to selling all available advance credits to applicants.

In theory, there are maximum and minimum amounts of impact for a given number of advance credits in a given service area.

Based on Ecology's *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington – Final Report*, if all impacts were to freshwater wetland systems with high ecological functions and high value to society, 165 freshwater credits would allow impacts to a total of approximately 2.04 acres in the WRIA 16/14b, WRIA 15, and WRIA 17 service areas (assuming a normal temporal loss factor of 3). If all impacts were to wetlands with low functions and low value to society (i.e., all functions and values at an impacted wetland receive minimum scores) 165 freshwater credits would allow impacts of about 6.11 acres in all freshwater service areas (assuming a normal temporal loss factor of 3).

According to the *Interim Nearshore Approach*, 50 advance credits for the marine/nearshore service area could result in impacts to subtidal eelgrass habitats between 5 acres (highest degree of impact and risk factors) and 34.72 acres (lowest degree of impact and risk factors). 50 advance credits for the marine/nearshore service area could result in impacts to mudflat or beach faces habitats between 12.5 acres (highest degree of impact and risk factors) and 34.72 acres (lowest degree of impact and risk factors). These two scenarios represent the highest and lowest mitigation ratios in the *Interim Nearshore Approach*. Given the wide range of marine/nearshore habitats, it is expected that there would be a wide range of impacts and not a high impact on any one habitat.

Sites and projects will vary widely. Although the tools will provide a consistent method for assessing debits of impact, there are likely to be cases where mitigation requirements approved by regulatory agencies are different than what the tools suggests. Any time mitigation requirements differ from what the tools suggests, the applicant must provide science-based justification for the alteration, and the changes must be approved by regulatory agencies with authority.

Permit reviewers from the Corps, Ecology, or other agencies (e.g., local jurisdiction, WDFW, tribes, federal) may require additional credits based on a case-by-case review.

APPENDIX F PROGRAM ACCOUNT

This appendix describes how HCCC ILF Program funds are invested, how fees are set, how funds are allocated within the Program Account, the process by which funds are disbursed, the reporting requirements, and the fee ledger, which will track income from Mitigation Fees and expenditures.

The Program Account is an account established by the Sponsor to track the fees accepted and disbursed. The HCCC ILF Program will have four "Service Area Accounts." "Mitigation Project Accounts" will be added for each mitigation project implemented through the HCCC ILF Program. The HCCC ILF Program will seek to maintain a fee ledger in which the majority of funds in the account at any given time are allocated toward fulfillment of credits at mitigation projects. The Program Account will have sufficient funds to pay for ongoing monitoring, maintenance, and long-term management activities, as well as to implement any necessary contingency measures associated with implementation and ongoing management of mitigation projects. No money shall be removed from the fund for any use other than the HCCC ILF Program.

The account must track funds accepted from permittees separately from those accepted from other entities and for other purposes.

F.1. Investment of Funds

The HCCC ILF Program Account is within an interest-bearing account established solely for the use of the HCCC ILF Program. All receipts and disbursements, including fees collected through the HCCC ILF Program, will flow through US Bank, which is a member of the Federal Deposit Insurance Corporation (FDIC). This account is separate from any accounts that receive funds from entities other than permit applicants. All interest and earnings accruing to the HCCC ILF Program remain in that account for use by the HCCC ILF Program for the purposes of providing compensatory mitigation. The HCCC ILF Program interest earnings will be split evenly between Long-term Management and Contingency accounts.

The HCCC ILF Program Account is auditable by the State of Washington and will be used exclusively for the mitigation. Additionally, the Corps and Ecology will receive annual reports and the Corps and Ecology will be able to audit the account.

F.2. Mitigation Fees

The Mitigation Fee prices will be formulated to reflect full-cost accounting for establishment and management of mitigation sites, which includes: costs associated with site selection, permitting and design, construction, monitoring and maintenance, long-term management, program administration, contingencies and property rights acquisition.

Mitigation Fees will comprise two fees: a Credit Fee and a Land Fee. The Credit Fee price will reflect average costs for implementing all components of a mitigation project, based on cost analyses of recent projects completed by HCCC and similar entities. Credit Fees will be used to implement all aspects of mitigation projects undertaken by the HCCC ILF Program.

The Land Fee prices will be based on an analysis of average cost of recent land acquisitions in the service area within different counties and land uses.

Mitigation Fees are intended for use in activities related to producing mitigation credit. Section 332.8(o)(5)(ii) of the federal rule states that credit costs may also be used for "administration of the in-lieu fee program." This statement implies that Credit Fees can be used for administrative activities, so long as they are directly related to production of mitigation credit.

Mitigation Fees cannot be used for activities such as trail maintenance, litter patrol, and other types of routine public land stewardship or maintenance activities unrelated to management of a mitigation site.

The HCCC ILF Program reserves the right to accept or reject, at its discretion, Mitigation Fees for impact projects determined to be at odds with the HCCC's conservation mission.

The prices of Credit Fees and Land Fees will be adjusted periodically, at the discretion of the HCCC in consultation with the IRT, to reflect costs associated with implementing mitigation projects through the HCCC ILF Program.

F.3. Mitigation Fee Pricing

F.3.1 Credit Fees

The Credit Fee for freshwater wetland mitigation will initially be based on the freshwater credit fees adopted in March 2012 in King County's ILF Program (Exhibit 5, Part 1). King County determined the Credit Fee using a weighted average of costs per freshwater wetland credit from recent mitigation projects that utilized the "wetland tool" (Exhibit 3). There is a lack of reliable data concerning the cost to implement freshwater wetland mitigation projects in Kitsap, Jefferson, and Mason Counties given the lack of the use of the "wetland tool". However, exclusive of land costs, the credit costs are conservatively assumed to be comparable to the costs in King County. The HCCC ILF Program will implement multiple functional assessments in the watershed at potential roster sites in 2012 using the "wetland tool", conduct a cost analysis of the conceptual approaches for mitigation at those sites, and consult with the IRT on authorizing an updated Credit Fee.

The Credit Fee for marine/nearshore mitigation is based on the average costs of recent restoration projects in Hood Canal (Exhibit 5, Part 2). Thirteen activity types (e.g., piling

removal, bulkhead setback, tidal channel construction) were modeled from recent comparable projects at both small and large scales to determine an average cost per acre of implementing each activity. Credit Fees will be determined by matching the development activity type to the same mitigation activity type. Marine/nearshore Credit Fees are also exclusive of Land Fees.

The HCCC retains the right to adjust credit fees based on site-specific and project-specific conditions.

F.3.2 Land Fees

Land Fees are added to the Credit Fees to constitute the Mitigation Fee. In a credit and function-based in-lieu fee system, there will be cases in which it will be difficult or impossible to assess the actual cost of the publicly owned area that will eventually be used for an HCCC ILF Program project because the applicant and HCCC staff may not know the location of the mitigation receiving site when Credit Fees are collected. In some cases, receiving sites will be acquired after an impact occurs in order to meet specific functional objectives.

To devise a system for calculating the Land Fee that is equitable for all applicants – whether or not a receiving site has been determined when the applicant buys credits – HCCC will base the Land Fee for both freshwater and marine/nearshore mitigation sites on the estimated costs of acquiring new lands for receiving sites in the same service area where impacts occurred. Anticipated land costs were estimated by determining average per acre costs of transactions completed since 2003 based on three different types of land use in Kitsap, Mason, and Jefferson Counties: agricultural, residential shoreline, and floodplain.

Table 4 shows the categories for which average land costs per acre have been calculated.

Table 4, Land Fees Determined as an Average Cost per Acre by Land Use Type

Land Use Type	Jefferson County	Kitsap County	Mason County
Agriculture	$10,410	$17,500	$20,314
Residential Shoreline	$41,118	$45,996	~
Floodplain	$27,272	$65,934	$35,934

This average cost per acre will be multiplied at a 1:1 ratio by the acreage required to mitigate the impact to determine the Land Fee charged to the applicant. If the acreage required to mitigate the impact is not known at the time of the credit sale, the HCCC will negotiate the cost with the applicant using best professional judgment.

For example, to determine the base Land Fee for a marine riparian impact in a residential shoreline area, the following equation would be used:

(acre of habitat class debits) x (Avg. acquisition $/acre for residential shoreline land) = Land Fee

This average land cost per acre will be updated periodically. This will ensure Land Fees reflect current market conditions and that fees collected are sufficient to acquire new lands and/or protect lands in perpetuity. Hood Canal Coordinating Council retains the right to adjust land fees based on site-specific and project-specific conditions.

F.4. Allocation of Mitigation Fees

Upon receipt of Mitigation Fees, the HCCC ILF Program will allocate funds to individual accounts based on the description in the Basic Agreement. Moneys will be allocated to pay for mitigation project planning and implementation process and to account for financial assurances associated with contingencies and long-term management. The process for planning and implementing mitigation projects is described in Appendices H, I, and K.

F.4.1 Service Area Accounts

For each service area there will be four "top level" *Service Area Accounts* that shall be available for use, including:

The **Land Fees Account**, which contains 100 percent of Land Fees collected in that service area. These funds are exclusively for use in acquisition of property interests or to secure Preservation Credits (Appendix H).

The **Contingency Account**, which contains 14.7% of Credit Fees collected (or calculated as 22% of mitigation construction costs) in that service area. These funds are to be used for contingencies related to project implementation, e.g., implementation of adaptive management plans (Appendix O).

The **Program Administration Account**, which contains 10.7% of Credit Fees collected (or calculated as 12% of all other costs) in that service area. These funds will pay for program administration duties, including but not limited to:

- Site selection and concept designs,
- Fee and credit accounting,
- Legal services,
- Data (both financial and credit) management (Appendix G),
- Reporting,
- Correspondence and meetings with the IRT and other regulatory agencies,

- Hood Canal Coordinating Council ILF Program development (e.g., working to improve how the Program works to ensure highest quality mitigation), and
- Other HCCC ILF Program administration duties as necessary.

The **Long-Term Management Account**, which contains 8% of Credit Fees collected (or calculated as 12% of mitigation construction costs) in that service area. These funds are solely for use in implementing long-term management plans (Appendix P) included in the Mitigation Plans (Appendix K). Long-term management funds are not available for use on a project until the project enters the long-term management phase (i.e., after the establishment phase is complete and all credit associated with a project is released; Appendix K).

With the exception of the Land Fees Account, the other three Service Area Accounts are funded by a set percentage of the Credit Fees. The percentage of Credit Fees allocated to each account may be adjusted to meet HCCC ILF Program needs, if approved by the Corps and Ecology in consultation with the IRT.

F.4.2 Individual Mitigation Project Accounts

In addition to four Service Area Accounts for each service area, there will be multiple Individual Mitigation Project Accounts for each credit transaction completed. These accounts will be funded by the remaining portion of the Credit Fee after the other three accounts have been funded.

To facilitate transparency in the disbursement process and to assist project managers with budget tracking, expenditures of Individual Mitigation Project Account funds will be tracked by specific tasks performed. Staff involved in the process will charge their time against these account numbers and task numbers depending on the task on which they are working.

F.5. Spending Authorization

Expenditure of funds from any account other than Program Administration Accounts for implementation of projects subject to the terms of this Instrument may only occur after receipt of written authorization from the Corps and Ecology after consultation with the IRT, pursuant to 33 CFR 332.8(i)(2), the Basic Agreement Article III.B, and the Spending Agreement template provided as Exhibit 10. The Corps and Ecology have pre-authorized the Sponsor to spend up to 75 percent of funds from the Program Administration Accounts upon initial receipt of Mitigation Fees from the permittee.

Beyond the initial release of Administrative Funds, the Sponsor must submit a draft Spending Agreement form to the Corps and Ecology during the site selection and conceptualization process (Appendix H). Following consultation with the IRT, the District Engineer or designee and Ecology must sign the Spending Agreement to authorize the subsequent release of funds to the Sponsor.

In cases of adaptive management, non-compliance or default, the Corps and Ecology, after consultation with the IRT, may direct the use of HCCC ILF Program funds according to either an amended Spending Agreement or issuing a corrective action directive letter to the Sponsor (Appendices R and S).

By signing this Instrument, the Sponsor has agreed to abide by the direction of the Corps and Ecology in authorization, release, and use of HCCC ILF Program funds. The Sponsor acknowledges that failure to abide by the Spending Agreement or written requests from the Corps and/or Ecology is a violation of the HCCC ILF Program Instrument and may result in Program termination, among other penalties.

F.6. Program Account Reporting

The HCCC ILF Program will submit annual reports to the Corps and Ecology. The annual reports must include the following information:

1. All income received, disbursements, and interest earned by the HCCC ILF Program account;
2. A list of all permits for which HCCC ILF Program funds were accepted. This list shall include: The Corps permit number (or the state permit number if there is no corresponding Corps permit number, in cases of state programmatic general permits or other regional general permits), the AMU/sub-basin/watershed/service area in which the authorized impacts are located, the amount of authorized impacts, the amount of required compensatory mitigation, the amount paid to the HCCC ILF Program, and the date the funds were received from the permittee;
3. A description of HCCC ILF Program expenditures from the account, such as the costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration;
4. A map of all debit and credit sites at the appropriate AMU/sub-basin/watershed/service area scales;
5. The balance of advance credits and released credits at the end of the report period for each service area; and
6. Any other information required by the District Engineer.

As provided in 33 CFR 332.8(i)(4), “the district engineer may audit the records pertaining to the HCCC ILF Program account. All books, accounts, reports, files, and other records relating to the HCCC ILF Program account shall be available at reasonable times for inspection.”

F.7. Fee Ledger

The HCCC ILF Program will maintain two ledgers: one to track Mitigation Fees and expenditures, and a second to track debits and credits. The ledgers will be used to track the source of funding for mitigation projects as well as where and how impact Mitigation Fees are spent. This section describes the fee ledger and Appendix G describes the credit ledger. An example fee ledger is included in Exhibit 7.

The fee ledger will track all income (Mitigation Fees) and expenditures within the HCCC ILF Program and will clearly show the following:

- Mitigation Fees collected for each impact project:
    - Land Fee amount
    - Credit Fee amount
    - Impact project Permit Number
- Deposits and Expenditures from the Land Fee Account:
    - Origin of deposits (Impact Permit Number(s))
    - Land Fee Expenditures (Acquisition project name, location, date, parcel number(s))
- Deposits and Expenditures for the Contingency Account:
    - Origin of deposits (Impact Permit Number(s))
    - Contingency Expenditures (Mitigation Project Name)
- Deposits and Expenditures for the Long-term Management Account:
    - Origin of deposits (Impact Permit Number(s))
    - Long-term Management Expenditures (Mitigation Project Name)
- Deposits and Expenditures for the Program Administration Account:
    - Origin of deposits (Impact Permit Number(s))
    - Program Administration Expenditures
- Deposits and Expenditures for each Individual Mitigation Project Account:
    - List of expenditures by Task categories covering all aspects of implementing mitigation receiving projects, e.g. administrative costs, design, permitting, construction, maintenance and monitoring, etc. (Appendix K).

APPENDIX G CREDIT ACCOUNTING

From a credit accounting standpoint, the HCCC ILF Program will seek to maintain a surplus of credits available to sell, neither amassing a significant surplus of credits, nor selling all available advance credits for a particular service area. In cases where demand for HCCC ILF Program mitigation credits is higher than anticipated, the HCCC ILF Program may request additional advance credits from the Corps and Ecology, which would require an amendment to the instrument. The intent is to "earn back" credits through mitigation prior to drawing down the total amount of advance credit in a given service area.

G.1. Tracking by Functional Type

Until the HCCC ILF Program accrues impact fees and implements mitigation projects, it is hard to predict exactly how mitigation credit types will balance with impact debits in each functional type across a service area, whether in freshwater wetlands, marine/nearshore habitats, or other. In some service areas, watershed needs assessments may indicate that an imbalance across functional types is desirable; in other cases balancing functional debit and credit types may be the goal. As the HCCC ILF Program accrues mitigation fees and implements mitigation through time, the type and amounts of debits and credits, and the balance among them, will be tracked and reported to the Corps and Ecology via credit ledgers. HCCC staff will consult with the IRT to discuss if balancing across functional credit types should be attempted, or if "trading" among functional types will be preferable. This will be done for each mitigation plan. It is likely to vary by location based on specific site/reach/watershed needs. Tracking each of the functional types of debits and credits separately will allow the decisions regarding managing for "no net loss" to be made in an explicit and transparent way.

G.2. Freshwater Wetland Credit/Debit Ledger

The Hood Canal Coordinating Council ILF Program will maintain a separate Freshwater Wetland Credit/Debit Ledger to account for all freshwater wetland credit transactions. This ledger will be used to track credits that are sold as well as credits that are released as mitigation projects meet performance success standards (Appendices K and M).

The wetland credit ledger template is shown in Exhibit 7, Part 1. Upon HCCC ILF Program certification, the wetland credit ledger will reflect the amount of "Advance Credits" advanced by the Corps and Ecology (Appendix E).

G.3. Marine/Nearshore Credit/Debit Ledger

The Hood Canal Coordinating Council ILF Program will maintain a separate Marine/Nearshore Credit/Debit Ledger to account for all marine/nearshore credit

transactions. This ledger will be used to track credits that are sold as well as credits that are released as mitigation projects meet performance success standards (Appendices K and M).

The marine/nearshore credit ledger template is shown in Exhibit 7, Part 2.

G.4. Other Ledgers

The HCCC ILF Program will also maintain separate ledgers to track all other transactions besides freshwater wetland and marine/nearshore, such as streams, lakes, and buffers. This ledger will be used to track credits that are sold as well as credits that are released as mitigation projects meet performance success standards (Appendices K and M).

The template for this Ledger is included as Exhibit 7, part 3.

G.5. Credit Ledger Reporting

The HCCC ILF Program will submit annual credit ledger reports to the Corps and Ecology according to the requirements specified in the federal rule, 33CFR 332.8(q)(1):

"The sponsor must compile an annual ledger report showing the beginning and ending balance of available credits and permitted impacts for each resource type, all additions and subtractions of credits, and any other changes in credit availability (e.g., additional credits released, credit sales suspended). The ledger report must be submitted to the district engineer, who will distribute copies to the IRT members. The ledger report is part of the administrative record for the mitigation bank or in-lieu fee program. The district engineer will make the ledger report available to the public upon request."

The annual ledger report will include the following information:

- Size, type and location of all permitted projects using HCCC ILF Program credits
- Beginning and ending balances of available credits for each resource type and service area
- Beginning and ending balances of permitted impacts for each resource type and AMU/sub-basin/service area
- All additions and subtractions of credits
- Any other changes in credit availability (e.g., additional credits released, credit sales suspended)
- All income received, disbursements made, and interest earned
- An itemized list of HCCC ILF Program expenditures

The HCCC ILF Program ledger will separately track funds and credits based upon the type of resource impact being mitigated and the permitting jurisdiction involved (federal, state, and city or county).

G.6. IRT Concerns with Use of Credits

If an IRT member has a concern with how HCCC ILF Program credits are being used or whether use is consistent with the terms of the instrument, the concerned IRT member may notify the Corps and/or Ecology in writing of the concern per 33 CFR 332.8(s). This section of the rule states, "Resolution of the concern is at the discretion of the district engineer consistent with applicable statutes, regulations, and policies regarding compensatory mitigation requirements for DA permits. Nothing in this section limits the authorities designated to IRT agencies under existing statutes or regulations."

Further, IRT members with permitting authority retain the right to enforce permit conditions on any permits issued according to state or local regulations.

COMPENSATION PLANNING FRAMEWORK

Appendices H through Q establish the Compensation Planning Framework, which provides information about each of the service areas covered by the HCCC ILF Program and outlines the process by which mitigation projects will be implemented. The Compensation Planning Framework includes descriptions of all steps involved in the mitigation process, including receiving site selection, project planning and implementation and long-term maintenance, monitoring, and stewardship provisions. This Compensation Planning Framework describes HCCC ILF Program elements designed to meet requirements of 33 CFR 332.8(c).Table 5 shows the required elements of the federal rule and the sections of this instrument that address the requirements:

Table 5. Where Sections of the Federal Rule are Addressed in this Instrument

33 CFR Federal Rule Section	Summary description of federal rule requirement	Relevant Section(s) of this Instrument
§332.8(c)(1)	Compensation Planning Framework purpose; need for watershed approach	Appendix H: Watershed Approach to Mitigation
§332.8(c)(2)(i)	Service area descriptions	Appendix I and maps included as Exhibit 1
§332.8(c)(2)(ii)	Threats to aquatic resources	"Threats" subsections in sections Appendix I
§332.8(c)(2)(iii)	Analysis of historic losses to aquatic resources	"Historic Losses" subsections in Appendix I
§332.8(c)(2)(iv)	Current aquatic resource conditions	"Physical Description and Current Aquatic Resource Conditions" subsections in Appendix I
§332.8(c)(2)(v)	Aquatic resources goals and objectives for each service area	"Goals for Mitigation in a Watershed Context" subsections in Appendix I
§332.8(c)(2)(vi)	Prioritization strategy for implementing mitigation	Appendix I
§332.8(c)(2)(vii)	Preservation Objectives	Appendix H
§332.8(c)(2)(viii)	Description of public and private stakeholder involvement	Appendix K
§332.8(c)(2)(ix)	Long term protection and management strategies	Appendix P
§332.8(c)(2)(x)	Program evaluation and reporting	Appendix N and Appendix U
§332.8(c)(2)(xi)	Other compensation planning information as required by the Corps and/or Ecology	Will address in amendments to this instrument as necessary.

APPENDIX H WATERSHED APPROACH TO MITIGATION

Making mitigation decisions according to a "watershed approach" is an important requirement of the federal rule, and is a guiding principle for the HCCC ILF Program. The federal rule (33 CFR 332.2) states:

"*Watershed approach* means an analytical process for making compensatory mitigation decisions that support the sustainability or improvement of aquatic resources in a watershed. It involves consideration of watershed needs, and how locations and types of compensatory mitigation projects address those needs. A landscape perspective is used to identify the types and locations of compensatory mitigation projects that will benefit the watershed and offset losses of aquatic resource functions and services caused by activities authorized by DA permits. The watershed approach may involve consideration of landscape scale, historic and potential aquatic resource conditions, past and projected aquatic resource impacts in the watershed, and terrestrial connections between aquatic resources when determining compensatory mitigation requirements for DA permits."

This section provides an overview of how the HCCC ILF Program, in consultation with the IRT, will prioritize selection of mitigation receiving sites to meet watershed needs.

The most important two steps in the mitigation decision-making process apply to all impact projects as required by federal, state, tribal, and local rules:

1. **AVOID** and **MINIMIZE** impacts as required, and
2. Exhaust all ecologically-appropriate **ONSITE** mitigation options.

When unavoidable impacts to aquatic areas are allowed and mitigation fees are collected to enable mitigation through the HCCC ILF Program, decisions for selecting mitigation sites will be made according to the stepwise approach in each service area, as detailed below.

H.1. Selecting Mitigation Receiving Sites

The process for selecting appropriate mitigation receiving sites for the HCCC ILF Program reflects the principles, strategies and methods contained in the following documents:

- *Selecting Wetland Mitigation Sites Using A Watershed Approach* (Hruby et al., 2009), which provides guidance on assessing the potential for success and sustainability of mitigation projects. Publication # 09-06-032.
- *Making Mitigation Work: The Report of the Mitigation that Works Forum* (Ecology, 2008), which provides an excellent overview of key strategies for implementing successful mitigation in Washington State. Recommendations of this effort have been incorporated into this Instrument, and will guide mitigation decision-processes employed by the HCCC ILF Program. Publication # 08-06-018.

- *Protecting Aquatic Ecosystems: A Guide for Puget Sound Planners to Understand Watershed Processes* (Ecology, 2005), which provides a useful framework for considering watershed processes when making mitigation decisions. Publication # 05-06-027.
- Puget Sound Watershed Characterization Project (Ecology, 2011), which provides scientific information about which landscape areas and processes are the most important to protect and restore. http://www.ecy.wa.gov/puget_sound/characterization/index.html

The steps for identifying appropriate mitigation receiving site will be as follows in each service area:

Step 1. Documented impacts are entered into the HCCC credit/debit ledger.

HCCC ILF Program Manager enters impact description and data into the HCCC credit/debit ledger for the appropriate habitat and service area, ensuring that impact and receiving sites are tracked by location (coordinates, reach/AMU) (see Appendix G).

Step 2. Determine ecological needs in the marine assessment and mitigation unit (AMU) or freshwater sub-basin where the impact(s) occurs.

Appendix I of this instrument reviews needs of each service area and their AMUs and sub-basins, but the following additional information will be provided in this step which is more explicitly linked to the impact(s).

The HCCC ILF Program Manager will review best available science to document the ecological needs, including all available watershed plans, analyses, watershed characterization efforts, staff expertise, etc. in a manner consistent with this instrument, particularly Appendices H and I. Any other special factors or attributes of a particular freshwater reach, sub-basin, marine drift cell, AMU, and service area will be considered as well, including existing or planned major impact projects, future projected development impacts, existing or planned major restoration projects, etc.

Step 3. The HCCC ILF Program Manager presents this documentation to the IRT (usually as impacts accrue and mitigation site selections are proposed). The HCCC ILF Program Manager, in consultation with the IRT, will determine whether functions lost at the impact sites are critical to the ecological needs of the freshwater sub-basin or marine AMU. Critical ecological importance shall be determined from available information and best professional judgment as to whether or not the ecosystem within a particular area cannot afford to lose the specific functions.

Step 4. If functions lost at the impact site(s) are critical to ecological needs, choose (a). If not, choose (b). Note that decoupling (or taking apart) of functional impacts may result in mitigation that could occur both onsite and offsite, thereby choosing both (a) and (b). In all cases, the mitigation at the selected site will address watershed needs according to information in Appendix I of this instrument and any new information available at the time the decision is being made. In both the marine and freshwater service areas, mitigation for the impacting project(s) will occur within the same service

area, except in rare case by case instances where the Corps, Ecology and the Sponsor, in consultation with the IRT, concur that impacts should be mitigated outside of the service area.

a) If impacts are to functions that are of critical ecological importance to the freshwater reach/sub-basin or marine drift cell/AMU, the HCCC ILF Program will look for in-kind mitigation receiving site(s) within the freshwater sub-basin or marine AMU reach or marine drift cell where the impact(s) occurred that replaces the functions lost near the impact site(s) and is sustainable. If no in-kind mitigation receiving site(s) is available within the freshwater reach or marine drift cell, the Program will methodically expand the search for in-kind mitigation receiving sites outward to adjacent reaches but not to exceed the sub-basin or AMU area boundary.

   Due to the requirement to acquire land and complete initial physical and biological improvements by the third full growing season after the first advance credit in that service area is secured by a permittee (33 CFR 332.8(n)(4)), in cases when appropriate in-sub-basin/AMU mitigation projects (e.g. sufficient type, magnitude and sustainability of ecological lift) cannot be identified (no later than within 18 months), the HCCC ILF Program Manager shall seek a site for in-kind, out-of-sub-basin/AMU mitigation, or out-of-kind mitigation using the nested approach not to exceed the service area boundary, until several possible sites are found that meet watershed needs and are sustainable according to best available science.

-OR-

b) If functions lost at impact site(s) are not of critical ecological importance to the freshwater sub-basin or marine AMU, the site selection process for both in-kind and out-of-kind mitigation will expand outward to adjacent sub-basins or AMUs (not to exceed the service area boundary) until several possible sites are found that meet watershed needs and are sustainable according to best available science.

Step 5. The HCCC ILF Program considers type, amount, and location of impacts to functions and considers needs of the freshwater sub-basin or marine AMU or service area .

a) The HCCC ILF Program Manager reviews impact site(s) data (credit/debit ledger, see Appendix G) and potential ILF receiving sites at the appropriate scale as indicated in Step 4.

b) HCCC ILF Program selects one or more site(s) addressing sub-basin, AMU, watershed and/or service area needs. The HCCC ILF Program Manager will develop a preliminary concept plan.

Step 6. The Corps and Ecology, in consultation with the IRT and Sponsor, consider approval of the proposal from Step 5 above. The HCCC ILF Program presents to the IRT the site selection rationale, preliminary concept plan and (usually after agreement of site and concept) the draft Spending Agreement. If approved by the Corps and Ecology, the HCCC ILF Program Manager finalizes the Spending Agreement with appropriate authorizing signatures and begins developing the site specific Mitigation Plan as described in Appendix K.

H.1.1 Determining Critical Ecological Needs

The HCCC ILF Program and the IRT will be assessing and documenting critical ecological needs at all spatial scales (freshwater reach, sub-basin, service area; marine drift cell, AMU, service area) as the Program evolves. Over time, the assessment of critical ecological needs will become more highly documented and pre-determined. As consensus builds on critical functions at various scales, the HCCC ILF Program, and the relevant permitting agencies, shall consider the implications of permitting impacts to those functions, and necessary reforms to their respective programs, to ensure that the mandate of "no net loss" of ecological functions and values is met over time, and consistent with §332.3(a)(1), that mitigation is commensurate with the amount and type of impact associated with permitted projects.

Critical functional thresholds and trade-offs between functions (e.g. out-of-kind mitigation) are technical assessments that will be viewed in light of ecological and social values and their related policy considerations.

H.2. Ecological Condition and Watershed Needs

The HCCC and its conservation partners have access to a wealth of information about ecological conditions of Hood Canal watersheds to use in identifying mitigation sites and implementing mitigation in a way that achieves watershed goals.

A number of governments, non-governmental organizations, private businesses, and citizens are actively working to protect and restore the natural resources of the Hood Canal watershed. The HCCC will continue to coordinate and partner with these entities to identify and prioritize mitigation sites within the service areas, as well as to implement and monitor projects.

Numerous reports, plans, and analyses describe how the ecological conditions in the Hood Canal watershed have changed through time in the face of development, and which ecological functions within a watershed are most important to protect and/or restore; this body of work provides a solid scientific basis (as well as information about societal and cultural value of resources) for making decisions about how to implement mitigation that will achieve "no net loss" of functions and values and have the greatest benefit to aquatic resources in the Hood Canal watershed.

The following is an initial list of reference documents used to determine watershed needs. The list will be updated and revised as needed to ensure decision-makers have the best available information. Reference documents used as major sources of information for the HCCC ILF Program must be scientifically vetted, accepted literature.

- Hood Canal Integrated Watershed Management Plan (IWMP)
    - The purpose for the IWMP is to provide a comprehensive, coordinated, prioritized and accountable road map for the HCCC, its many partners, and the general citizenry in protecting and restoring the Hood Canal watershed in order to meet our vision that "Humans benefit from and coexist sustainably with a healthy Hood Canal."
    - Hood Canal policymakers are setting goals for ecological conservation and restoration that are balanced with human health and well-being. A series of technical viability assessments are providing measurable targets that form the basis of developing strategies and actions. An ecosystem pressures assessment has been completed ranking regional pressures for their effects on the 8 primary conservation components.
- Salmon Conservation and Recovery Plans and three year work plans
    - Summer Chum Salmon and Skokomish and Mid-Hood Canal Chinook Salmon Recovery Plans have been developed locally and adopted by the state and federal governments. Bull trout and Steelhead Trout recovery plans are currently being drafted. These documents show salmon habitat limiting factors by sub-population and model their effects on various stages of salmon life histories. Three year work plans are maintained to show what specific actions need to occur in what watersheds in the near term to implement salmon recovery.
    - Salmonid Habitat Limiting Factors Assessments have been completed for all WRIAs and nearshore areas in Hood Canal, and were incorporated into recovery planning.
- Nearshore Assessments and Restoration Prioritization Frameworks
    - Multiple regional and sub-regional efforts have been conducted, including the Puget Sound Nearshore Ecosystem Restoration Program and Jefferson and Kitsap County Nearshore Assessments. These larger scale assessments typically define site and landscape scale degradation and assess and prioritize potential strategic needs or corrective actions. Further information is available in Appendix I.
- Watershed characterization plans, data or both
    - Multiple efforts have been conducted over the decades to characterize watersheds, with most recent efforts completed by WRIA Planning Units under RCW 90.82 and, more recently, by a collaborative of state and

federal agencies with the Puget Sound Watershed Characterization Project. Further information is available in Appendix I.

- Local Shoreline Master Programs and Restoration Plans
    - The 3 county jurisdictions in Hood Canal protect shorelines with locally-approved regulations as guided by the State's Shoreline Management Act passed in 1971, which has an over-arching goal to "prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines." The act includes marine, riverine, lacustrine, shoreland or terrestrial edge, wetlands, and floodplains. Hood Canal marine shorelines are noted as a Shoreline of Statewide Significance.
    - Jefferson County essentially completed their update in 2012, while Kitsap and Mason Counties are currently working to update their programs. Each must inventory and characterize relevant shorelines, adopt shoreline environmental designations that provide a framework of land use and natural resource protection, and adopt restoration plans. Recent state guidance has created a "no net loss" policy for these habitats, and restoration plans are an important component of that effort to increase ambient conditions to offset permitted development activities.
- Local Comprehensive Land Use Plans
    - County governments are required under the Growth Management Act of 1990 to coordinate land use with capital facilities planning as a result of the State Legislature finding that uncoordinated and unplanned growth posed a threat to the environment, sustainable economic development and quality of life in Washington.
    - Comprehensive Plans must identify and protect critical areas and natural resource lands, designating urban growth areas and implementing them through capital investments and development regulations. Much of the lands in Hood Canal are designated as rural resource lands or low density suburban, however several urban growth areas (e.g. Belfair, Silverdale), rural villages (e.g. Hoodsport, Brinnon), and Limited Areas of More Intensive Rural Development do allow higher density development but also provide better services such as sewer systems and drinking water. Legacy lots created before 1990 are often smaller and nonconforming, presenting challenges to natural resource protection.
- Local Flood Hazard Management Plans
    - These plans have been developed for several high risk areas of Hood Canal, including Big Quilcene, Dosewallips, Duckabush, and Skokomish Rivers. The Department of Ecology and the counties administer and enforce all laws related to flood control and floodplain management regulation. Most of these plans find that Hood Canal's rural floodplains

are difficult and expensive to manage in a way that would provide for sustainable natural resources and communities at once. Instead, they usually recommend protective measures in limited reaches of river systems where communities are well established (e.g. Brinnon) and strategic retreat in areas already functioning well or where humans are at high risk and can't be affordably protected from flood risks.

- US Forest Service (and WA DNR and private timber companies) Watershed Analyses
    - The US Forest Service has adopted ecosystem management as its official land management policy, and provided for an interdisciplinary approach to assess and synthesize biological, physical, and socio-economic data to understand aquatic and terrestrial processes and to assess opportunities to restore or improve those processes and watershed conditions. Watershed analyses have been completed for all of the major river systems flowing from the National Forest in western Hood Canal, as well as WA DNR-led assessments around the Tahuya State Forest and eastern Hood Canal. Findings often included the need to reduce road networks and sediment delivery in upper watersheds, reduce clear-cutting, replace undersized and fish-blocking culverts, and restore degraded stream channels.
- Ecoregional Assessments: Willamette Valley/Puget Trough/Georgia Basin (Nature Conservancy, 2004)
    - The Nature Conservancy, with multiple partners, has completed nine ecoregional assessments that identify core habitats within our natural infrastructure across the Pacific Northwest. Hood Canal falls into two ecoregions, including Pacific Northwest (most of the Olympics) and Willamette-Puget-Georgia lowlands. These core habitats include the lands and waters critical to the conservation of biodiversity in these regions. Findings for Hood Canal suggest a strong emphasis on conserving the largest remaining tracts of forested habitats in Puget Sound and along the marine waters, including the Tahuya plateau, east Jefferson County, and Skokomish watersheds. Marine reaches of northern Hood Canal are also noted for their strategic importance.
- Puget Sound Partnership's Action Agenda
    - The Action Agenda explains what a healthy Puget Sound is, describes the current state of Puget Sound, prioritizes cleanup and improvement efforts, and highlights opportunities for investment and coordination. The Puget Sound Partnership updated the Action Agenda in 2012, including regional and local action area priorities. In Hood Canal, the Partnership has identified the Hood Canal Coordinating Council as the Local Integrating Organization responsible for working with governments, non-governmental organizations, and citizens alike in order to improve

coordination and collaboration. The HCCC IWMP is essentially the local chapter of the Action Agenda. Both planning efforts develop priority strategies to be implemented in the 5 to 10 year timeframe as well as near term actions that need immediate implementation in the next two years. Recommended actions in Hood Canal include, but are not limited to, reducing anthropogenic nitrogen sources in Lower Hood Canal, implementing salmon recovery plans, conserving forests before they are converted to residential development, reducing stormwater inputs, and enforcing existing regulations.

In addition to watershed information provided in the compensation planning framework, staff resources, including HCCC staff and consultants, Puget Sound Partnership (PSP) Ecosystem Recovery Coordinators, WA Ecology Watershed leads, WDFW Watershed Stewards, WA DNR staff, HCCC member County and Tribal staff will be consulted to help develop additional detail for watershed needs.

The information available to guide mitigation decisions is not static. Scientists and planners continue to collect new data on the Hood Canal watershed, perform new analyses and employ innovative methods in examining the ecological systems across the landscape. As new reports and analyses become available, including future watershed characterization results for Hood Canal watersheds, they will be added to the resources informing mitigation decisions through the HCCC ILF Program and incorporated by reference into this Instrument.

Additional information on ecological condition and watershed needs can be found in Appendix I.

H.2.1 Site Selection Factors

In determining ecological suitability of a potential mitigation site, the HCCC ILF Program will consider the following:

- The relative locations of the impact and mitigation sites in the marine/nearshore environment;
- Watershed scale characteristics that are important to ecological processes and habitat structure and function, including but not limited to surface and groundwater flow patterns, sediment delivery and transport, tidal exchange, freshwater flow, etc;
- The reach and site scale ecological processes, structure, and functions necessary for properly functioning conditions and the stressors impacting those processes.
- Watershed scale habitat limiting factors for meeting goals;
- Vegetation conditions, soil characteristics, habitat quality and other physical and chemical characteristics;

- The size and location of the compensatory mitigation site relative to hydrologic sources (including availability of water rights) and other ecological features;
- Habitat connectivity and diversity and compatibility with adjacent land uses and watershed management plans;
- Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources (e.g. shallow sub-tidal habitat or shellfish), cultural sites, or habitat for federally or state listed threatened or endangered species;
- Sites that can benefit from reversion to previous conditions (i.e., through bulkhead removal or revegetation);
- The extent to which the site has long-term potential to contribute to the protection or restoration of site, reach, and watershed processes;
- The potential of the site to accommodate timely implementation of a restoration or enhancement project that will succeed in the watershed and ecosystem setting; and/or
- Availability of projects at the site that do not require "highly engineered" solutions.
- Development trends;
- Anticipated land use changes;
- Habitat status and trends;
- Local or regional goals for the restoration or protection of particular habitat types or functions (e.g., re-establishment of habitat corridors or habitat for species of concern);
- Water quality goals;
- Climate change and sea level rise;
- Floodplain management goals; and/or
- The relative potential for chemical contamination of the aquatic resources.

Selecting an actual site on which to perform a mitigation project will consider the aforementioned factors and the conditions that generated the mitigation need, such as landscape position, elevation, ecosystem setting and functional condition.

Potential marine/nearshore mitigation site selection will be prioritized based first on the proximity of the mitigation site to the impact location in a nested-scale hierarchy (Appendix H.1) and the ability of the mitigation site to replace functions lost at the impact site. Initially, mitigation sites located within the impacted drift cell or near this drift cell will be assessed by the HCCC ILF Program to determine the capacity of these sites to mitigate for lost marine/nearshore functions at the impact site. If these sites are

determined to not be appropriate, the geographic area will be expanded to locate other potential mitigation sites. In addition, if a marine/nearshore mitigation site is located at distance from the impact location, but has more capacity to restore functional marine/nearshore processes than mitigation sites located closer to the impact location, this site may be prioritized above closer sites; after consultation with the IRT and appropriate regulatory authorities.

Potential freshwater mitigation site selection will be prioritized in a similar manner, based first on proximity of the mitigation site to the impact location in a nested-scale hierarchy (Appendix H.1) and the ability of the mitigation site to replace functions lost at the impact site, followed by an expanding search to adjacent locations within the Service Area.

H.3. Prioritizing Sites and Developing a Roster of Potential Sites

To ensure mitigation projects are implemented in the most appropriate locations, the HCCC ILF Program will rely on a group of experts to screen and prioritize potential sites and develop a roster of possible receiving sites. The site selection team will comprise HCCC, IRT, and partner staff with expertise in natural resources management, restoration ecology, engineering, fisheries, wetland science, and marine/nearshore processes and knowledge of the watershed. The team will draw upon all available resources in making decisions, including applicable scientific plans and documents, firsthand knowledge and expertise and outside stakeholder input, as guided by the HCCC ILF Program Instrument.

The expert team will identify multiple, potential receiving sites in each service area and marine AMU, stratifying sites across various potential activity types (e.g. bulkhead removal, riparian planting, wetland mitigation). To avoid deterioration of ecological functions in a particular area by cumulative effects of "exporting" mitigation for multiple projects, the HCCC ILF Program shall track and report the number and nature of impacts for each area (e.g. freshwater reach and sub-basin, marine drift cell and AMU, and all service areas) and the locations of the receiving sites (Appendix G).

When a roster of potential receiving sites has been identified, an ecologist will perform limited site reconnaissance to identify a preferred site. The reconnaissance will involve assessing the existing functions and the potential for functional lift of each sites. The initial site reconnaissance will include:

- Application of an approved mitigation assessment tool of existing conditions. If the mitigation is for freshwater wetland impacts, the ecologist shall rate the wetland using the wetland tool (Exhibit 3). If the mitigation is for marine/nearshore impacts the ecologist shall perform an approved marine/nearshore functional assessment. If the mitigation is for stream or other aquatic impacts the ecologist shall perform an approved mitigation reconnaissance.

- Coarse assessment of whether existing conditions are conducive to generating the necessary number of credits.
- Collection of site specific information that will be used to create a conceptual project plan.

H.3.1 Securing Potential Receiving Sites

Once potential sites are selected, screened and prioritized, and identified as a part of an approved mitigation plan within this Program (Appendix K.2), the HCCC will work to secure (or enroll) lands for use as mitigation receiving sites. Specifically, the roles that each organization is responsible for are as follows:

- The Hood Canal Coordinating Council will coordinate identification and recruitment of particular properties with potential to meet mitigation needs and to be added to the list of sites. Contact with landowners will primarily be the responsibility of HCCC or its designees.
- The Hood Canal Coordinating Council or its designees will be responsible for tailoring the site protection instrument to the site conditions and mitigation needs of the site, including identifying all permitted and prohibited uses. The HCCC will then send a copy of the site protection instrument to the Corps and Ecology for consultation with the IRT and approval.
- Pending that approval, the Hood Canal Coordinating Council or its designee will be responsible for ordering an appraisal that establishes the price of the site protection instrument.
- The Hood Canal Coordinating Council, in partnership with a public agency, tribe, or land trust, will be responsible for the actual negotiation, transaction, and enrollment of land in the Program. All fee simple title of enrolled lands will be owned by the HCCC, a public agency, a tribe, or a land trust that has adopted the Land Trust Alliance Standards & Practices. All site conservation easements will be owned by an independent third party with appropriate qualifications. The Corps, Ecology, and HCCC will be named as beneficiaries to the site protection instruments, as deemed appropriate by each entity. To ensure mitigation projects continue to provide ecological functions, the terms of the site protection instrument will incorporate a requirement for the landowner to obtain prior approval from the easement holder before the landowner performs any “allowed alterations.”
- The Hood Canal Coordinating Council or its designee will be responsible for forwarding the transaction to the County Auditor’s office for recording as part of the permanent land record. If land interests are to be owned by a tribe in tribal trust status, it must be recorded through the Bureau of Indian Affairs Title Plant.

The practice of allowing mitigation to occur on private lands will be analyzed regularly, and if this aspect of the HCCC ILF Program becomes problematic, the Program can decide to discontinue allowing private lands as mitigation receiving sites.

H.4. Mitigation Strategy

The mitigation strategy selected for each permitted impact will be based upon this compensation planning framework, the mitigation site selected (see section above), an assessment of type and degree of function and disturbance at the landscape and site scales, and perceived success of each of the available strategies.

Restoration generally will be the first mitigation strategy considered because the likelihood of success is greater and the impacts to potentially ecologically important uplands are reduced compared to enhancement or creation. Restoration also has potential to produce more substantial gains in aquatic resource functions compared to enhancement and preservation. Creation and enhancement, though legitimate strategies, will be less favored than restoration and potentially preservation.

H.4.1 Preservation as a Mitigation Strategy

Preservation of high value aquatic resources that are "under threat of destruction or adverse modifications" [33 CFR Part 332.3(h)], (i.e., conversion to residential development, commercial development, timber harvest, or other activity significantly altering ecosystem functions and values) may be used as a compensatory mitigation strategy by the HCCC ILF Program. In general, these lands must be determined to be consistent with the preservation criteria in the Federal Rules [33 CFR Part 332.3(h)] and must meet the site selection criteria for HCCC ILF Program outlined below. In cases where preservation is proposed, project planning and implementation funds from the ILF Credit Fees may be used to secure the property to be preserved, in addition to funds collected through the Land Fees for those credit sales.

Given the threats and declining trajectory in an otherwise relatively healthy Hood Canal Watershed, a precautionary strategy that includes preservation to ensure the continued viability of healthy aspects of Hood Canal is prudent. Preservation as a mitigation strategy will target those systems that are relatively undisturbed or the least disturbed within the service areas. Preservation will be considered an appropriate mitigation strategy when all of the following criteria are met:

1. The resources to be preserved provide important physical, chemical, or biological functions for the watershed; and
2. The resources to be preserved contribute significantly to the ecological sustainability of the watershed as demonstrated through the use of appropriate quantitative assessment tools; and

3. Preservation is approved by the Corps and Ecology to be appropriate and practicable; and
4. The resources to be preserved are under threat of destruction or adverse modifications; and
5. The preserved site will be permanently protected through an appropriate site protection instrument.

To the maximum extent appropriate and practicable, preservation shall be done in conjunction with aquatic resource restoration, establishment, and/or enhancement activities. In such cases, the preservation credit calculation methods included in Appendix D will be used to assess the amount of preservation credit earned by preserving a property. Also, preservation alone may require a higher mitigation ratio.

The ecological value related to quantifying preservation credit derived should include the following considerations:

1. The extent to which proposed management activities within the preserve area promote natural ecological conditions such as exclusion of invasive exotic species or human impacts.
2. The ecological and hydrological relationship between wetlands, aquatic areas and uplands to be preserved.
3. The scarcity of the habitat provided by the proposed preservation area and the degree to which listed and imperiled species use the area.
4. The proximity of the area to be preserved to areas of national, state or regional ecological significance, such as national or state parks, Shorelines of Statewide Significance and other regionally significant ecological resources or habitats, such as lands acquired or to be acquired through governmental or non-profit land acquisition programs for environmental conservation, and whether the areas to be preserved include corridors between these habitats.
5. Specific ecosystem services or processes that are provided by the preservation area and their value.

In cases when there is an existing easement over the property that meets the mitigation needs of the Program, credits cannot be derived through preservation; i.e. sites with existing conservation easements cannot generate credits through preservation as defined in the Federal Rule [33 CFR Part 332.3(h)]. In cases where an existing easement or other site protection instrument is insufficient to meet the mitigation needs of the Program, credits can be derived through additional preservation as determined on a case-by-case basis by the Corps and Ecology in consultation with the IRT.

Preservation sites may also serve as important reference sites, which will provide a template for replacing ecological functions at other mitigation sites within the service area. Such reference sites will also provide a benchmark for temporal and spatial trend analyses within the Hood Canal service areas, which can inform performance standards and mitigation success criteria.

Preservation may be particularly valuable as a mitigation strategy for protecting unique, rare, or “difficult-to-replace” aquatic resources, and may be the most appropriate form of compensatory mitigation for those resources. The HCCC ILF Program has determined which habitats can be classified as “difficult-to-replace”, as documented in Appendix A.

APPENDIX I SERVICE AREAS

The geographic service areas for the HCCC ILF Program encompasses those portions of WRIAs 16/14b, 15, and 17 draining to Hood Canal, defined by a line extending from Foulweather Bluff to Tala Point and Port Ludlow, south through the Great Bend to its terminus near the town of Belfair, WA. This area is further divided into three freshwater service areas (WRIAs 16/14b; WRIA 15; and WRIA 17) and one marine/nearshore service area (Hood Canal marine/nearshore) for purposes of the HCCC ILF Program. Maps of the service area boundaries are included as Exhibit 1, Parts 1-5. The service areas are defined as follows:

1. The Marine/Nearshore Environment service area encompasses the marine riparian zone (approximately 200 feet landward of the marine/nearshore geomorphic unit), the adjacent aquatic intertidal and subtidal zones including sub-estuaries and beaches, tidally influenced portions of streams, and estuarine wetlands.
2. The Freshwater Environment service area includes freshwater wetlands, lakes/ponds, and non-tidally influenced rivers / streams and their adjacent floodplains and riparian areas.

Projects with unavoidable impacts to marine/nearshore and/or freshwater resources within these geographic limits would potentially be eligible to purchase mitigation credits from the HCCC ILF Program subject to the Program requirements and procedures specified in this Instrument.

Within the service areas, decisions about where to locate mitigation for each eligible project or group of projects would need to consider the specific resources and functions being impacted, the watershed context, the local and tribal jurisdictional boundaries, and other factors. Impacts to freshwater wetlands and other freshwater aquatic resources would generally need to be mitigated at an appropriate receiving site within the same sub-basin or service area, though there may rarely be examples where out of service area mitigation is proposed as described in Appendix H. Until a full marine/nearshore credit debit tool is developed and accepted by the Corps and Ecology in consultation with the IRT, impacts to marine/nearshore resources would be mitigated at the closest appropriate receiving site within the same marine assessment and mitigation unit (AMU) as the impact site. The sponsor will use an expanding, tiered (or nested-scale) approach to find suitable receiving sites, working out from the impact site until a feasible and appropriate mitigation site is identified (see Appendix H).

For aquatic habitat and buffer impact projects requiring city or county permits, the mitigation receiving site would generally need to be within the same county as the impact site unless the county regulations specifically allow out-of-jurisdiction mitigation.

Sections I.1 and I.2 describe current and historic conditions, current and future threats, objectives for mitigation for each service area and/or AMU. This information is summarized from plans, reports and analyses cited in the text and also listed in

Appendix H. These plans were developed by natural resources professionals from the HCCC and other agencies and institutions (e.g., WRIA planning unit staff, University of Washington researchers). Information contained in the referenced plans was derived through a number of strategies, including field work as necessary to obtain valid, high quality data. In this way, information about service areas is based on an "appropriate level of field documentation" as required in CFR 33 332.8(c)(2)(iv).

The ILF program is designed to help achieve HCCC's Integrated Watershed Management Plan (IWMP, in prep 2012) conservation priorities, while the IWMP requires that habitat-impacting development projects have avoided, minimized, and effectively mitigated unavoidable impacts. Thus the ILF and IWMP are integrally related. HCCC is developing management goals for each of the following conservation priorities. The following draft goals are being considered.

- Forests and Forestry
    - Integrity - To maintain forest cover, quality, and connectivity to aquatic resources in the Hood Canal watershed.
    - Balance - To maintain an optimum balance between 3 types of forest management by: increasing wild and diverse forests; maintaining the area and productivity of managed timber lands in lieu of converting them to residential lands; and maintaining forest cover in residential lands.
- Rivers and Streams
    - Water Quantity - To maintain normative flow conditions during low and high flow periods.
    - Sediment - To decrease sediment sources and delivery while increasing normative patterns of transport and deposition in channels and floodplains.
    - Water Quality - To increase water quality (e.g., reduce stream temperatures, nutrient/toxic/pathogen cycling).
    - Connectivity - To increase connectivity of streams, floodplains, channel migration zones, and riparian areas.
    - Habitat - To increase habitat quality and quantity (wood loading, pool quality/quantity, edge habitat, wetted area, bank stability, benthic community).
- Riparian Areas
    - Integrity – To increase the width, maturity, continuity, and connectivity of vegetation communities along our freshwater and marine shorelines.
- Estuaries
    - Integrity – To increase tidal and freshwater connectivity, wetland extent, channel complexity, and eelgrass health.

- Beaches
    - Integrity – To increase unarmored shorelines, sediment feeder bluffs, drift cell connectivity, eelgrass health, and the quality of riparian influence.
- Shellfish and Shellfishing
    - Quantity – To increase abundance, productivity, and the likelihood of a mature and diverse age structure for Olympia and Pacific oysters, as well as Manila, butter, littleneck, and geoduck clams for their ecological, cultural, and economic benefits.
    - Water Quality – To increase open shellfish growing areas and decrease human health risks and human influence on marine acidification in Hood Canal.
    - Harvest – To increase commercial, recreational, and subsistence landings of shellfish products.
    - Balance – To maintain a balanced approach to meeting shellfish, salmon, and habitat goals.
- Salmon
    - Quantity – To increase the abundance, escapement, productivity, and diversity of summer chum salmon, Chinook salmon, coho salmon, and steelhead trout and their ecosystems for their ecological, cultural, and economic benefits.
    - Harvest – To increase (direct and/or indirect) commercial, recreational, and subsistence landings of summer chum salmon, Chinook salmon, coho salmon, and steelhead trout after meeting sustainable escapement rates.
- Bottomfish
    - Quantity – To increase the abundance, productivity, and the likelihood of a mature and diverse age structure for English sole, rock fish, and ling cod.
    - Water Quality – To decrease human influence on low dissolved oxygen conditions in Hood Canal.

The draft management goals are meant to signal HCCC policy direction, and will be refined over time to add measurable benchmarks and timelines as determined through viability assessment and policy interface. The IWMP is designed as a conservation framework that strategically prioritizes a limited number of ecological components that encompass the entire Hood Canal ecosystem. Though the IWMP draft management goals listed above do not explicitly note components of ecological importance to the ILF Program, such as lakes, forage fish, marine mammals, and birds, most are implicitly conserved by conserving their habitat (e.g. forage fish are conserved by conserving

beaches and eelgrass) or adjacent habitats (e.g. lakes are conserved by conserving their riparian areas). Where the IWMP management goals are perceived to conflict with the watershed's ecological and mitigation needs, the latter will prevail in order for this Program to meet the ILF goal of "no net loss" of aquatic functions and values.

The series of maps presented in Exhibit 1) are coarse-scale and are not intended for site or mitigation strategy selection processes without additional information as provided for in this Instrument. In particular, shellfish data in Exhibit 1 may not reflect existing conditions due to the age of the data (circa 1985).

I.1. MARINE/NEARSHORE SERVICE AREA

Hood Canal is a natural, glacier-carved fjord, which forms the westernmost waterway and margin of the Puget Sound basin. The Canal has approximately 220 miles of marine shoreline with a variety of distinct physical, ecological and land use characteristics. The interaction of currents, wave energy, tidal and nutrient fluxes, salinity and substrate supports a diverse array of plant and animal species. Several of these species, including summer chum salmon, Chinook salmon, steelhead and bull trout, and marbled murrelet, among others, are federally listed as threatened.

Hood Canal is approximately 62 miles long and has a maximum depth of nearly 626 feet or 200 m (Kellogg, 2004; Labbe, et al., 2006). The basin is relatively straight for the majority of its length, with the exception of Port Gamble, Dabob, and Quilcene Bays, major embayments, and the Great Bend. Over most of its length the Hood Canal varies in width from 1.0 to 2.5 miles or 2 km to 4 km (Simonds, et al., 2008). The dominate land uses along the marine shoreline are rural residential development, agriculture (e.g., small farms, shellfish beds), industry (e.g., Navy facilities and timber harvest), recreation (private marinas and docks), and transportation (e.g., US Highway 101).

A shallow sill extends across the short axis of the canal south of the Hood Canal Floating Bridge (State Route 116) and north of NKB Bangor in the vicinity of South Point and Thorndyke Bay. The main current, or thalweg, runs along the west side of the channel, forming a hanging valley at the sill crest. The sill limits exchanges of dense water between the deeper southern reach and Admiralty Inlet, the channel linking Puget Sound to the North Pacific Ocean via the Strait of Juan de Fuca. South of the sill, the bottom along the thalweg is extremely rough, varying by +/- 80 feet (25 m) over 0.6 miles (1 km) or less (Gregg and Pratt, 2010).

The sill, canal cross-sectional area and bathymetric irregularities affect tidal currents, flow stratification, tidal energy and exchange of nutrients and dissolved oxygen (Gregg and Pratt, 2010; Kellogg, 2004; Gustafson, et al., 2000). Due to stratification and modest freshwater input, bottom water in southern Hood Canal has a long residence time, on the order of one to four months. There is little exchange with overlying oxygenated water, and dissolved oxygen concentrations in parts of the canal can become very low, a condition commonly referred to as hypoxia (Fagergren and Criss, 2004). However, an

accurate description of the hydraulic properties of Hood Canal is hindered by its complex geometry and bathymetry (Gregg and Pratt, 2010).

Hood Canal is an estuary. Estuaries are semi-enclosed, protected inland waters where the mixing of freshwater from the uplands/terrestrial environment and saltwater from Hood Canal occurs. Sub-estuaries occur at large river deltas, such as the Dosewallips River, where the slowing of water flow results in sediment deposition, and at smaller stream mouths and embayments around the canal. Estuaries are well known as productive environments that support a wide variety of fauna such as salmon, shellfish, and birds, many of which are economically important. Tidal wetland habitats (including tidal marshes and scrub-shrub habitat) and tidal non-wetland habitats (tidal flats with mud, sand, or gravel substrates) are a significant component of estuaries (Todd et al., 2006). Todd et al. (2006) inventory and characterize these habitats in detail.

Drift cells are an important characteristic of the marine/nearshore ecosystem in Hood Canal and elsewhere in Puget Sound. There are 90 drift cells in Hood Canal-- distinct ecological units delimited by physical parameters such as wave action, currents, erosion, sediment transport, deposition and substrate. As such, drift cells are partially compartmentalized zones that act as closed or nearly closed systems that transport beach sediment (Washington DOE, 1991). The sediment transport is the result of wind-generated waves. The geographic limits of drift cells are determined by geomorphic and sedimentological indicators (Washington DOE, 1991). Drift cells are composed of erosion, transport and deposition zones.

Sediment transport within shoreline drift cells determines the ultimate size, shape and configuration of sediment depositional features such as beaches, spits, berms and mudflats. These sediment transport processes form the basis for establishing and maintaining beach habitat structure and function. Typically, there are two types of beach features: 1) bluff-backed beaches, which are erosional regions, and 2) barrier beaches, which are generally depositional in nature.

While the streams and rivers entering the Hood Canal are sources of sediment to the drift cells, the majority of sediment comes from the miles of bluffs that line the canal's shorelines. These bluffs are referred to as "feeder bluffs" because erosion and mass wasting supply the sediments that maintain the physical, chemical, biological and geomorphologic characteristics of the drift cells and beach formations (Johannessen and MacLennan, 2007). Table 6below provides a summary overview of the service area.

Table 6. Marine/Nearshore Service Area Overview

Attribute	Value
Size	220 linear miles
Number of drift cells	90
Predominant land uses	Agricultural (clam beds), industrial (Navy wharf), recreational (private marinas and docks), residential

For purposes of this ILF program, the marine/nearshore service area has been divided into five geographic sub-regions, or assessment and mitigation units (AMUs). Each AMU displays a range of geography, land use, historic and future impacts, geology, patterns of littoral drift, oceanography and habitat complexes, but do not display clear distinctions at their boundaries or in all characteristics that would suggest they operate as distinct ecological units. The five AMUs are further subdivided using Puget Sound Nearshore Ecosystem Restoration Project (PSNERP) shoreline process units (SPUs). A shoreline process unit is associated with a single drift cell. However, a shoreline process unit is composed of the directional drift cell component as well as the adjacent divergence zone, convergence zone, and areas of no appreciable drift. The divergence, convergence, and no appreciable drift components of adjacent drift cells sometimes overlap so some of the characteristics and metrics reported here are shared between adjacent shoreline process units.

In most cases, the AMU and SPU boundaries are similar; however, several SPUs extend beyond the northern AMU boundaries of the Hood Canal Entrance and North Hood Canal AMUs. While these boundaries do not align, ecological conditions in each AMU can still be determined from the SPU data. The marine / nearshore AMUs are as follows:

- Hood Canal Entrance
- North Hood Canal
- Dabob Bay
- Central Hood Canal
- South Hood Canal

I.1.1 Historic Marine/Nearshore Resources

Environmental conditions in Hood Canal have changed significantly since European settlement. Several investigators have attempted to reconstruct historic shorelines, tidal marshes, wetlands and riparian forests in and around the Hood Canal and Puget Sound areas as they existed prior to European settlement (Todd et al., 2006; Collins and Sheik 2005; Collins 2000; Collins et al., 2003; Labbe et al., 2006).

Collins and Sheik (2005), using topographic sheets surveyed by the U.S. Coast and Geodetic Surveys between 1850 and 1890, estimated nearshore habitat in Puget Sound at 29,490 hectares (114 square miles). Fifteen hundred hectares (6 square miles) were associated with Mason, Kitsap, and Jefferson Counties, which includes the Hood Canal marine/nearshore environments within the service area, and Clallam County.

Collins and Sheik (2005) estimated that 40 percent of the nearshore habitats within the Hood Canal were lost by the time of their study. The most common direct causes of habitat change were attributed to fill associated with transportation infrastructure and residential development. Other important direct causes included urban, industrial, and military-related development, dredging and channelization activities, and diking and armoring (Hirschi et al., 2003).

Dikes built to create farmland and reduce flooding have altered estuarine sedimentation patterns and eliminated the tidal influence that forms salt marshes. Dams built to manage water supplies and generate power have reduced the magnitude and frequency of river flow and limited sediment inputs that sustain river deltas. Seawalls and bulkheads built to protect shoreline properties have reduced sediment supplies that feed beaches from naturally eroding bluffs (Gelfenbaum et al., 2006).

Human stressors impact the functions and structures that support clean water and biological communities. For example, the decline of eelgrass communities in Hood Canal is thought to be a result of degraded water quality, increasing sedimentation, direct dredging and shading, and general shoreline development, among other causes (Simenstad et al. 2006). Riparian habitats have been changed from conifer-dominated systems to red alder-dominated systems (Labbe et al. 2006), or been lost altogether (Correa 2002; Kuttel 2003). Migratory corridors for salmon have been significantly altered, with likely behavioral effects on salmonids as they emigrate from the system. Recent work by the Hood Canal Dissolved Oxygen Program suggests anthropogenically derived nitrogen can exacerbate the frequency and intensity of hypoxia events in the marine environment, and may stress marine biota (University of Washington, HCDOP).

There have been both historic and contemporary occurrences of hypoxia in the marine waters of Hood Canal that increase stress and mortality on those fauna, particularly fish and marine invertebrates in the benthic and pelagic zones. Areas most sensitive to water quality problems are generally those with high runoff, low mixing, and anthropogenic inputs of nutrients, sewage and other runoff. In the Hood Canal, the most critical area of influence is the Hood Canal Hook in Lower Hood Canal, (University of Washington, HCDOP). Climate, stratification and flushing are further variables compounding the difficulty of assessing the impact of humans on water quality in Hood Canal.

PSNERP (Schlenger et al., 2011) mapped historic and current estuarine wetland area for major estuaries in the Hood Canal AMUs, allowing an assessment of wetland area alteration over time. In addition, Point No Point Treaty Council mapped historic spit/marsh and stream delta complexes. These data are presented below for each marine/nearshore AMU.

Hood Canal Entrance

Two significant estuaries are located in the Hood Canal Entrance AMU: Port Gamble Bay and Port Ludlow Bay. Approximately 42 percent (35 acres) of the historic estuarine wetland area has been lost from these estuaries.

Eighteen spit/marsh complexes were historically located throughout this AMU; six have been lost. Historic area ranged from approximately 46 acres to less than 0.1 acre, with most complexes on the lower end of the range. One of the eight stream delta complexes has been lost (Hawks Hole Creek). Historic size varied from over 22 acres to about 1.5 acres.

North Hood Canal

The four major estuaries located in the North Hood Canal are: Big Beef Creek, Little Anderson Creek, Shine Creek, and Thorndyke Creek. Cumulatively, these estuaries have lost approximately 27 percent (116 acres) of their mapped estuarine wetland area.

Twenty-five spit/marsh complexes were historically found in this AMU; nine have been lost. Sizes ranged from 46 acres to about a 0.1 acre, with most complexes less than 2 acres in size. Two of the eleven stream delta complexes are no longer mapped in the AMU (Cattail Creek and Devil's Hole Creek). Sizes ranged from greater than 47 acres to about 1.4 acres; 5 complexes were greater than 10 acres.

Dabob Bay

Within Dabob Bay, Quilcene Bay and Taboo Creek represent the major estuaries. Estuarine wetland area has increased significantly overall in this AMU (approximately 106 percent; 62 acres) as a result of delta progradation from diking, forest practices, and loss of floodplain connectivity.

The Dabob Bay AMU contained fifteen spit/marsh complexes that ranged in size from 31 acres to about 0.5 acre. Most were less than 5 acres in size. Two spit/marsh complexes no longer exist (Tongue Spit and Tule Marsh). The Tarboo Creek and Upper Quilcene Bay complexes were quite large at 126 acres and 250 acres, respectively. These represent two of the five stream delta complexes found in the AMU; none of which have been lost.

Central Hood Canal

Big Anderson Creek, Dosewallips River, Duckabush River, Fulton Creek, Hamma Hamma River, and Stavis Creek have major estuaries in the Central Hood Canal AMU. Overall, the mapped estuarine wetland area in these locations has increased significantly (approximately 138 percent; 396 acres), again due mostly to delta progradation.

The thirteen spit/marsh complexes ranged in size from about 7 acres to a 0.1 acre, with most less than two acres in size. Five of these complexes have been lost. No stream delta complexes have been lost in this AMU; complex sizes ranged from 153 acres down

to about 0.2 acre, with 8 complexes larger than 10 acres (of these, 3 complexes were larger than 96 acres).

South Hood Canal

Major estuaries located in the South Hood Canal are found at: Dewatto River, Lilliwaup River, Skokomish River, Tahuya River, and Union River. Approximately 4 percent (126 acres) of the estuarine wetland area has been lost from this AMU.

Nine of the twenty-three spit/marsh complexes no longer exist. Sizes ranged from almost 6 acres to 0.01 acre, with most less than 1 acre. Twenty-five stream delta complexes are were mapped in this AMU. Size ranged from an enormous 800 acres (Skokomish River; of note, Lynch Cove was mapped at nearly 400 acres) to 0.08 acre. Most complexes were between 0.5 acre and 10 acres. Only the Twanoh Creek complex has been lost.

I.1.2 Physical Description and Current Aquatic Resources Conditions

Hood Canal is well known for its high quality freshwater and salt water habitats, scenic beauty, recreational benefits and economic value. Despite the historic changes that have occurred, Hood Canal supports valuable nearshore and estuarine habitat.

Shellfish and shellfishing are particularly important cultural, recreational and economic resources in Hood Canal. Commercial and natural production of both native and imported shellfish occurs throughout the Canal and is a major component of the economy in Jefferson and Mason counties. The diversity of shellfish ranges from bivalves to crabs to shrimp. Pacific oysters largely replaced Olympia oysters as the primary species of oyster harvested and cultivated in Hood Canal, but now wild-stocks of Pacific oysters are also diminished. Ocean acidification has been increasingly identified as impacting current hatchery production that supports cultivation of oysters in Hood Canal. Clams are also significant resources in Hood Canal.

Marine/nearshore riparian habitats are an important feature of the Hood Canal ecosystem. Marine riparian areas are transitional areas between the aquatic and terrestrial systems where the interactions and influences between these two environments create biophysical gradients and distinctive ecological processes and biota. The marine/nearshore riparian areas perform critical functions such as pollution control, fish and wildlife habitat, soil stability, sediment control, microclimate, shade, and inputs of nutrients, macroinvertebrates and large woody debris (Brennan, 2007).

Submerged aquatic vegetation such as eelgrass and kelp are also important components of the marine/nearshore environment (Dowty et al., 2010). Eelgrass and other seagrasses are known to provide extensive ecosystem services worldwide (Costanza et al., 1997; Green and Short 2003; Larkum et al., 2006). In Hood Canal and other parts of Puget Sound, eelgrass provides spawning grounds for Pacific herring, rearing/foraging habitat for out-migrating juvenile salmon, and important feeding and foraging habitats

for crab and waterbirds (such as the black brant and great blue heron) (Phillips 1984; Simenstad 1994; Wilson and Atkinson 1995; Butler 1995). Eelgrass also improves water quality by reducing particle loads and acting as a sink for nutrients (Short and Short 1984; Asmus and Asmus 2000), and stabilizes sediment, thus counteracting erosion processes (Harlin et al. 1982; Fonseca 1996).

The current conditions in each marine / nearshore AMU are summarized below. The data presented are derived from various sources. PSNERP (Schlenger et al., 2011) rated each drift cell in terms of its degree of degradation for 11 different nearshore processes (i.e., sediment input, tidal flow, tidal channel formation and maintenance, detrital import/export, etc.). PSNERP also developed a composite rating of impairment (for all processes combined) at the process unit or drift cell scale. Point No Point Treaty Council rated the health/functionality of spit/marsh complexes and delta complexes. These rating provide an indication of relative condition of these features and their potential /suitability for restoration or protection. Marine Riparian data was obtained from Point-No Point Treaty Council (2012). Exhibit 1, Parts 6-31 provide mapping of the ecological conditions discussed in each AMU and are located in Appendix W. Exhibit 1, Part 31a provides a data table of marine riparian cover.

Hood Canal Entrance

The Hood Canal Entrance AMU contains approximately 40 miles of marine shoreline. PSNERP rated most SPUs as “least” or “less degraded,” with two “moderately degraded” SPUs located on the eastern shoreline.

The majority of the Hood Canal Entrance has a variety of drift cell directional units on both the western and eastern shorelines. The bay at Port Ludlow, Coon Bay, two estuaries located in Port Gamble Bay, and Bywater Bay account for most of the no appreciable drift components in the AMU. Two relatively large divergence zones are located within Port Gamble Bay.

Kelp has a patchy distribution in multiple locations in the Hood Canal Entrance AMU, primarily along the western shoreline. Large reaches of shoreline north and south of Coons Bay do not have any mapped kelps beds and Port Gamble Bay has no mapped beds. Eelgrass is mapped as patchy or continuous throughout most of this AMU; however, there is very little eelgrass present in the southeast portion of Port Gamble Bay, the area north of Hood Head, or Port Ludlow Bay.

The Hood Canal Entrance contains 146 overwater structures, primarily concentrated at the two marinas located in the AMU at Port Ludlow and Coon Bay. Two breakwaters are also mapped in the AMU.

Feeder bluffs are relatively common, as a percentage of shoreline length, throughout the Hood Canal. In the Hood Canal Entrance, feeder bluffs are mapped for much of the western and eastern shorelines. They are noticeably absent at Port Ludlow Bay, Foulweather Marsh, Coon Bay, Bywater Bay, north of Little Boston Creek, and at the mouths of Martha John Creek and Gamble Creek. Approximately 13 percent of the

mapped feeder bluffs are armored, most of this results from residential development. Feeder bluff armoring occurs throughout the AMU, but is concentrated along the south shore of Port Ludlow Bay, south of Talsa Marsh and Coon Bay, and along the southern and south eastern shoreline of Port Gamble Bay.

Six of the twelve spit/marsh complexes are rated as functional, 5 are impaired, and one was unrated. Moderately impaired complexes include Point Julia and Tala Marsh. Impacts typically resulted from fill material placed for homes and roads.

Eight stream delta complexes are located in this AMU. Most are impaired; the result of fill material for homes and roads. Moderately impaired complexes include: Gamble Creek and Ludlow Creek.

Herring spawning is mapped along the majority of the eastern shoreline and around Port Gamble Bay. Herring holding is mapped in most of the AMU, with the exception of Port Ludlow and vicinity. This herring population is one of the largest remaining in Puget Sound. Smelt and sand lance spawning is mapped throughout much of the AMU, but is concentrated along the eastern shoreline, Port Gamble Bay, and around Port Ludlow.

Only one stream in the Hood Canal Entrance has mapped fish distribution for one of the two listed salmonid species in Hood Canal: Chinook salmon and summer chum salmon. Gamble Creek has documented fall Chinook salmon presence/migration, but it is not recognized as an independent stable population in the Puget Sound Chinook Salmon Recovery Plan (2005). Numerous other streams contain mapped presence/migration, known spawning habitat, and/or juvenile rearing habitat for other salmonid species that are not listed. The estuaries of these streams are used by the salmonids as they transition to salt water and begin their outmigration to Puget Sound.

Closed canopy cover in marine riparian areas has been most heavily impacted due to residential development along the eastern shoreline. Approximately 48 percent of the shoreline in the service area is mapped as closed canopy, while 42 percent is mapped as non-forest; other natural vegetation comprises roughly 7 percent and off-shore vegetation represents 4 percent.

As the population continues to increase in the Hood Canal watershed, additional pressure will be placed on Hood Canal's marine/nearshore environment and its contributing watersheds. Significant threats affecting the Hood Canal Entrance AMU are (PSP, 2008):

- Marine/estuary: Loss of estuary habitat and pocket estuaries;
- Marine nearshore: Disruption of marine shoreline processes from homes, and shoreline armoring that have altered sediment supply, vegetation, water quality and freshwater inputs;
- Bacterial pollution and pathogens: loadings from human and animal waste lead to shellfish and recreational swimming beach closures;

- Surface water runoff impacts: Impervious surfaces and pollutants from stormwater;
- Sea level rise: loss of estuarine beaches, increased shoreline flooding; and
- Conflicting use values of marine shorelines.

Mitigation objectives specific to this AMU that address these threats, include:

- increase kelp distribution along the eastern AMU shoreline and in Port Gamble Bay:
    - remove overwater structures and pilings and fill, while limiting new installations
    - restore riparian cover through planting
    - remove bulkheads and other bank hardening to allow for natural erosion and beach forming processes
    - implement transplantation projects, where conditions are appropriate
- reduce feeder bluff armoring along the southeast shoreline of Port Ludlow and the south and eastern shoreline of Port Gamble Bay and south of Tala Marsh:
    - remove hard shoreline armoring and nearshore fill
    - remove other structures that impede littoral drift
    - preserve intact feeder bluffs
- restore spit/marsh complexes at Point Julia and Tala Marsh and stream delta complexes at Gamble Creek and Ludlow Creek to reduce or eliminate impairment due to factors such as homes and roads:
    - remove artificial fill or aggraded sediments deposited as a result of anthropogenic disturbance
    - restore riparian areas through planting
    - improve riverine and tidal channel connectivity and complexity;
- restore or maintain closed canopy cover from the vicinity of Coon Bay to the south end of Port Gamble Bay:
    - reestablish nearshore forest cover in riparian areas and throughout the watershed, particularly shifting from alder dominated forest to conifer dominated forest cover;
- preserve and restore estuaries with documented fish presence, including Port Gamble estuary, and increase the quality and extent of marine/nearshore habitat for forage fish:
    - acquire land for preservation

- restore riparian vegetation through planting
- remove nearshore fill, bulkheads, and other structures that degrade beaches and displace habitat
- implement eelgrass/kelp transplantation projects, where conditions are suitable
- restore salt marsh, embayments, inlets, and other nearshore features
- restoring, enhancing, and creating tidal and distributary channel habitats
- removing or replacing culverts and other barriers that restrict salmonid migration and rearing

- minimize water quality and quantity impacts associated with development:
  - restore riparian cover along shorelines with substantial residential development, including: Port Ludlow, Coon Bay, south of Tala Marsh, and between Coon Bay and the southern portion of Port Gamble
  - removing existing and preventing new impervious surfaces
  - remove pollutant sources (e.g., leaky septic systems)

North Hood Canal

The northern North Hood Canal AMU contains approximately 60 miles of shoreline. For the most part, PSNERP rated the western shoreline as "least degraded," the eastern shoreline as "moderately degraded," and the northern shoreline of Squamish Harbor and most of Little Beef Harbor/Seabeck Bay are "more degraded."

Typically, shorelines on the west and east shores of Hood Canal in this AMU transport sediment to the north. Notable exceptions to this include the shoreline on the north side of Squamish Harbor that transports sediment to the west and the shoreline at Little Beef Harbor, where sediment travels to the south.

Kelp has mostly patchy distribution throughout this AMU, with long stretches of patchy distribution occurring north of Thorndyke Bay, near Fisherman's Harbor Spit, and in the vicinity of, and south of Bangor Trident Base. Much of the eastern shoreline from Port Gamble (except at the industrial shoreline at Port Gamble) south to Bangor Trident Base is mapped as continuous eelgrass, as is the shoreline of Little Beef Harbor. Most other areas of this AMU have patchy eelgrass distribution.

This AMU includes 163 overwater structures, many of which are located at South Point and Bangor Trident Base. The two marinas are at South Point and Seabeck.

Feeder bluffs are mapped along approximately 65 percent of the North Hood Canal AMU; the most of any AMU. Areas noticeably lacking feeder bluff include: north of the Hood Canal Bridge, the vicinity of South Point, the Thorndyke Creek estuary, areas occupied by wharfs/piers at Bangor Trident Base, and the estuaries of Fisherman's Harbor, Big Beef Creek, and Seabeck Creek. Approximately 18 percent of the mapped

feeder bluffs are armored. Armoring is concentrated at Squamish Harbor, South Point, the eastern shoreline between the Hood Canal Bridge and Jump Off Joe Creek and between Bangor Trident Base and Misery Point.

Fourteen spit/marsh complexes are mapped in the AMU; nine are rated as functional, the rest experience some level of impairment. Carlson Spit and Kings Spit are moderately impaired. Fill material (roads, homes, industrial) and anthropogenic drift logs have resulted in much of the impairment.

Eleven stream delta complexes are mapped in the AMU. Four complexes are rated as functional, six as impaired, and one was unrated. Fill for homes, roads, dams, and channelization works has caused most impacts. Moderately impaired complexes include Big Beef Creek and Seabeck Creek.

Herring spawning is mapped at Port Gamble, extending west to roughly Kinman Creek. Herring are documented along the northern shoreline of Squamish Harbor and along the shore in Seabeck Bay. Herring holding occupies the north portion of this AMU. Very limited smelt spawning is mapped in the North Hood Canal, but sand lance spawning occurs at numerous locations, concentrated along the shoreline at South Point, at Bangor Trident Base and the shoreline across the water, from Green Point, to Southeast Toandos Lagoon, in addition to Seabeck Bay. Two of Hood Canal's three mapped locations for rock sole are found in this AMU, at Squamish Harbor and Hazel Point.

Summer chum salmon presence/migration is recorded in Little Anderson Creek and Big Beef Creek. Many other streams contain mapped presence/migration, known spawning, and/or juvenile rearing habitat for other salmonid species that are not listed. These salmonids use the estuaries of these streams as they transition to salt water and begin their outmigration to Puget Sound.

Closed canopy cover in the marine riparian areas has been impacted by residential development and development associated with Bangor Trident Base. About 49 percent of the shoreline in the service area is mapped as closed canopy and 43 percent is mapped as non-forest; other natural vegetation occupies roughly 4 percent and off-shore vegetation is also mapped over 4 percent of the area.

This AMU is significantly threatened by the following (PSP, 2008):

- Marine/estuary: Loss of estuary habitat and pocket estuaries;
- Marine nearshore: Disruption of marine shoreline processes from homes, and shoreline armoring that have altered sediment supply, vegetation, water quality and freshwater inputs;
- Bacterial pollution and pathogens: loadings from human and animal waste lead to shellfish and recreational swimming beach closures;

- Surface water runoff impacts: Impervious surfaces and pollutants from stormwater and forestry practices
- Sea level rise: loss of estuarine beaches, increased shoreline flooding; and
- Other: conflicting use values of marine shorelines.

Specific mitigation objectives for this AMU that deal with these threats include:

- restore shoreline at Port Gamble:
    - remove overwater structures and pilings and fill, while limiting new installations
    - restore riparian cover
- remove bulkheads and other bank hardening to allow for natural erosion and beach forming processes; increase kelp distribution, if ecologically appropriate, in Squamish Harbor, on the eastern shoreline south of the Hood Canal Bridge, between Jump Off Joe Creek and Cattail Creek, between Thorndyke Bay and Hazel Point, and in Little Beef Harbor:
    - remove overwater structures and pilings and fill, while limiting new installations
    - restore riparian cover;
    - remove bulkheads and other bank hardening to allow for natural erosion and beach forming processes
    - implement transplantation projects where conditions are suitable
    - reduce feeder bluff armoring in Squamish Harbor, the eastern shoreline between the Hood Canal Bridge and Cattail Creek and between Bangor Lagoon and Misery Point; remove hard shoreline armoring and nearshore fill
    - remove other structures that impede littoral drift
    - preserve intact feeder bluffs
- restore spit/marsh complexes at Carlson Spit and Kings Spit and stream delta complexes at Big Beef Creek and Seabeck Creek to reduce or eliminate impairment due to factors such as road, homes, anthropogenic drift logs, and dams:
    - remove artificial fill or aggraded sediments deposited as a result of anthropogenic disturbance
    - restore riparian areas
    - improve riverine and tidal channel connectivity and complexity

- minimize the loss of marine riparian vegetation due to residential development and restore closed canopy cover along the eastern shoreline, concentrating on residential areas located outside of Bangor Trident Base:
    - reestablish nearshore forest cover in riparian areas and throughout the watershed, particularly shifting from alder dominated forest to conifer dominated forest cover
- preserve and restore estuaries with documented listed fish presence, including the Little Anderson Creek and Big Beef Creek estuaries, and increase the quality and extent of marine/nearshore habitat for forage fish:
    - acquire land for preservation
    - restore riparian vegetation
    - remove nearshore fill, bulkheads, and other structures that degrade beaches and displace habitat
    - implement eelgrass/kelp transplantation projects where conditions are suitable
    - restore salt marsh, embayments, inlets, and other nearshore features
    - restoring, enhancing, and creating tidal and distributary channel habitats
    - removing or replacing culverts and other barriers that restrict salmonid migration and rearing
- minimize water quality and quantity impacts associated with development and timber harvest activities:
    - restore riparian cover along shorelines with substantial residential development, including: around Squamish Harbor, South Point, much of the eastern shoreline, and around Little Beef Harbor/Seabeck Bay
    - removing existing and preventing new impervious surfaces
    - remove pollutant sources (e.g., failing septic systems)

Dabob Bay

Approximately 40 miles of shoreline are mapped within the Dabob Bay AMU, which is the fewest of all marine/nearshore AMUs. PSNERP rates one SPU (Upper Quilcene Bay) in this AMU as “moderately degraded”; the other 7 received “least” or “less” degraded ratings.

Generally, drift cells located in Dabob Bay transport sediment to the north. Shorelines that occupy the northern extent of bays in this AMU typically exhibit no appreciable drift.

Only the southeast portion of the AMU is mapped with patchy kelp beds. Virtually all of the shoreline in this AMU is mapped as containing patchy or continuous eelgrass beds, with the exception of a stretch of beach north of Jackson Cove.

The Dabob Bay AMU contains 49 mapped overwater structures, one marina located south of Indian George Creek, and 7 breakwaters. The overwater structures in Dabob Bay AMU are not concentrated like in the Entrance, North, and South AMUs, but sparsely distributed throughout the AMU.

Much of Dabob Bay and the eastern shoreline of the Quilcene Bay have mapped feeder bluffs. Roughly 40 percent of the shoreline contains feeder bluffs; the least of any AMU. The Tarboo Creek estuary, shoreline near Fisherman's Point, the Upper Quilcene Bay and down to Point Whitney, and the eastern peninsula of Jackson Cove typically do not contain mapped feeder bluff. Approximately 8 percent of the feeder bluffs are armored, primarily found in the north portion of Dabob Bay and the eastern shore of Quilcene Bay, associated with residential development.

Only 4 of the fifteen spit/marsh complexes are functional; the rest are impaired and one is unrated. Moderately impacted complexes include: Camp Discovery Spit, South Whitney Marsh, Smart Cove Lagoon, West Toandos Marsh, Whitney Point, and Zelatched Point. Impacts have resulted from activities associated with fill material.

Five stream delta complexes are mapped in this AMU, with only the Tarboo Creek complex still functional (Lindsay Creek was unrated). The Upper Quilcene Bay, Spencer Creek, and Marple-Jackson Creek complexes are rated as moderately impaired.

Herring spawning is documented from Jackson Cove to Whitney Point, in much of the Upper Quilcene Bay, and from Fisherman's Point to Broad Spit. Smelt and sand lance spawning occurs along the western and eastern shorelines of Quilcene Bay and from Broad Spit, around the north end of Dabob Bay, to roughly Camp Harmony Spits.

Fall Chinook salmon presence/migration and known spawning habitat is recorded in Tarboo Creek. Additionally, fall Chinook and summer chum salmon are documented in two tributaries of the Upper Quilcene Bay, Big and Little Quilcene Rivers (presence/migration, known spawning, and/or known rearing habitat). However, like Gamble Creek, Tarboo and Quilcene Chinook salmon are not independent, stable populations incorporated into the Puget Sound Evolutionarily Significant Unit. Many other streams contain mapped presence/migration, known spawning, and/or juvenile rearing habitat for other salmonid species that are not listed. These salmonids use the estuaries of these streams as they transition to salt water and begin their outmigration to Puget Sound.

Compared to the other AMUs in the marine/nearshore service area, threats impacting the Dabob Bay AMU are fewer and of less magnitude. Threats present in this AMU include:

- Marine/estuary: Loss of estuary habitat and pocket estuaries;

- Marine nearshore: Disruption of marine shoreline processes from homes, and shoreline armoring that have altered sediment supply, vegetation, water quality and freshwater inputs;
- Bacterial pollution and pathogens: loadings from human and animal waste lead to shellfish and recreational swimming beach closures;
- Surface water runoff impacts: Impervious surfaces and pollutants from stormwater and some agricultural and forestry practices;
- Sea level rise: loss of estuarine beaches, increased shoreline flooding;
- Climate change: reduction in glaciers and snowfields and associated hydrologic impacts; and
- Other: conflicting use values of marine shorelines.

Mitigation objectives specific to this AMU that respond to the threats involve activities such as:

- remove the breakwater located at Upper Quilcene Bay:
    - remove structures that impede littoral drift
- establish kelp beds in Dabob Bay and establish eelgrass along the eastern Jackson Cove peninsula shoreline, if ecologically appropriate:
    - remove overwater structures and pilings and fill, while limiting new installations
    - restore riparian cover
    - remove bulkheads and other bank hardening to allow for natural erosion and beach forming processes
    - implement transplantation projects
- restore sediment processes by removing feeder bluff armoring along the eastern shorelines of Quilcene Bay and Dabob Bay:
    - remove hard shoreline armoring and nearshore fill
    - remove other structures that impede littoral drift
    - preserve intact feeder bluffs
- restore spit/marsh at Camp Discovery Spit, South Whitney Marsh, Smart Cove Lagoon, West Toandos Marsh, Whitney Point, and Zelatched Point and stream delta complexes at Upper Quilcene Bay, Spencer Creek, and Marple-Jackson Creek to reduce or eliminate impairment due to fill material:
    - remove artificial fill or aggraded sediments deposited as a result of anthropogenic disturbance

    - restore riparian areas
    - improve riverine and tidal channel connectivity and complexity
- preserve and restore estuaries, including Tarboo Creek estuary and the two estuaries located in Upper Quilcene Bay, and increase the quality and extent of marine/nearshore habitat for forage fish:
    - acquire land for preservation
    - restore riparian vegetation
    - remove nearshore fill, bulkheads, and other structures that degrade beaches and displace habitat
    - implement eelgrass/kelp transplantation projects
    - restore salt marsh, embayments, inlets, and other nearshore features
    - restoring, enhancing, and creating tidal and distributary channel habitats;
    - removing or replacing culverts and other barriers that restrict salmonid migration and rearing
- minimize water quality and quantity impacts associated with development and agriculture:
    - Preserve and restore natural features that sequester and treat nutrient and pathogens associated with agriculture
    - restore riparian cover along shorelines with substantial residential development, including Upper Quilcene Bay
    - removing existing and preventing new impervious surfaces
    - remove pollutant sources (e.g., failing septic systems, fertilizer runoff).

Central Hood Canal

The Central Hood Canal AMU contains approximately 60 miles of shoreline. PSNERP rated nearly half of the SPUs as “moderately degraded” or “more degraded”; approximately the other half were rated as “less degraded” to “least degraded.”

Drift cells on the western shore of the Central Hood Canal AMU usually exhibit a mixture of south to north sediment movement as well as cells with no appreciable drift. The eastern shoreline contains a combination of south to north and north to south sediment transport.

Kelp has very limited occurrence in the Central Hood Canal AMU, with almost no mapped beds on the eastern shoreline. Patchy distribution occurs at three locations on the eastern shoreline: south of the Dosewallips River, north of Ayock Point, and north of Lilliwaup Creek. In contrast, eelgrass is mapped as patchy or continuous along most of the shoreline in this AMU, with a few notable exceptions. The shoreline between the Dosewallips River and Pleasant Harbor, a stretch of shoreline between Schaerer Creek

and Wachetickeh Creek, and an approximately 2.5 mile stretch of shoreline north of Dewatto Bay are not mapped for eelgrass.

The Central Hood Canal AMU contains 126 mapped overwater structures and two marinas. Like Dabob Bay AMU, the overwater structures are sparsely distributed throughout the AMU. Pleasant Harbor is the major marina in the AMU.

Feeder bluffs occupy about half of the Central Hood Canal AMU. Relatively long stretches of shoreline where feeder bluffs are not mapped include: Jackson Cove, the Dosewallips and Duckabush river estuaries, south of the Duckabush River estuary, Stavis Creek estuary, the Hamma Hamma River estuary, and various point shoreforms and stream mouths along the Hood Canal. Armoring occupies approximately 17 percent of mapped feeder bluffs. Feeder bluffs along the western shoreline are armored as is the shoreline north of Big Anderson Creek on the eastern shoreline.

Only one of the eight spit/marsh complexes is rated as functional (Quatsap Point), with the others impaired primarily by homes. Moderately impaired complexes include: Chinom Point, Pleasant Harbor Spit, Spear Fir Lagoon, Tekiu Point and Triton Marsh.

Seventeen, mostly impaired, stream delta complexes are mapped in this AMU. Only Boyce Creek and Stavis Creek are rated as functional (three other complexes were unrated). Big Anderson Creek, Dosewallips River, Duckabush River, and McDonald Creek were rated as moderately impaired. Roads, dredging, dikes, homes, and miscellaneous fill have impacted these complexes.

Herring spawning is found at the Duckabush River estuary and to the north, the Dosewallips River estuary, Smart Cove Lagoon, Stavis Creek estuary, and around Miami Beach Marsh. Sporadic sand lance spawning is mapped from the vicinity of Miami Beach Marsh, south to Tekiu Point.

Fall Chinook and summer chum salmon presence/migration and/or known spawning habitat is mapped in the Dosewallips River, Duckabush River, Fulton Creek, Harding Creek, Big Anderson Creek, Hamma Hamma River, and Eagle Creek. Many other streams contain mapped presence/migration, known spawning, and/or juvenile rearing habitat for other salmonid species that are not listed. These salmonids use the estuaries of these streams as they transition to salt water and begin their outmigration to Puget Sound.

Within this AMU, closed canopy cover in the marine riparian habitats is mapped relatively continuously along the AMU shoreline (approximately 68%), interrupted primarily by residential development and Highway 101. Approximately 20 percent of the shoreline is mapped as non-forest, 7 percent as other natural vegetation, and 6 percent as off-shore vegetation.

Threats impacting the Central Hood Canal AMU include (PSP, 2008):

- Marine/estuary: Loss of estuary habitat and pocket estuaries;

- Marine nearshore: Disruption of marine shoreline processes from homes, and shoreline armoring that have altered sediment supply, vegetation, water quality and freshwater inputs;
- Bacterial pollution and pathogens: loadings from human and animal waste lead to shellfish and recreational swimming beach closures;
- Nutrient loading: significant low dissolved oxygen conditions;
- Surface water runoff impacts: Impervious surfaces and pollutants from stormwater;
- Climate change: Reduction in glaciers and snowfields and associated hydrologic impacts;
- Sea level rise: loss of estuarine beaches, increased shoreline flooding; and
- Other: conflicting use values of marine shorelines.

Mitigation objectives for the Central Hood Canal AMU that tackle threats include:

- increase kelp distribution, if ecologically appropriate, along the western shoreline and establish kelp beds along the eastern shorelines; additionally, establish eelgrass between Brinnon and Pleasant Harbor, north of Wacketickeh Creek, and north of the mouth of the Dewatto River, if ecologically appropriate:
    - remove overwater structures and pilings and fill, while limiting new installations
    - restore riparian cover;
    - remove bulkheads and other bank hardening to allow for natural erosion and beach forming processes
    - implement transplantation projects
- reduce feeder bluff armoring and restore sediment processes between Jackson Cove and Pleasant Harbor, from the Hamma Hamma River estuary to Lilliwaup Creek, and between Miami Beach Marsh and Thomas Creek:
    - remove hard shoreline armoring and nearshore fill
    - remove other structures that impede littoral drift
    - preserve intact feeder bluffs
- restore spit/marsh at Chinom Point, Pleasant Harbor Spit, Spear Fir Lagoon, Tekiu Point and Triton Marsh and stream delta complexes at Big Anderson Creek, Dosewallips River, Duckabush River, and McDonald Creek, most of which have been impacted by roads, dredging, dikes, and homes, to reduce or eliminate impairment:
    - remove artificial fill or aggraded sediments deposited as a result of anthropogenic disturbance

    - restore riparian areas
    - improve riverine and tidal channel connectivity and complexity
- minimize the loss of marine riparian vegetation due to residential development and restore closed canopy cover along the western and northeastern shorelines:
    - reestablish nearshore forest cover in riparian areas and throughout the watershed, particularly shifting from alder dominated forest to conifer dominated forest cover
- preserve and restore estuaries with documented listed fish presence, including the estuaries of the Dosewallips River, Duckabush River, Fulton Creek, Harding Creek, Big Anderson Creek, Hamma Hamma River, and Eagle Creek, and increase the quality and extent of marine/nearshore habitat for forage fish:
    - acquire land for preservation
    - restore riparian vegetation
    - remove nearshore fill, bulkheads, and other structures that degrade beaches and displace habitat
    - implement eelgrass/kelp transplantation projects
    - restore salt marsh, embayments, inlets, and other nearshore features
    - restoring, enhancing, and creating tidal and distributary channel habitats
    - removing or replacing culverts and other barriers that restrict salmonid migration and rearing
- minimize water quality and quantity impacts associated with development and timber harvest activities:
    - restore riparian cover along shorelines with substantial residential development, including: the mouth of the Dosewallips River, Pleasant Harbor, Miami Beach Marsh, and Ayock Point
    - removing existing and preventing new impervious surfaces
    - remove pollutant/nutrient loading sources (e.g., failing septic systems, road runoff).

South Hood Canal

The South Hood Canal AMU contains the most miles of shoreline (about 65 miles). PSNERP rated the shoreline between Lilliwaup Creek and south of Hoodsport, and the area between Dalby Creek and Springbrook Creek as “most degraded.” The shoreline between the Dewatto River estuary and Rendsland Creek estuary, in addition to the shoreline near Little and Big Mission creeks is rated as “less degraded;” the rest of the shoreline in this AMU is rated as “more degraded .”

The South Hood Canal AMU contains a significant percentage of no appreciable drift components, primarily located at Dewatto Bay, Tahuya River estuary, the end of the Hood Canal near Belfair, and the Skokomish River estuary/Annas Bay. This AMU also contains the greatest percentage of convergence and divergence zones, which are scattered throughout the AMU. Generally, drift in the northern portion of the AMU is to the north, but at the Great Bend, sediment transport shifts direction and typically flows from west to east.

The only mapped kelp beds in this AMU occur west and east of Dalby Creek, but the distribution is patchy. As noted above, kelp distribution diminishes on a north to south gradient in Hood Canal. Eelgrass is mapped as patchy or continuous throughout the AMU, with noteworthy exceptions being at Lynch Cove, the mouth of the Skokomish River, the vicinity of the Dewatto River, and near Miller Creek.

The South Hood Canal contains nearly three times the number of overwater structures as any other AMU. With 490 overwater structures and 2 marinas, the AMU has experienced significant overwater development. The south shore, from Union to Belfair contains the majority of these structures. The two marinas are located at Union and across the water near Hall Marsh (west of Tahuya River).

About half of the South Hood Canal AMU shoreline contains feeder bluffs. Armoring is mapped along 59 percent of these feeder bluffs, with notable exceptions largely between the Dewatto River estuary and Cougar Spit.

In the South Hood Canal AMU, twelve of the twenty-three spit/marsh complexes are impaired, and two are functional (Red Bluff Marsh and Two Points Marsh). Cougar Spit, Low Spit, Neelim Marsh, and Sunset Beach Spit are moderately impaired. Fill from homes and bulkheads have resulted in most spit/marsh impacts.

Twenty-four stream delta complexes are mapped in this AMU. All but three are impaired (functional complexes include: Dewatto River, Little Dewatto River, and Tahuya River). Moderately impaired complexes include: Dalby Creek, Enati Creek, Granite Creek, Holyoke Creek, Lilliwaup Creek, Little Lilliwaup Creek, and Lynch Creek. Fill from homes, roads, parks, and dredging activities have impacted these complexes.

Herring spawning is recorded from Shoofly Creek, into Lynch Cove, and on to West Morang Creek. Herring holding habitat is found from approximately the mouth of the Tahuya River to Twanoh Creek. The shoreline from the Tahuya River estuary to Burn Marsh, with the exception of Sunbeach Spit to Lynch Cove, is dominated by smelt spawning along the shoreline.

Fall Chinook and summer chum salmon presence/migration and/or known spawning habitat is mapped in the Lilliwaup Creek, , Dewatto Creek, , Skokomish River, Tahuya River, , and Union River. Bull trout migrate through the Skokomish River to upstream spawning areas. Many other streams contain mapped presence/migration, known spawning, and/or juvenile rearing habitat for other salmonid species that are not listed. These salmonids use the estuaries of these streams as they transition to salt water and begin their outmigration to Puget Sound.

Closed canopy cover in the marine riparian habitats is largely absent from the Skokomish River estuary/Annas Bay area, likely due to the amount of emergent marsh in the estuary within 300 feet of the marine shoreline, as opposed to forested marsh. Similar to the other AMUs, residential development and/or roads have reduced forest cover. Approximately 46 percent of the shoreline in the service area is mapped as closed canopy, while 38 percent is mapped as non-forest; other natural vegetation comprises roughly 13 percent and off-shore vegetation represents 2 percent.

The South Hood Canal is significantly impacted by numerous threats (PSP, 2008):

- Marine/estuary: Loss of estuary habitat and pocket estuaries;
- Marine nearshore: Disruption of marine shoreline processes from homes, and shoreline armoring that have altered sediment supply, vegetation, water quality and freshwater inputs;
- Nutrient loading, bacterial pollution and pathogens: significant low dissolved oxygen conditions (human sources of nitrogen represent a significant portion of the total nitrogen load to Lower Hood Canal during summer months (University of Washington, HCDOP). Nitrogen from on-site sewage systems along the canal contributes the majority of the summertime load. Other anthropogenic alterations contribute nitrogen loading as well, including nitrogen-fixing red alders, agriculture, stormwater, and land use practices such as fertilization, among others. The nitrogen load is large enough to affect the low dissolved oxygen condition in Lower Hood Canal during low rainfall periods in summer and early fall, when plankton growth is greatest. In years when dissolved oxygen is low from natural processes, this further depression increases risk of fish kills and other harm to biota. There is strong inter-annual variation in oxygen levels from ocean and climate conditions, so in some years this effect will not be noticed and in other years it could extend the severity and duration of anoxic conditions. In addition, Mallin et al. (2000) found that fecal coliform abundance was significantly correlated with watershed population and the percentage of developed land within the watershed. Furthermore, they found that the percentage of watershed-impervious surface coverage was the most important anthropogenic factor associated with fecal coliform abundance. Hood Canal currently has about 44 streams emptying into the marine basin that are listed as impaired with fecal coliform);
- Climate change: Reduction in glaciers and snowfields and associated hydrologic impacts;
- Sea level rise: loss of estuarine beaches, increased shoreline flooding; and
- Other: conflicting use values of marine shorelines.

Mitigation objectives for the AMU that address threats include:

- reduce overwater structures on the southern shoreline:
    - remove overwater structures and pilings and fill, while limiting new installations
- restore sediment processes by removing feeder bluff armoring, which is nearly ubiquitous along most shoreline area:
    - remove hard shoreline armoring and nearshore fill
    - remove other structures that impede littoral drift
    - preserve intact feeder bluffs
- restore impaired spit/marsh at Cougar Spit, Low Spit, Neelim Marsh, and Sunset Beach Spit and stream delta complexes at Dalby Creek, Enati Creek, Granite Creek, Holyoke Creek, Lilliwaup Creek, Little Lilliwaup Creek, and Lynch Creek that have been impacted by development activities:
    - remove artificial fill or aggraded sediments deposited as a result of anthropogenic disturbance
    - restore riparian areas
    - improve riverine and tidal channel connectivity and complexity
- minimize the loss of marine riparian vegetation due to residential development and roads and restore closed canopy cover throughout the AMU;
    - reestablish nearshore forest cover in riparian areas and throughout the watershed, particularly shifting from alder dominated forest to conifer dominated forest cover
- preserve and restore estuaries with documented listed fish presence, including the Lilliwaup Creek, , Dewatto Creek, , Skokomish River, Tahuya River, , and Union River estuaries, and increase the quality and extent of marine/nearshore habitat for forage fish:
    - acquire land for preservation
    - restore riparian vegetation
    - remove nearshore fill, bulkheads, and other structures that degrade beaches and displace habitat
    - implement eelgrass/kelp transplantation projects
    - restore salt marsh, embayments, inlets, and other nearshore features
    - restoring, enhancing, and creating tidal and distributary channel habitats
    - removing or replacing culverts and other barriers that restrict salmonid migration and rearing

- minimize water quality and quantity impacts associated with development and timberland activities:
    - removing existing and preventing new impervious surfaces;
    - remove pollutant sources (e.g., leaky septic systems, road runoff).

I.1.3 Marine/Nearshore Prioritization Strategy

Each potential marine/nearshore mitigation receiving site will be evaluated for its potential to generate compensatory mitigation credits by producing gains in ecological function. Priority sites will be those that have the following characteristics:

- The mitigation site supports one or preferably more of the marine/nearshore objectives listed above;
- The mitigation site supports multiple marine/nearshore habitat components (for example, barrier beach, coastal bluff, alluvial floodplain, lagoon, salt marsh, intertidal or subtidal flats, distributary channel, tidal channel and riparian forest); off channel-habitat;
- The site is contiguous to or well connected to the surrounding alluvial, terrestrial and marine/nearshore landscapes;
- The system can be internally connected to allow for the movement of organisms, water, and sediments;
- The contributing basin provides for flood discharge, wood recruitment, organism dispersal and sediment supply to support functions;
- The mitigation site will contribute to regional aquatic resource conservation initiatives; and
- The site is sustainable with low to no risk of degradation due to existing or future land use changes on or off-site.

The HCCC will rely on the marine/nearshore assessment summarized above as well as additional pertinent information from credible, scientific sources to identify priority restoration sites at the drift cell scale. For example, Battelle (Diefenderfer et al. 2006) evaluated the conditions of 50 nearshore drift cells in Jefferson County to assess the potential for long-term, self-sustaining shoreline restoration, considering the importance of watershed condition, function, and presence of biological resources. Drift cells were evaluated for the presence and significance of a series of stressors and functions to identify nearshore areas with the greatest potential for restoration success. Not all nearshore functions or sources of stressors were assessed.

Stress and function scores were calculated for each drift cell and watershed in eastern Jefferson County. A reach with a combination of low stress and high function was

indicative of the best ecosystem conditions. Conversely, a reach with high stress and low function was indicative of the poorest ecosystem conditions (Diefenderfer et al. 2006).

Battelle's analysis also considered the condition of the surrounding watershed. Where disturbance is high on the drift cell and watershed scales, then landscape-scale restoration is required to achieve restoration success. Low disturbance on both small and large scales indicates the need for preservation and/or conservation. Sites with moderate disturbances have a greater choice of options, depending on the outcome of specific evaluation criteria. Watersheds with low stress scores indicate that landscape processes are sufficiently intact to make them suitable for restoration.

Kitsap County conducted a nearshore assessment along the 66 miles of Hood Canal shoreline within Kitsap County in 2008 using methodologies similar to Jefferson County. The overall goal of Kitsap County's nearshore assessment was to develop a science-based protocol for determining priorities and strategies for improving nearshore ecosystem functions. Similar work is now underway in Mason County, which can be used to inform the selection of priority marine/nearshore sites in that jurisdiction.

Once priority reaches have been identified, the HCCC will work with partners and the IRT to prepare site level reconnaissance and conceptual design for a stratified set of potential roster sites. These sites and their mitigation potential and concepts will be documented and incorporated into the technical appendices after review by the IRT and Corps/Ecology approval.

I.2. FRESHWATER SERVICE AREAS

For purposes of the HCCC ILF Program, there are three freshwater service areas; each one comprises the portion of a water resources inventory area (WRIA) that flows into Hood Canal and the HCCC ILF operating area. The freshwater service areas encompass 2,663 square miles of land draining to the Hood Canal.

Exhibit 1, Parts 32-44 provide mapping of the ecological conditions discussed in each AMU and are located in Appendix W. Exhibit 1, Parts 45 and 46, located in Appendix W, are forest cover and riparian forest cover summary tables.

I.1.4 WRIA 16/14b (Hood Canal Basin)

As a result of recent legislation, Hood Canal drainages and marine shoreline along the south shore of the lower canal from the Skokomish River to Belfair, known as WRIA 14b, have been incorporated into the WRIA 16 planning area.

The majority of this small area is low elevation hills and valleys. Despite the abundance of smaller streams and numerous lakes, WRIA 14b has no major rivers.

WRIA 16 covers approximately 428,800 acres and extends from southeast Jefferson County southward to, and including, the Skokomish watershed in northwest Mason County. The four principal watersheds within this WRIA—the Dosewallips, Duckabush, Hamma Hamma, and Skokomish—originate in the Olympic Mountains and terminate

along the western shore of Hood Canal. Many smaller streams, some of which are intermittent, also flow directly into Hood Canal. This WRIA includes Lake Cushman which is a large reservoir expanded in the 1920s by damming the North Fork Skokomish River for hydroelectric production. Kokanee Dam is also located on the North Fork. Numerous small dams are located on smaller streams throughout the WRIA (Correa 2003). Table 7 provides key attributes of the WRIA 16/14b service area.

Table 7. WRIA 16/14b Service Area Overview

Attribute	Value
Size	1,051 square miles
WRIA	16/14b
Number of subbasins	146
Counties	Mason and Jefferson
Predominant land uses	Forestry, recreation, residential, agriculture, commercial
Advance Credits requested	45 (15 of each functional type)

Historic Freshwater Resource Losses

Land use activities associated with forestry, agriculture, residential and commercial development and transportation have adversely affected freshwater resources in this service area. Commercial logging operations have removed much of the old-growth forest, causing significant alterations to the freshwater ecosystem. The removal of old-growth riparian vegetation reduced large woody debris input, leading to decreased sediment storage capacity, reduced channel complexity, and increases in peak flows. Wetlands located along lower river reaches have been heavily impacted by agricultural activities. Early settlers ditched, diked, and drained wetlands and floodplains to convert land to agricultural production and to prevent flooding. These development activities are associated with aggradation problems from excessive sediment loads and unstable streambeds and streambanks. Development and associated transportation projects led to the channelization and armoring of streams and the filling of wetlands. Increased impervious surface not only reduced the extent of aquatic resources, but has led to water quality degradation from chemical pollutants and surplus nutrient input.

Ecology's Puget Sound Watershed Characterization Project provides an estimate of the amount of aquatic resource loss in this freshwater service area (Ecology 2011). Ecology used data about historic wetlands, hydric soils, topography, developed areas, loss of floodplains, and stream channels to examine the loss of surface water storage areas including depressional wetlands and unconfined or moderately confided stream channels.

Ecology identifies approximately 2,240 acres of depressional wetlands in the service area. Approximately 10% of the historic depressional wetland area (196 acres) has been lost through conversion to other land use/cover types.

Approximately 4.5 percent of the unconfined stream channels have been altered in this service area, while only about 1.5 percent of the moderately confined stream channels have been developed (Ecology 2011). Unconfined channels are typically associated with lower gradient streams or stream sections in the lower reaches, where development tends to be concentrated (e.g., agriculture, urbanization). This service area has the greatest extent of stream channel confinement because there are more stream miles in the upper watershed as compared to WRIA 17.

Physical Description and Current Aquatic Resources Conditions

The following excerpts from the Draft Skokomish-Dosewallips Basin Watershed Planning (WRIA) Level 1 Assessment characterize WRIA 16/14b (Golder 2002):

> *The Olympic Peninsula and the Skokomish Watershed ranges from steep rocky terrains ranging up to over 7,000 feet high in the northern interior of the basin, to flat floodplains in the southern coastal areas. Annual precipitation ranges from 60 inches to over 250 inches that supports a temperate rainforest.*
>
> *Most of the land (approximately 60 percent) in the basin is under federal ownership in the form of national forest and national park. Major commercial activities include forest industry, shellfish harvest, and hydroelectric power generation.*
>
> *The geology of the mountainous terrain is rocky with sedimentary and basalt rocks. Runoff from the rocky terrain is quick with minor groundwater storage capacity. Minor alluvial sediments are present in the river valleys.*
>
> *Alluvial and glacial sediments along the coast and in floodplains and estuaries host a significant groundwater flow system that the primary source of groundwater supply in the basin.*
>
> *Two patterns of annual streamflow hydrographs are recognized. In catchments where there is significant snowpack influences, peak flow periods occur in the late fall and late spring. Although significant precipitation occurs during the winter, winter streamflows are suppressed by the accumulation of precipitation as snowpack. In stream catchments of lower elevations, peak flows are coincident with peak precipitation in the middle of the winter.*
>
> *Streamflows are flashy with sharp spikes of increased streamflow that dissipate quickly. This reflects the small storage capacity of the basins as groundwater, and rain on snow events that cause quick releases of water from snowpack storage.*

Water quality in the basin in general is excellent. One marine waterbody (Hood Canal South) and nine freshwater waterbodies are listed as having water quality impairments in WRIA 16 and the portion of WRIA 14 on the south shore of Hood Canal that is designated as the Upper Mason sub-basin and is being considered with WRIA 16. Seven waterbodies are listed as impaired for fecal coliform, and two for pH, all of which will require TMDL development. The North Fork of the Skokomish River, which is listed for instream flow, will not require TMDL development, since instream flow is not considered a pollutant under the Clean Water Act.

Ecology (2011) assessed each WRIA in terms of its hydrological characteristics. The so called "water flow model" assesses surficial geology, soils, topography, land cover, land use, hydrography, and wetlands to identify areas on the landscape that are important for water storage, groundwater recharge, groundwater discharge processes. The model also assesses the degree of impairment or degradation that has occurred to these processes in a given area.

To identify hydrologically important areas the model evaluates a watershed in its "unaltered" state. In the importance model, water delivery is evaluated by the quantity and type of precipitation including "rain-on-snow" zones, which affect the timing of water movement. Surface storage is estimated by the amount of potential depressional wetlands, lakes, and floodplains. Subsurface water movement is evaluated using data on precipitation, coarse and fine grained deposits, slope wetlands, and alluvial floodplains (Ecology 2010).

To determine the degree of degradation, the model evaluates the watershed in its "altered" state. This model uses land cover data to estimate loss of forest and conversion to impervious surfaces, as well as the presence of dams to evaluate the degree to which water delivery has changed. Surface storage degradation is estimated based on the degree of urban and rural development and its impact to wetland and stream storage. Changes to recharge are estimated from land cover and its reduction in area for infiltration. Road density evaluates areas for impacts to shallow subsurface flow. Reduction in discharge is estimated by well density and the loss of floodplains and slope wetlands. Water loss is evaluated by looking at the total amount of impervious cover in the watershed (Ecology 2010).

The model provides a ranking, from low to high, for how important and how degraded each analysis unit is relative to all units in the watershed. This in turn allows a relative ranking of individual assessment units in terms of their priority for different forms of management (listed in relative order):

- Highest Protection
- Protection
- Protection/Restoration

- Conservation
- Highest Restoration
- Restoration
- Restoration/Development
- Development/Restoration

Areas that are important and relatively unimpaired are considered the highest priority areas for protection; areas that are important but more impaired become candidates for restoration; and areas that are both relatively less important for water flow and severely degraded are lower priorities for protection or restoration (in other words they are less sensitive to disturbance; more suitable for higher density development and therefore lower priorities for protection and restoration). It is important to note that the subbasin ratings are coarse-scale and within any given subbasin there may be areas that are exceptions to the overall ranking.

A brief overview of the management priorities for individual subbasins is provided below and shown on Exhibit 1, Parts 33-35. According to Ecology's model, much of the upper watershed in the WRIA 16/14b service area is a high priority for protection. Areas that rated highest for protection are the upper North and South Fork Skokomish River subbasins.

The Dosewallips River subbasin is a high priority for protection, conservation and restoration. Much of this land is forested, with limited timber harvest. The eastern part of the subbasin has experienced more development and the mapped management priorities reflect this, with the area less suitable to protection and conservation, but some areas are mapped for restoration.

According to the national wetland inventory, freshwater wetlands have limited distribution in the subbasin; they are primarily confined along the river and its floodplains.

Mapped evergreen forest and mixed forest cover in the Dosewallips River subbasin remained relatively constant over a 15 year time period (1992-2006) at about 70 percent and 1 percent, respectively.

Mapped evergreen and mixed forest cover in the riparian corridor of the Dosewallips River also showed little change (69 percent cover).

The Duckabush River subbasin is very similar to the Dosewallips with the eastern portion of subbasin more degraded, due to development, and with lower importance (in terms of water flow) than the western and central portions. There are many mapped freshwater wetlands along the Duckabush River, in particular, the upper and lower reaches.

The Duckabush River subbasin forest cover did not change significantly over the 1992-2006 time period; about 75 percent for evergreen forest and 1 percent for mixed forest.

Mapped evergreen and mixed forest cover in the riparian corridor of the Duckabush River remained steady (72 percent).

Almost the entirety of the Jefferson Creek-Hamma Hamma River subbasin is mapped for protection, conservation, or restoration. Mapped freshwater wetlands are found in close proximity to the Hamma Hamma River, particularly along the lower 6 miles. Much of the subbasin is forested. The eastern portion of the subbasin contains minimal development. Overall, in terms of water flow processes, the subbasin has low levels of degradation.

Mapped evergreen forest and mixed forest covers in the Hamma Hamma River subbasin were stable at 75 percent and 1 percent, respectively.

Mapped evergreen and mixed forest cover in the riparian corridor of the Hamma Hamma River was relatively constant (74 percent).

A significant percentage of the Lilliwaup Creek-Frontal Hood Canal subbasin is not a priority for protection, conservation, or restoration. This mapping correlates with relatively significant degradation, resulting from clearcutting, within the subbasin. The northwestern portion of the assessment unit is primarily mapped as a conservation area; the western part of the subbasin is mapped as protection and restoration.

Almost no freshwater wetlands are mapped in the northern section of the Lilliwaup Creek subbasin, but there are many associated with the lower portion of Wacketickeh Creek, Lilliwaup Creek, Tenas Lake, Melbourne Lake, and Price Lake, and the broad area.

Evergreen forest cover declined in the Lilliwaup Creek subbasin between 1992 and 2006; falling from nearly 80 percent to about 70 percent. This reduction is attributed to significant clearcutting that has occurred east of Cushman Lake. Mixed forest cover remained constant at about 5 percent.

Mirroring the loss in evergreen forest cover at the subbasin scale, evergreen forest cover within the riparian corridors of many of the major streams in the subbasin also declined. Reductions in cover were as follows: Eagle Creek (7 percent), Finch Creek (9 percent), Jorsted/Ayock Creek (7 percent), Lilliwaup Creek (7 percent), and Sund/Miller Creek (25 percent). Mapped evergreen cover did not significantly decline at Fulton Creek. Mixed forest cover was stable for these drainages.

Generally, the western section of the North Fork Skokomish River-Skokomish River subbasin is important (in terms of water flow) and has little degradation; this area is mapped for protection. Much of the land surrounding Lake Cushman is mapped for conservation. Further to the south, resources that influence water flow have been degraded (associated with timberland activities, land conversion, and agriculture), making restoration a fairly common recommended action, particularly around the mouth of the Skokomish River.

Significant freshwater wetland area is mapped near the mouth of the Skokomish River and upstream to Lake Kokanee. Wetlands are also mapped around Lake Cushman and upstream of the lake, along the river shoreline.

A small decline in evergreen forest cover was mapped in the North Fork Skokomish River subbasin; with approximately 69 percent evergreen forest cover in 2006. Mixed forest cover remained even at about 2 percent.

Mapped evergreen and mixed forest cover in the riparian corridor of the North Fork Skokomish River was stable (72 percent).

The majority of the South Fork Skokomish River subbasin is mapped for protection and restoration. This area is associated with the river and has experienced relatively significant degradation due to a patchwork of clearcutting and wetland conversion, primarily in the lower subbasin.

Freshwater wetlands are mapped along much of the shoreline of the South Fork and the lower 4 miles of Vance Creek. In addition, Lake West is surrounded by wetland habitat.

Both evergreen and mixed forest cover in the South Fork Skokomish River subbasin were steady at 70 percent and 2 percent, respectively.

Mapped evergreen and mixed forest covers in the riparian corridor of the South Fork Skokomish River remained at about 72 percent.

Despite the marine/nearshore shoreline along the South Shore of Hood Canal experiencing significant degradation due to residential development and associated bulkheads, the freshwater subbasin is mapped primarily for conservation and restoration. Two sections of this subbasin are not well suited to these types of water flow management recommendations.

Few freshwater wetlands are mapped in this subbasin, with the exception of several relatively small wetlands located south and southwest of Lynch Cove.

A small decline in evergreen forest cover was mapped in the South Shore subbasin, attributed to residential development in the subbasin. Cover dropped four percent between 1992 and 2006 to 56 percent. Mixed forest cover remained stable at 12 percent.

Mapped evergreen and mixed forest cover did not significantly decline in the riparian corridor of Twanoh Creek.

Threats for WRIA 16/14b

Damming of streams and wetlands as well as shoreline modifications are common in WRIA 16/14b. These activities, along with conversion of forestland to residential land uses, have significantly altered the natural flow regime of many streams in the region. With anticipated climate change is likely to increase threats associated with decreased snow pack and the effects on aquatic systems, particularly in the WRIA 16 drainages that flow out of the Olympic Mountains.

The economy in WRIA 16 relies largely on shellfish harvesting, commercial forestry, tourism, Christmas-tree farming, and other agriculture for economic development (WRIA 16 Planning Unit 2006). Agriculture and residential development within the floodplains of many WRIA 16 watersheds have resulted in channelization of rivers and tributaries, draining of beaver ponds and spruce swamps for livestock grazing, and logging in forested riparian zones.

Objectives for WRIA 16/14b

Mitigation objectives for this service area include:

- protect and conserve lands in the northern and central portions of the service area that have limited impacts to water flow from development;
- protect lands west and south of Cushman Lake from alterations to flow regime;
- restore lands in the vicinity of the Great Bend and south shore of Hood Canal that have been significantly degraded due to residential development;
- restore and protect flood storage by:
    - restoring and enhancing depressional wetlands at the headwaters of Lilliwaup Creek and in the vicinity of the Skokomish River;
    - restoring and protecting floodplains;
    - preserving and revegetating floodplain and riparian corridors;
- restore and protect natural conveyance systems and flow regimes by:
    - removing fill;
    - restoring forest cover and other natural vegetation, particularly on land near the western Hood Canal shoreline and the in the vicinity of the mouth of the Skokomish River;
    - preserving high-quality wetlands;
- restore and protect stream channel sinuosity and complexity and connection to floodplains by:
    - removing levees and revetments;
    - removing fish passage barriers;
    - removing floodplain fill;
    - installing large woody debris;
    - restoring or enhancing off-channel habitats and other refugia;
    - revegetating riparian corridors; and
    - improving streambank conditions.

I.1.5 WRIA 15 (Kitsap Basin)

WRIA 15 covers approximately 631,100 acres of the Kitsap Peninsula, most of which lies within Kitsap County, but also extends into Mason County. Approximately half of WRIA 15 flows into Hood Canal, with the remainder flowing east or south into Puget Sound. The topography of WRIA 15 is generally low in elevation and gradient. Major water bodies in the Hood Canal drainage include the Union River, Mission Creek, Tahuya River, Rendsland Creek, Dewatto River, Big Anderson Creek, and Big Beef Creek; many small streams, lakes, and wetlands are also present. Table 8 provides key attributes of the service area within WRIA 15.

Table 8. WRIA 15 Service Area Overview

Attribute	Value
Size	986 square miles
WRIA	15
Number of subbasins	100
Counties	Mason and Kitsap
Predominant land uses	Forestry, recreation, residential, military
Advance Credits requested	45 (15 of each functional type)

Historic Freshwater Resource Losses

According to Ecology's characterization assessment, approximately 1,080 acres of depressional wetland are identified in WRIA 15. Approximately 10 percent of the historic depressional wetlands, nearly 95 acres, have been lost due to land conversion (Ecology 2011).

Ecology documents approximately 5.5 percent of the unconfined stream channels as altered, and roughly 4.0 percent of the moderately confined stream channels as developed (Ecology 2011).

Physical Description and Current Aquatic Resources Conditions

The following excerpts from the Salmonid Habitat Limiting Factors Report for Water Resource Inventory Areas 15 (West), Kitsap Basin and 14 (North), Kennedy-Goldsborough Basin describe WRIA 15 as follows (Kuttel 2003):

> *The topography of this area is relatively flat and dissected by numerous streams eroding sediments deposited and reworked by several glacial episodes. Numerous lakes and wetlands are present in depressions throughout the drainage network, providing important rearing habitat for juvenile salmonids, particularly coho salmon and cutthroat trout. The*

glaciers deposited large quantities of gravel that provide abundant salmonid spawning habitat in the low to moderate gradient streams draining this region. Groundwater travels freely through gravel lenses, maintaining streamflows during the dry summer months, and improving conditions for developing juvenile salmonids buried in the streambed during the winter and early spring.

WRIA 15 is quite unique in comparison to other western Washington watersheds. As noted above, the entirety of the WRIA is low-elevation and low-gradient. The drainages are relatively small in comparison to larger river systems, and flows are dependent on precipitation and groundwater contribution, as the drainages do not receive snowmelt runoff from either the Olympic or Cascade Mountains. Low-elevation snowmelt or rain-on-snow events during winter months are infrequent, are generally lower magnitude than events in the larger river systems that originate in the mountains, but can occasionally be extreme. As a result, the natural hydrology and salmonid habitat conditions in streams in undisturbed areas tend to be very stable. However, the salmonid habitat in the streams in East WRIA 15 appears to be highly susceptible to changes in hydrology resulting from stormwater runoff from development in the watersheds. The increase in impervious surfaces, associated with conversion of forestland to residential and commercial development, decreases the infiltration of precipitation into the soils and wetlands, and increases the frequency and magnitude of peak stream flows. The result is less water being available to sustain flows through the dry months, and the increased peak flows result in increased bank and streambed instability, channel scour and downcutting, and loss of instream habitat diversity, all of which adversely affect salmonid production.

In terms of water flow processes, Ecology's model rates the southern portion of the Tahuya River-Frontal Hood Canal subbasin as a mosaic of protection and restoration areas. This area has experienced significant impacts associated with timber harvest and residential development around many small lakes, particularly in the central part of this area. The subbasin to the north, from the vicinity of Olympic View to around the Hood Canal Bridge, is rated as more suitable for development than protection, conservation, or restoration, relative to other parts of the assessment unit. This area contains substantial residential development, including Naval Base Kitsap. Around Port Gamble Bay, to the northern portion of the subbasin at Foulweather Bluff, the area is mapped in a patchwork of conservation and development areas less suitable for protection, conservation, or restoration. This part of the subbasin contains considerable residential development. It is important to note that the results of the watershed characterization are relative to areas within the assessment unit, and that areas noted as less important

for conservation and restoration should not be allowed to degrade further where future development activities do occur.

Relatively few freshwater wetlands are mapped in the northern section of this subbasin. Significant wetland area is mapped along the major drainages: Dewatto River, Tahuya River, Mission Creek, and Union River. In addition, the south-central portion of the subbasin contains numerous lakes, which are ringed by wetland habitat, and wetland complexes not associated with lake or pond resources.

Threats for WRIA 15

Conversion of forestland to residential and commercial development in WRIA 15 has increased the amount of impervious surface. Major land uses in WRIA 15 are forest resources, agriculture, and urban uses such as near the community of Belfair at the southeastern end of Hood Canal and Seabeck in eastern Hood Canal. An imminent threat is the potential loss of the forestlands around Port Gamble Bay and Hansville and the effects it would have on water flow, water quality and wildlife habitat. The marine sediments of Port Gamble Bay are contaminated and are the subject of a clean-up effort. Another imminent threat is continued development of the Bangor Sub-base and impacts to wetlands, streams, and riparian buffers.

A small decline in evergreen forest cover was mapped in the Tahuya River subbasin, attributed to timber harvest in the south-central portion of the subbasin. The cover dropped four percent to 63 percent. Mixed forest cover remained stable at 10 percent.

Evergreen forest cover in the riparian corridor of Big Anderson Creek declined by almost 8 percent between 1992 and 2006. Along the Dewatto River, evergreen cover was reduced by about 10 percent over this time period. The Tahuya River, Mission Creek, and Union Creek had reductions of evergreen cover of about 8 percent, 6 percent, and 7 percent, respectively. Mixed forest cover for these riparian corridors remained steady during this time period. Increases of riparian evergreen forest cover were mapped at Gamble Creek and Stavis Creek; up by 9 percent and 5 percent, respectively. Again, mixed forest cover was constant. Evergreen forest cover over other streams located in the subbasin, including Big Beef Creek, Hawks Hole, Little Anderson, Rendsland Creek, Lowfall Creek, and Seabeck Creek, did not change appreciably (for both evergreen and mixed forest cover).

Climate change may also bring a new, long-term threat to aquatic resources of WRIA 15.

Objectives for WRIA 15

Mitigation objectives for this service area include:

- conserve lands around Port Gamble Bay and between the bay and Foulweather Bluff;
- protect and restore lands along the western and southern extents of the Kitsap peninsula that have had moderate impacts to water flow due to residential development and timberland activities;

- restore and protect flood storage by:
    - restoring and enhancing depressional wetlands, particularly in the south central portion of the service area where wetlands and lakes are concentrated and clearcutting is a common land use practice;
    - restoring and protecting floodplains;
    - preserving and revegetating floodplain and riparian corridors;
- restore and protect natural conveyance systems and flow regimes by:
    - removing fill;
    - restoring forest cover and other natural vegetation;
    - removing hydrologic barriers;
    - preserving high-quality wetlands;
- restore and protect stream channel sinuosity and complexity and connection to floodplains by:
    - removing levees and revetments;
    - removing fish passage barriers;
    - removing floodplain fill;
    - installing large woody debris;
    - restoring or enhancing off-channel habitats and other refugia;
    - revegetating riparian corridors; and
    - improving streambank conditions.

I.1.6 WRIA 17 (Quilcene Basin)

WRIA 17 is bordered to the north by the Strait of Juan de Fuca, to the east by Admiralty Inlet, northern Puget Sound and Hood Canal, and to the south and west by the Olympic Mountains and associated foothills and floodplains. Approximately half of WRIA 17 flows into Hood Canal, with the remainder flowing north into the Strait of Juan de Fuca or east into Puget Sound. The service area includes the sub-basins that drain to Hood Canal including the Big Quilcene, Little Quilcene, Tarboo, Thorndyke, Shine, and Ludlow. Over 70 percent of the WRIA is privately owned. Table 9 provides key attributes of the service area within WRIA 17.

Table 9. WRIA 17 Service Area Overview

Attribute	Value
Size	626 square miles

Attribute	Value
WRIA	17
Number of subbasins	80
Counties	Jefferson
Predominant land uses	Forestry, recreation, residential, industrial
Advance Credits requested	45 (15 of each functional type)

Historic Freshwater Resource Losses

Ecology mapped approximately 376 acres of depressional wetland in the service area. Approximately 10 percent of the historic depressional wetlands (41 acres) have been lost due to development (Ecology 2011).

Approximately 8 percent of this service area contains developed unconfined streams, and only about 2 percent of altered moderately confined streams. The relative high level of alteration of unconfined streams in this service area is associated with extensive forestry and agricultural practices (Ecology 2011).

Physical Description and Current Aquatic Resources Conditions

The following excerpts from the Watershed Management Plan for the Quilcene-Snow Water Resource Inventory Area (WRIA 17) (Cascadia 2003) depict WRIA 17 as follows:

> *WRIA 17 is located on the northeastern Olympic Peninsula, and includes portions of Jefferson and Clallam Counties. The WRIA encompasses direct drainages to Puget Sound from Jimmycomelately Creek in the northwest to the Quilcene River in the south. The watershed also boasts portions of the Hood Canal and the Strait of Juan de Fuca, and the northeast flank of the Olympic Mountains.*
>
> *Approximately 26,835 people live in WRIA 17, many of them in Port Townsend, the main population center of the watershed. More than seventy percent of the 256,783 acres in the WRIA are privately owned; the federal government owns twenty percent and state government owns the remaining ten percent.*
>
> *Glaciers were the primary shapers of WRIA 17. The terrain ranges from the steep slopes of the Olympic Mountains to coastal lowlands drained by high gradient streams. Deep to moderately deep loams and areas of silt and clay are characteristic of soils in WRIA 17. In lowland valleys, pasture vegetation is common, while at higher elevations alders and conifers predominate (Parametrix et al., 2000).*

The WRIA 17 Technical Assessment compares the limited water quantity information available to optimum instream flows for salmonid species. According to this analysis, the optimum instream flows far exceed the estimated streamflows expected during median years, and also are greater than flows expected in wet years during the times that salmon need the water to be in the streams. In other words, according to this analysis, at certain times of year there is not enough water in the streams to provide optimal habitat.

In general, freshwater and marine water quality in WRIA 17 is good where it has been measured, although some areas have fair to poor water quality. Most of the monitoring studies conducted in the watershed have measured temperature and fecal coliform bacteria concentrations, although some have evaluated physical characteristics such as dissolved oxygen, pH, conductivity, total suspended solids, and turbidity. Only limited amounts of information are available for nutrients such as nitrate and total phosphorus, and even less is available for inorganic and organic compounds.

Ecology's water flow process ratings for this subbasin show that the Big Quilcene River subbasin is mapped for protection and restoration of water flow, moving from west to east. This is the result of a lack of development and timber harvest activities in this portion of the subbasin. Few mapped freshwater wetlands are found in this subbasin, except for several relatively small wetland habitats found in the northeastern part of the subbasin.

The Big Quilcene River subbasin saw a marginal increase in evergreen forest cover, reaching 80 percent cover in 2006. Mixed forest cover remained constant at 3 percent.

Mapped evergreen and mixed forest cover in the riparian corridor of the Big Quilcene River was steady (77 percent).

The western portion of the Little Quilcene River-Frontal Hood Canal subbasin is mapped as conservation and restoration areas. This area contains forest land with limited harvest activity. The northern and eastern portion of the subbasin contains more disturbance (clearcutting and residential development) and are typically mapped as less suited for protection, conservation or restoration. The two peninsulas are mapped in a patchwork, primarily for protection, restoration, and conservation, with the area near Fisherman's Harbor mapped as less suitable for protection, conservation, and restoration. Management priorities for the southern portion of the subbasin, along the western shoreline of Hood Canal, include protection and restoration in the vicinity of the Big and Little Quilcene Rivers, the area north of Jackson Cove, land near Right Smart Cove, and lands around Thorndyke Estuary. These areas contain limited residential development and some agricultural practices. The land surrounding Spencer Creek is more suitable for development, meaning water flow has been highly degraded and the area is of low ecological importance.

Freshwater wetlands are sporadically mapped throughout most of the subbasin, particularly, the central portion. In addition, significant freshwater wetland areas occur at the north end of Quilcene Bay and Dabob Bay and near the mouth of Shine Creek.

Mapped evergreen forest cover in the Little Quilcene River subbasin saw a small uptick in the late 1990s/early 2000s, but declined by 2006 to 54 percent. Mixed forest cover was stable at 13 percent.

Mapped evergreen forest riparian cover significantly declined along Ludlow Creek and Thorndyke Creek. Cover along Ludlow Creek declined by approximately 12 percent to 38 percent and by 25 percent at Thorndyke Creek, to 53 percent. Evergreen cover increased at Tarboo Creek in the late 1990s/early 2000s, but was reduced to 46 percent by 2006. Mixed forest cover remained stable for these drainages. Mapped evergreen and mixed forest covers did not significantly decline in the riparian corridor of the Little Quilcene River and Donovan Creek.

Threats for WRIA 17

The following excerpts from the Watershed Management Plan for the Quilcene-Snow Water Resource Inventory Area (WRIA 17) (Cascadia 2003) identify the threats affecting the watershed:

> *In WRIA 17, human activities, especially related to land use, have degraded salmon habitat. In particular, forest practices, agriculture, rural development and shoreline development have had negative effects. For example, timber harvest on state and private forestlands, if not managed properly, can result in reduced riparian habitat and increased sediment loads in streams. These changes can result in higher water temperatures, lack of large woody debris, reduced woody debris recruitment, and smothering of spawning gravels, all of which are detrimental to salmonids.*
>
> *Agricultural activities in the floodplains of many WRIA 17 sub-basins have led to channelized streams, drained beaver ponds, and removal of vegetation from riparian zones. These practices have had a variety of negative effects, including reducing channel complexity, pool/riffle ratios, and bank and streambed stability, and eliminating riparian areas and juvenile rearing habitat associated with beaver ponds. In nearshore areas, farmers have diked and filled salt marshes and estuaries, interrupting nearshore processes and eliminating salt marsh habitats.*
>
> *Residential development in rural areas also has led to reductions in riparian function, because residents often cut down vegetation to increase views. In some cases, removal of vegetation destabilizes banks, leading to shoreline armoring, which interrupts habitat-forming processes. Stormwater runoff introduces pesticides, chemical fertilizers and other contaminants into streams, degrading water quality.*

Climate change may also bring a new, long-term threat to aquatic resources of WRIA 17, particularly the Big and Little Quilcene Rivers which drain from the Olympic Mountains.

Objectives for WRIA 17

Mitigation objectives for WRIA 17 include:

- protect and conserve lands in the western and southern portions of the service area, which have minimally degraded water flow due to development;
- restore lands with moderate alterations to water flow in the north-central and eastern portions of the service area;
- restore and protect flood storage by:
    - restoring and enhancing depressional wetlands in the north-central and eastern portions of the service area that have been impacted by timberland practices;
    - restoring and protecting floodplains;
    - preserving and revegetating floodplain and riparian corridors;
- restore and protect natural conveyance systems and flow regimes by:
    - removing fill;
    - restoring forest cover and other natural vegetation;
    - removing hydrologic barriers;
    - preserving high-quality wetlands;
- restore and protect stream channel sinuosity and complexity and connection to floodplains by:
    - removing levees and revetments;
    - removing fish passage barriers;
    - removing floodplain fill;
    - installing large woody debris;
    - restoring or enhancing off-channel habitats and other refugia;
    - revegetating riparian corridors; and
    - improving streambank conditions.

I.1.7 Freshwater Prioritization Strategy

The HCCC ILF Program, in consultation with the IRT, will rely on the results of Ecology's watershed characterization for water flow processes to as a first-level screening tool to identify subbasins that are likely to yield ecologically suitable freshwater mitigation

sites that achieve specific mitigation objectives. The HCCC is working with the Puget Sound Watershed Characterization Technical Assistance Team to use these analyses as a basis for screening priority freshwater mitigation sites throughout the service areas because they provide vital information on:

- Hydrological conditions, soils, geology and vegetative characteristics that influence the value of the mitigation and its potential to successfully contribute to no net loss;
- Watershed-scale features, such as wetland condition, floodplain condition, drainage patterns, and landscape-scale functions; and
- The degree of impairment or alteration present at multiple scales.

The selection of potential mitigation sites will also be informed by Ecology's water quality and habitat characterization models, which are currently in development and are expected to be available in early summer 2012. The characterization information will be supplemented with county-scale information and studies that identify resources and sites that meet the following criteria:

- Sites with hydrologic, soil, and other physical and chemical characteristics that indicate mitigation efforts will be sustainable over time, including changes in climate;
- Sites that are connected hydrologically and ecologically to other important resources in the watershed in ways that support aquatic habitat diversity, habitat connectivity, and other landscape scale functions;
- Sites that when restored, enhanced or preserved will be compatible with the existing and planned land uses surrounding the site; and
- Sites where mitigation will have beneficial effects on ecologically important aquatic or terrestrial resources and/or habitats (i.e., perform and/or contain the processes, functions, and structures necessary to maintain and support the local environment and greater watershed, and allows fish and wildlife dependent on such resources and habitats, to carry out their life histories) for federally- or state-listed threatened and endangered species.

The HCCC ILF Program will also consider other relevant factors including, but not limited to, development trends, habitat status and trends (including climate change), the relative locations of the impact and mitigation sites in the watershed, local or regional goals/objectives for the restoration or protection of particular habitat types or functions (e.g., reestablishment of habitat corridors or habitat for species of concern), water quality goals/objectives, floodplain management goals/objectives, land ownership, the amount of functional lift available at a site, and the relative potential for chemical contamination of the aquatic resources.

Once priority areas have been identified, the HCCC ILF Program will work with partners and the IRT to do site level reconnaissance and evaluations for a stratified set of roster

sites, including prioritizing mitigation actions. These sites and their mitigation potential and concepts will be documented and incorporated into the technical appendices after review by the IRT and Corps/Ecology approval.

APPENDIX J THIRD PARTY ENTITIES

The HCCC may enter into an agreement with a non-profit or governmental management entity to perform many of the required functions for the HCCC ILF Program including fiscal management; providing funding to entities that will purchase and hold mitigation sites in conservation status in perpetuity (long-term management); reporting; contracting for the design, construction, and monitoring; and other functions as described in this Instrument. Approaches will be developed in partnership with HCCC members and the IRT.

Though some of the tasks associated with operating the HCCC ILF Program may be delegated to a management entity if authorized by the Corps and Ecology in consultation with the IRT, the HCCC will retain sole responsibility for ensuring the success of its mitigation-receiving sites and the Program generally.

The HCCC may transfer interest in property in part or in whole to a qualified local land manager such as a local/state/federal/tribal government, a land trust that has adopted the Land Trust Alliance Standards & Practices, or other non-profit organization that has experience in conservation land management. If mitigation properties are transferred the HCCC will also either transfer funds to the new owner or enter into an agreement to provide the necessary long-term stewardship through other means. The HCCC will seek IRT review and DE and Ecology approval before transferring mitigation site stewardship responsibilities to another entity.

APPENDIX K CREDIT FULFILLMENT

Credit fulfillment refers to the process by which actual mitigation projects are planned and constructed to offset credits that have been sold. Subsections in this section describe the process for implementing mitigation projects.

K.1. Sponsor Qualification and Implementation

K.1.1 Technical Feasibility

The HCCC is confident that the technical needs required to meet the goals of the HCCC ILF Program exist. HCCC and other organizations and agencies are currently active in restoration throughout the Hood Canal watershed. Communities, scientists, government, managers, and conservation groups are ripe with interest to protect and restore large areas of the Hood Canal watershed on the scale of effort envisioned by the HCCC ILF Program.

To meet the needs of each mitigation project, the best available science will be incorporated along with an appropriate monitoring program to evaluate the effectiveness of the implemented strategies and inform adaptive management. The mitigation and monitoring plans will be vetted by the IRT and other relevant experts to ensure the greatest chance of success for each project and the overall HCCC ILF Program.

K.1.2 Sponsor Qualifications

The HCCC is a watershed-based "council of governments" composed of local governments and Indian tribes with ownership, land use jurisdiction and other governmental interests in the watershed. The HCCC's member organizations include Jefferson, Kitsap and Mason Counties, the Port Gamble S'Klallam Tribe and the Skokomish Tribe. The member organizations formed the HCCC in 1985 to coordinate their activities with each other and with other federal, state, tribal and local governments with jurisdiction over land and resource management in Hood Canal. In addition to its member organizations, the HCCC also includes the following federal and state agencies as ex officio, nonvoting members:

Federal Agencies:

- United States Navy
- United States Forest Service
- National Park Service
- Environmental Protection Agency, Region 10
- United States Fish and Wildlife Service

- National Marine Fisheries Service
- United States Army Corps of Engineers

State Agencies:

- Department of Natural Resources
- Department of Fish and Wildlife
- Department of Ecology
- Department of Health
- Office of Community Development
- Parks and Recreation Commission
- Department of Transportation
- Puget Sound Partnership

The HCCC serves a variety of functions and operates in a number of capacities. First, as an interlocal agency under Chapter 39.34 RCW, the HCCC coordinates the activities of its members and other public entities and Indian tribes in their efforts to protect and restore the Hood Canal watershed. HCCC's Board of Directors includes the County Commissioners of each member County and the Tribal Chairperson or a duly-authorized representative of each member Tribe. In this capacity the HCCC is preparing its Integrated Watershed Management Plan (IWMP), which is intended to develop a coordinated, cohesive strategy for protection and restoration efforts throughout the Hood Canal watershed.

In 2000 the HCCC formed a non-profit, public benefit corporation under Chapter 24.03 RCW, Washington's Nonprofit Corporations Act, to serve as the HCCC's fiscal agent. The Internal Revenue Service (IRS) has recognized the HCCC as a public charity under section 501(c)(3) of the Internal Revenue Code. Starting in 2011, the HCCC will comply with the audit requirements of Office of Management and Budget Circular A-133. The nonprofit corporation administers multiple grants for the habitat assessment and rehabilitation programs.

Finally, the HCCC serves a variety of functions pursuant to Chapter 90.88 RCW, the Aquatic Rehabilitation Act, and Chapter 77.85 RCW, the Salmon Recovery Act. The Act designates the HCCC as the local management board for Hood Canal rehabilitation under RCW 90.88.010(3). HCCC is the inter-WRIA coordinator for watershed planning under RCW 90.88.030(1)(b). The HCCC also is the lead entity for salmon recovery and regional recovery organization for summer chum salmon recovery under RCW 90.88.030(1)(a). As the lead entity, HCCC develops both short term and longer term project lists, solicits sponsors to implement the programs and evaluates and ranks project proposals.

The HCCC will serve as sponsor of the HCCC ILF Program. As sponsor, the HCCC will identify, fund, operate, maintain, and manage HCCC ILF projects as described in this

Instrument. The HCCC will be responsible for all roles required of an HCCC ILF Program sponsor in 33 CFR Part 332.8, unless otherwise approved by the Corps and Ecology, including:

- Assuming responsibility for a permittee's compensatory mitigation requirements.
- Ensuring the success of compensatory mitigation for which fees have been collected.
- Maintaining accounting ledgers, tracking all fees collected and expenditures.
- Selection and assessment of mitigation sites, as well as their design and construction.
- Monitoring and maintaining mitigation projects through their establishment period as well as implementing a Long-Term Management and Maintenance Plan.
- Attaining approval for mitigation plans and expenditures from the HCCC ILF account.
- Maintaining sufficient funds for the long-term management of mitigation projects. Annually reporting on the progress and status of the HCCC ILF Program and its projects including financial ledgers, credit ledgers, mitigation receiving site monitoring and progress toward success, amount of mitigation provided for authorized impacts/fees collected, and any other changes in land ownership or transfers of long term management responsibilities.

The HCCC is responsible for evaluating ecosystem conditions and prioritizing the most important actions to restore the Hood Canal watershed to health. The HCCC accomplishes these tasks in part through review and coordination of existing land use plans, watershed plans, species recovery plans, and prioritized lists from other entities. The HCCC also serves an accountability and environmental outcome monitoring function for the Hood Canal watershed. Furthermore, the HCCC excels at coordinating restoration efforts and bringing together representatives from all levels of government agencies and non-government organizations.

The HCCC has staff with the expertise to review and revise mitigation plans and designs for proposed mitigation receiving sites to maximize sustainability and functional gain. The HCCC also have staff with experience developing performance standards that target the achievement of ecosystem function. In addition, the HCCC have staff with experience reviewing monitoring reports and developing contingency plans to correct poor site performance or address unforeseen circumstances. Examples of various types and sizes of projects that HCCC has coordinated, planned and/or implemented (other examples available upon request) are:

- Little Quilcene Estuary Restoration project that restored approximately 100 acres by removing 2,200 feet of levees, reconfiguring 1,900 feet of mainstem riverine habitat, creating 1,600 feet of tidal channel, installing 8 engineered log jams, and removing 33,000 cubic yards of aggraded sediments in the sub-estuarine interface.
- Union River Headwaters Conservation project that conserved approximately 2,600 acres of working forest land by purchasing conservation easements that extinguished development rights as well as created no-cut buffers that add a higher level of protection to aquatic resources than regulations provide.
- Lynch Cove Community Park Restoration project that restored approximately 2 acres by removing 100 feet of bulkhead, a derelict concrete wading pool in the intertidal zone, 0.5 acres of invasive weed removal, and planting and maintenance of 0.5 acres of native, salt tolerant plants.

K.1.3 Project Implementation

The HCCC ILF Program Manager is the "client" in a consulting services model that will be used to facilitate project implementation. The HCCC ILF Program Manager will outline scope, budget and schedule expectations for the implementation groups, who are the "consultant" in the model, and will assign work according to their expertise, availability and potential scale or location efficiencies.

When the construction budget for a project is expected to be greater than $90,000, state law requires the construction tasks for these projects be put out to competitive bid. In these cases, private ecological restoration contractors will bid on the projects, and HCCC ILF Program staff will oversee construction. It is expected that the requirement to send larger projects to bid will increase the price of projects. This added *"contracting"* expense is incorporated into credit price calculations (Appendix F). In the interest of fairness to all applicants, this additional cost will be factored in to the price for all credits sold, regardless of the impact size. This accounts for the fact that at the time a credit is sold, the location and size of the mitigation project may be unknown, and therefore the HCCC ILF would be unable to determine whether additional contracting fees might apply to the project. Exceptions can be made, at the discretion of the HCCC in coordination with the IRT, if impacts and receiving sites are known in advance.

K.2. Mitigation Plans

A key document guiding much of the credit fulfillment process will be site specific Mitigation Plans. The requirements for site specific Mitigation Plans are described in detail in the federal rule [33 CFR Part 332.4(c)]. At a minimum, the federal rule specifies that Mitigation Plans shall include the following sections:

- Objectives

- Site selection
- Site protection instrument
- Baseline information
- Determination of credits
- Mitigation work plan, including opportunities or need to phase projects.
- Maintenance plan
- Performance standards
- Monitoring requirements
- Plans and specifications, including identification of necessary local, state and federal permits for proposed project.
- Affected stakeholders (a plan for stakeholder involvement may be required)
- Adaptive management plan and contingencies plan
- Long-term management plan
- Financial assurances
- Credit release schedule
- Information such as nearby mitigation or restoration projects and how the mitigation project may compliment them,
- Adjacent land uses and potential effects of adjacent land uses on mitigation project
- Other information as identified by the IRT

All Mitigation Plans for the HCCC ILF Program will adhere to the requirements for Mitigation Plans outlined in the federal rule, and all Mitigation Plans will be approved by the Corps and Ecology in consultation with the IRT.

Mitigation plans will also clearly delineate the areas of a site where mitigation activities can occur. For example, Mitigation Plans will identify features that would disallow creation of credits such as trail corridors, utility easements, previous mitigation projects without any available additional credit, and restoration projects.

K.3. Credit Fulfillment Process

The credit fulfillment process will generally require the following steps:

1. Review mitigation needs based on type and location of impact(s). This assessment will include basic site information as well as the number of debits

associated with an impact and a complete list and description of any impacts to aquatic areas and/or buffers, as applicable.

2. Select a 'preferred' mitigation-receiving site according to the process outlined in Appendix H. The preferred site proposal shall be reviewed and approved by the Corps and Ecology in consultation with the IRT.
3. Submit preferred site and preliminary concept plans to the Corps and Ecology for review and consultation with the IRT, including information about other restoration or mitigation activities in the vicinity of the preferred site to ensure the area proposed for mitigation is clearly defined and distinct from other projects and land-uses at the site. At minimum, the concept plans should provide a simple graphic representation of key project elements and a short narrative description.
4. Joint public notice on conceptual draft "Mitigation Plan" by the Corps/Ecology.
5. Apply the appropriate credit/debit tool to determine the number of credits the mitigation project should generate.
6. Begin data collection and validation of assumptions to confirm suitability of preferred mitigation-receiving site.
7. Pending approval to proceed, develop draft Mitigation Plan and cost estimate in consultation with a qualified restoration ecologist/engineer.
8. The HCCC ILF Program Manager shall also submit a copy of the draft site protection instrument that would protect the land in perpetuity.
9. Submit a draft Spending Agreement for review and approval by the Corps and Ecology in consultation with the IRT.
10. Complete the final draft Mitigation Plan, and upon review and approval by the Corps and Ecology in consultation with the IRT, incorporate into the HCCC ILF Program Instrument in the Mitigation Plans section at the end of the Instrument (Appendix X).
11. Finalize site protection instrument (e.g., conservation easement or restrictive covenants) and long-term stewardship plan.
12. Negotiation with and approval by the Corps and Ecology in consultation with the IRT of monitoring periods and credit release schedules. The credit release schedule determines the points in the project at which credits will be considered "released" (i.e., the point at which the sponsor has met the obligation for fulfilling the credit).
13. Final Corps and Ecology approval of Mitigation Plan and site protection instrument; both the HCCC ILF Program and the landowner shall agree to abide by the terms outlined in the site protection instrument.

14. Complete permitting necessary to implement Mitigation Plan (process should have started earlier before step 10).
15. Implement approved Mitigation Plan
16. Monitor and report on progress towards meeting performance measures and credit release.
17. Upon meeting performance measures, release appropriate credits.

The steps outlined above have been distilled into a one-page Credit Fulfillment Checklist, which is included with this instrument as Exhibit 8. This checklist shall guide HCCC ILF Program staff and IRT members through the fulfillment steps. The Checklist shall be jointly reviewed and amended by the Corps, Ecology and the Program Sponsor, in consultation with the IRT, to ensure all relevant steps in the fulfillment process are captured in the checklist. This checklist may be amended as necessary to incorporate other necessary or desirable steps identified by the Corps, Ecology and the Sponsor.

The federal rule [33 CFR 332.8(g)] describes the process by which the HCCC ILF Program instrument is modified to incorporate Mitigation Plans. The rule describes two methods by which a program instrument may be modified: (1) a full review process [332.8(g)(1)] which is similar to the review and approval process for new in-lieu fee instruments, outlined in [332.8(d)]; and (2) a streamlined review process described in [332.8(g)(2)].

K.4. Credit Fulfillment Schedule

For fulfillment of all credits, a compensatory mitigation project plan will be submitted to and approved by the Corps and Ecology, in consultation with the IRT, and the initial physical and biological improvements will be completed by the third full growing season after the impact that generated the credit sale(s) as required by the federal rule [33 CFR 332.8 (n)(4)]. The submittal of the Mitigation Plans to the Corps and Ecology will include a credit release schedule.

In some cases, mitigation projects may require baseline data collection in order to reduce risk of project failure. In these instances, the collection of data will generally occur within one year of the impact that generated the credit sale, but actual construction may not occur within three growing seasons. These cases would be limited to those which require multiple years of baseline data collection and would be contingent on Corps, Ecology, and/or County planning staff approval as appropriate.

K.5. Credit Release Schedule

For each credit fulfillment project, a credit release schedule will be negotiated with and approved by the Corps and Ecology, in consultation with the IRT. Generally, credit release will be requested to conform to the performance measure monitoring schedule outlined in Appendix N.

Sections 33 CFR 332.8(o)(8)(i) and (iii) of the federal rule describe details related to the Credit release schedule for in-lieu fee programs:

"(i) *General considerations.* Release of credits must be tied to performance-based milestones (e.g., construction, planting, establishment of specified plant and animal communities). The credit release schedule should reserve a significant share of the total credits for release only after full achievement of ecological performance standards. When determining the credit release schedule, factors to be considered may include, but are not limited to: The method of providing compensatory mitigation credits (e.g., restoration), the likelihood of success, the nature and amount of work needed to generate the credits, and the aquatic resource type(s) and function(s) to be provided by the mitigation bank or in-lieu fee project. The district engineer will determine the credit release schedule, including the share to be released only after full achievement of performance standards, after consulting with the IRT. Once released, credits may only be used to satisfy compensatory mitigation requirements of a DA permit if the use of credits for a specific permit has been approved by the district engineer."

"(iii) For in-lieu fee projects and umbrella mitigation bank sites, the terms of the credit release schedule must be specified in the approved mitigation plan. When an in-lieu fee project or umbrella mitigation bank site is implemented and is achieving the performance-based milestones specified in the credit release schedule, credits are generated in accordance with the credit release schedule for the approved mitigation plan. If the in-lieu fee project or umbrella mitigation bank site does not achieve those performance-based milestones, the district engineer may modify the credit release schedule, including reducing the number of credits."

The Corps and Ecology, following consultation with the IRT, will also need to approve the credit release schedule based on documented project performance milestones, and if deemed necessary, a site visit (see 33 CFR 332.8(o)(9)).

The credit release schedule will be negotiated for each Mitigation Plan, though generally these credit release schedules will conform to discrete project milestones identified in the monitoring plans and ecological performance standards established for each project and approved by the Corps and Ecology in consultation with the IRT. Table 10 provides an example credit release schedule. Actual credit release schedules for each project may differ from the example below depending on site conditions, the duration of the required monitoring and other project variables.

Table 10. Example Credit Release Schedule (based on a 10 year monitoring period)

Project Milestone	Portion of Credit Released	Cumulative Portion of Fulfillment
Installation	1/6	1/6
Year 1 performance standards achieved	1/6	1/3
Year 3 performance standards achieved	1/6	1/2
Year 5 performance standards achieved	1/6	2/3
Year 7 performance standards (If needed) achieved	1/6	5/6
Year 10 performance standards (if needed) achieved and transition to long-term stewardship (IRT sign-off on achievement of performance standards)	1/6	Credit fulfilled

Credit releases for in-lieu fee projects must be approved by the Corps and Ecology. In order for credits to be released, the Sponsor will submit documentation to the Corps and Ecology demonstrating that the appropriate milestones for credit release have been achieved and requesting the release. The Corps and Ecology will provide copies of this documentation to the IRT members for review. IRT members will provide comments on this document (see 33 CFR 332.8 (o)(9)).

The Corps and/or Ecology may determine that a site visit is necessary prior to the release of credits. Such a visit will be compliant with 33 CFR 332.8 (o)(9).

If the in-lieu fee project does not achieve the performance-based milestones, the Corps and Ecologymay modify the credit release schedule, including reducing the number of credits. (see 33 CFR 332.8(o)(8)(iii)).

If at any step in the credit release schedule it is determined through monitoring that performance standards are not being met, the Corps, Ecology, and the Sponsor, in consultation with the IRT, shall identify appropriate adaptive management and contingency measures (Appendix O) and devise a plan for implementation.

APPENDIX L MITIGATION SITE MAINTENANCE

HCCC ILF Program staff and/or an approved third party steward will coordinate mitigation site maintenance during the establishment phase. Active maintenance practices will generally follow a minimum five (5) to seven (7) year program, or possibly 10 year program that may include repair/replacement of engineered structures, nuisance species control and other adaptive management measures, such as grade or hydrology modifications, species substitutions, replanting, replacement of habitat features, and temporary fencing. Projects requiring phased installation may specify maintenance and monitoring measures that promote the phased approach.

Due to the variability of projects at mitigation receiving sites, implementation and maintenance plans for each mitigation project will be developed on a case-by-case basis in consultation with the IRT. Site maintenance beyond the project performance period will be performed by the property owner or the long-term steward, depending on the specific provisions for long-term stewardship (Appendix P).

Site maintenance plans will be incorporated into the Mitigation Plans for each site, and as such, will be appended to the HCCC ILF Program instrument upon Corps and Ecology approval.

APPENDIX M ECOLOGICAL PERFORMANCE STANDARDS

Performance standards are observable or measurable physical (including hydrological), chemical and/or biological attributes that are used to determine if a compensatory mitigation project meets its objectives. Performance standards included in HCCC ILF Program Mitigation Plans will relate to the objectives of the compensatory mitigation project, so that the project can be evaluated through time to determine if it is developing into the desired resource type, providing the expected functions and generating the anticipated functional lift.

Ecological performance standards will be based on the best available science that can be measured or assessed in a practicable manner. Performance standards may be based on variables or measures of functional capacity described in the freshwater mitigation assessment method, measurements of hydrology or other aquatic resource characteristics and/or comparisons to reference aquatic resources of similar type and landscape position.

Reference sites may be used to develop performance standards for mitigation sites. Performance standards will take into consideration the hydrologic variability exhibited by reference aquatic resources, especially wetlands. Performance standards will take into account the expected stages of the aquatic resource development process in order to allow early identification of potential problems and appropriate adaptive management.

Specific performance standards for a given mitigation project will depend in large part on the type, scale and scope of the proposed project and will be outlined in detail in the Mitigation Plans developed for each site. These plans must be reviewed and approved by the Corps and Ecology, in consultation with the IRT, prior to implementation, so specific performance standards for a mitigation project can be negotiated. Performance standards for the HCCC ILF Program mitigation projects will generally include the following components (excerpted and adapted from *Monitoring Plant and Animal Populations,* Elzinga et al. 2001):

> List of *Attributes*. Attributes identify what will be monitored, such as *woody vegetation*, *invasive species* (e.g., reed canary grass - *Phalaris arundinacea*), *wetland area*, or *water regimes*. The attributes to be monitored will vary from site to site, and will be listed in the Monitoring and Maintenance sections of the Mitigation Plans developed for each receiving site. These plans will be incorporated into the HCCC ILF Program instrument upon approval by the Corps and Ecology in consultation with the IRT.
>
> List of *Indicators*. They identify what aspect of the attribute will be monitored, such as percent *aerial cover* (of vegetation), *density* (of stems of surviving vegetation), *size* (of wetland area), or *percent area* (of a water regime).

Actions. They identify the "verb" of the indicator, such as *will not exceed* X percent cover (of invasive species), *establish* X acres (of wetland area), *maintain* number (of surviving, healthy, and vigorous vegetation), or will have X-X% area (of a water regime).

Quantities/Status. They identify the amount of change or the desired level the indicator should reach, such as achieving *greater than 50%* total aerial cover of trees and shrubs, establishing *2 acres of salt marsh*, or *having 25% to 50% area* of a water regime.

Time Frame. They identify when the quantity/status should be achieved or at what time the effectiveness of management of the site should be evaluated. For example, having X-X% area of a water regime *each year* of monitoring, achieving X acres of wetland *by the end of the monitoring period*, or achieving X% total aerial cover of trees and shrubs *by the end of year 7*. Performance standards should be included for interim years, not just the end of the monitoring period.

Location. They identify the geographical area where the attribute will be monitored, such as a particular wetland mitigation site or a specific habitat type within a compensatory wetland. For example, *the compensatory mitigation area at site X in Port Gamble, Washington* will achieve X acres of tidal wetland by the end of the monitoring period.

In the context of the above performance standard components, most freshwater mitigation projects will generally also include standards to address the specific goals and objectives identified in the guidelines entitled W*etland Mitigation in Washington State - Part 2, Version 1, p. 47, Chapter 3 "Considerations for Developing a Mitigation Project*", including*:*

- Water, hydroperiod and hydrology
- Hydroperiod associated with target functions
- Area of hydrogeomorpic (HGM) classes/subclasses, Cowardin classes, aquatic area types, or upland community types
- Species richness and abundance
- Maximum percent cover of invasive vegetation species
- Specific target functions or physical characteristics
- Finally, to the extent possible, performance standards will be developed to ascertain whether lift is being created in the context of the functions measured by the mitigation assessment method.

Performance standards for marine/nearshore mitigation would include some of these same considerations but may also include others to be defined on a case-by-case basis depending on the specific resources, habitats, functions and process that are the targets

of the mitigation effort. These would be subject to IRT review and approval by the Corps and Ecology at the time a mitigation plan is submitted.

APPENDIX N MONITORING AND REPORTING

Monitoring and reporting requirements from the HCCC ILF Program will meet requirements outlined in the federal rule.

N.1. Monitoring

The HCCC ILF is "responsible for monitoring the in-lieu fee project sites, in accordance with the approved monitoring requirements for each project, to determine the level of success and identify problems requiring remedial action or adaptive management measures. Monitoring must be conducted in accordance with the requirements in 33 CFR 332.6, and at time intervals appropriate for the particular project type. Monitoring will continue until such time that the district engineer, in consultation with the IRT, has determined that the performance standards for the project have been attained." (33 CFR 332.8(q)(2)).

In general, monitoring periods will span five to ten years for most projects, including preservation. Depending on the nature of the mitigation projects, monitoring periods may be shorter or longer. The Corps and Ecology, in consultation with the IRT, will review and approve all monitoring plans.

Monitoring periods will comply with the terms of 33 CFR 332.6(b), which states that the "mitigation plan must provide for a monitoring period that is sufficient to demonstrate that the compensatory mitigation project has met performance standards, but not less than five years. A longer monitoring period must be required for aquatic resources with slow development rates (e.g., forested wetlands, bogs).

Performance monitoring will require qualitative and quantitative assessments of physical, chemical and biological characteristics of the project as appropriate, using appropriate analytical methods. The purpose of monitoring is to determine the level of compliance with established ecological performance standards specified in the approved Mitigation Plan, which are intended to measure whether the requisite ecological lift is being created. The purpose of monitoring is also to identify problems requiring remedial action or adaptive management measures. Monitoring will be continued until performance standards have been achieved.

Monitored parameters will depend in large part on the type, scale and scope of a proposed project, but will generally include hydrologic conditions, vegetative cover, site topology, soil stability and presence/extent of noxious weeds and nuisance species in accordance with the ecological performance standards for a given site.

Monitoring requirements and specifications will vary from receiving site to receiving site and will be outlined in detail in the Mitigation Plan for each mitigation site; the Corps and Ecology, in consultation with the IRT, will have the opportunity to review and approve monitoring requirements during review of the Mitigation Plans.

The HCCC ILF will formulate a monitoring plan for each project, which details and complies with all of the above. Specifically, the monitoring plan will "address the monitoring requirements for the compensatory mitigation project, including: 1) the parameters to be monitored and associated performance standards, 2) the length of the monitoring period, 3) the party responsible for conducting the monitoring, 4) the frequency for submitting monitoring reports to the district engineer, and 5) the party responsible for submitting those monitoring reports to the district engineer" (33 CFR 332.6). The Mitigation Plan will also include a detailed credit release schedule. The scheduled release of credits will correspond to the timeframe established for monitoring the mitigation sites to ensure ecological performance standards are being met.

The Corps and Ecology may conduct site inspections on a regular basis (e.g., annually) during the monitoring period to evaluate mitigation site performance. (33 CFR 332.6(a)(1)).

N.2. Long-term Monitoring

Each Mitigation Plan will have details about the long-term maintenance and monitoring plan for each mitigation site. Appendix P of this instrument explains in more detail the roles and responsibilities of long-term maintenance and monitoring.

N.3. Reporting

Specific reporting guidelines will be negotiated with the Corps and Ecology in consultation with the IRT for each mitigation project. Generally, the monitoring reports should follow reporting guidelines set forth in a regulatory guidance letter issued by the Corps on October 10, 2008 which provides "Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment, and/or Enhancement of Aquatic Resources".

HCCC ILF Program monitoring reports will comply with 33 CFR 332.6(c), which states:

(1)The district engineer must determine the information to be included in monitoring reports. This information must be sufficient for the district engineer to determine how the compensatory mitigation project is progressing towards meeting its performance standards, and may include plans (such as as-built plans), maps, and photographs to illustrate site conditions. Monitoring reports may also include the results of functional, condition, or other assessments used to provide quantitative or qualitative measures of the functions provided by the compensatory mitigation project site.

(2) The sponsor is responsible for submitting monitoring reports in accordance with the special conditions of the DA permit or the terms of the instrument. Failure to submit monitoring reports in a timely manner may result in compliance action by the district engineer.

(3) The district engineer must provide monitoring reports upon request to interested federal, tribal, state, and local resource agencies, and the public.

APPENDIX O ADAPTIVE MANAGEMENT AND CONTINGENCIES PLANNING

Each Mitigation Plan (Appendix K) will include an *adaptive management plan*, which is defined in the federal rule as a "management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success." (33 CFR 332.4(c)(12) Adaptive management plans included with mitigation plans will necessarily lack specific measures to address underperformance, since the type of underperformance will not be known at the time the Mitigation Plan is developed. Specific corrective measures will be developed if and when underperformance details become clear. Any and all adaptive management measures will be appended to the Mitigation Plan and the IRT will review and comment on any additions or amendments to Mitigation Plans in support of Corps and Ecology approval.

Contingency funds, incorporated into the credit fees and held in reserve in a separate account (Appendix F), would pay for development and implementation of adaptive management plans.

Section 33 CFR 332.7(c) of the federal rule provides further guidance on adaptive management of mitigation projects:

"If monitoring or other information indicates that the compensatory mitigation project is not progressing towards meeting its performance standards as anticipated, the responsible party must notify the district engineer as soon as possible. The district engineer will evaluate and pursue measures to address deficiencies in the compensatory mitigation project. The district engineer will consider whether the compensatory mitigation project is providing ecological benefits comparable to the original objectives of the compensatory mitigation project.

"The district engineer, in consultation with the responsible party (and other federal, tribal, state, and local agencies, as appropriate), will determine the appropriate measures. The measures may include site modifications, design changes, revisions to maintenance requirements, and revised monitoring requirements. The measures must be designed to ensure that the modified compensatory mitigation project provides aquatic resource functions comparable to those described in the mitigation plan objectives.

"Performance standards may be revised in accordance with adaptive management to account for measures taken to address deficiencies in the compensatory mitigation project. Performance standards may also be revised to reflect changes in management strategies and objectives if the new standards provide for ecological benefits that are

comparable or superior to the approved compensatory mitigation project. No other revisions to performance standards will be allowed except in the case of natural disasters."

Once approved by the Corps and Ecology, the revised project elements identified in the adaptive management plan will be implemented, and will be appended to the approved Mitigation Plan and incorporated into the HCCC ILF Program instrument; ecological performance standards, monitoring requirements and schedule, and credit release schedule will be amended accordingly to incorporate the terms of the project as revised in the adaptive management plan.

If an adaptive management plan identifies the need for significant modification of a compensatory mitigation project, the responsible party must get approval from the Corps and Ecology. A streamlined review process is available (see 33 CFR 332.8(g)(2).

If the failure is substantial and would be difficult or impossible to correct on-site (e.g. landscape conditions change such that hydrology is insufficient to support a wetland) the HCCC ILF Program will, in consultation with the IRT, evaluate whether the project should be abandoned altogether in favor of pursuing alternate contingency measures, such as a new project. A failure of a project (in whole or in part) is considered "default" in which case provisions in the Basic Agreement Article IV.N. and Appendix S of this instrument would apply.

APPENDIX P SITE PROTECTION AND LONG-TERM MANAGEMENT

Following the project performance period (i.e., establishment phase), mitigation projects will be managed in accordance with long-term management plans developed for each site. HCCC ILF Program credit pricing will reflect costs associated with long-term management of mitigation sites to ensure money is available to implement the long-term management plan.

Mitigation sites in the HCCC ILF Program will be protected in perpetuity. Fee ownership will not constitute adequate site protection to meet the requirements in the federal rule. Therefore, mitigation receiving properties must be protected by a site protection instrument prior to being used as a mitigation site. The Program will pursue site protection instruments in the following order of preference: conservation easements, restrictive covenants, or integrated natural resource management plans.

The site protection instruments set forth in this Appendix are guidelines. Depending on specific site conditions and land ownership, the Corps, Ecology and the HCCC, in consultation with the IRT, may negotiate alternative site protection measures so long as the alternate measures are consistent with the federal rule and reviewed and approved by the Corps and Ecology following consultation with the IRT.

P.1. Mitigation Site Protection

The federal rule (33 CFR 332.7) requires permanent site protection to ensure mitigation sites continue to provide ecological functions in perpetuity. The rule provides for flexibility in how sites are protected. All site protection instruments must be approved by the Corps and Ecology following consultation with the IRT.

Each mitigation site in the HCCC ILF Program will have the following protections:

- Conservation easements or restrictive covenants on title which clearly enumerate permitted and prohibited uses, or an integrated natural resource management plan authorized for this Program by the Corps and Ecology.
- The Corps, Ecology, and HCCC will be named as beneficiaries, as deemed appropriate and necessary by those entities;
- Monitoring and enforcing terms of the site protection instruments; and
- Periodic access, monitoring and maintenance reports for each site.

Long term stewardship will be funded through an account established for each service area expressly and solely for long-term maintenance and monitoring. This account, called the Long-Term Management Account, will be a sub-fund within the HCCC ILF Program Account (Appendix F).

HCCC will include a section on permanent site protection in the Mitigation Plan for each site, and incorporate – by reference – the site protection instruments into the Mitigation Plan.

The approved long-term steward will enforce the terms of site protection instruments by periodically monitoring sites for compliance and requiring corrective measures as necessary to ensure the site continues to provide ecological functions according to the mitigation and long term management plans for the site. The monitoring will occur at regular intervals beginning at the end of the performance period identified in the Mitigation Plan (i.e., when all credits from a mitigation project are released, and the site transfers into long-term management phase). The long-term steward will prepare and submit maintenance and monitoring reports to HCCC and the Corps and Ecology for each mitigation site according to the approved schedule.

If compliance monitoring identifies conditions at a mitigation site which are not allowed under the terms of the site protection instruments, the steward will report these infractions to the HCCC, the Corps and Ecology, and funds from the Long-term Management Account will be applied to return the site to compliance. If funds available are insufficient, the Corps and Ecology may direct use of Financial Assurances or other HCCC ILF Program accounts pursuant to Article III.E of the Basic Agreement and Appendix R.

P.2. Site Protection Instruments

HCCC will record site protection instruments on title for all parcels – or portions of parcels – used as mitigation receiving sites, with the possible exception of public lands managed under an existing Integrated Natural Resource Management Plan approved by the Corps and Ecology in consultation with the IRT. These site protection instruments will clearly state:

- A statement of intent for the site to remain ecologically intact such that site continues to provide ecological functions provided by the mitigation project;
- A requirement to notify the Corps, Ecology, HCCC and/or other designated state or federal agency at least 60 days prior to transfer of title;
- Clear listing of compatible/permitted uses;
- Clear listing of incompatible/prohibited uses;
- Other restrictions as required/approved by the Corps and Ecology.

Language will vary from site to site depending on site-specific conditions. Conservation easement and restrictive covenant example language or templates have been developed with cooperating partners and are available upon request.

Authority for monitoring site protection instruments during the long-term management phase will be provided until the Sponsor and Corps and Ecology in consultation with the

IRT agree to close a site pursuant to closure provisions in the Basic Agreement Article IV.V.

P.3. Failure to Meet Site Protection Instrument Conditions

In cases where a landowner has intentionally or unintentionally failed to abide by the terms of the site protection instruments resulting in compromised functions of the applied mitigation, the Sponsor, instrument beneficiaries or holders, and/or the Corps and Ecology may take any or all of the following actions:

- require the landowner to pay for restoration and/or enhancement necessary to return the site to conditions that meet the original mitigation project performance requirements and the terms of the site protection instrument, and/or
- file a civil suit against the landowner for failure to meet the terms of the site protection instrument.

APPENDIX Q IMPLEMENTATION OF APPROVED PLANS

Once the Corps and Ecology, in consultation with the IRT, has approved a proposed Mitigation Plan and credit release schedule, the HCCC will initiate implementation of the mitigation project (Appendix K). In some instances, project work may be bid to private contractors, in which case the bidding process would occur in accordance with the HCCC ILF contracting rules. The design team will oversee contract development and perform construction management and oversight. The construction process will include routine inspections, special inspections, pre-construction site review meetings, post-construction meetings and compliance reporting, if necessary.

Regardless of what entity performs the construction of the project, construction will follow construction plans contained in the Corps and Ecology-approved Mitigation Plans, as well as any modifications as required through adaptive management plans (Appendix O).

APPENDIX R FINANCIAL ASSURANCES

The federal rule requires in-lieu fee program sponsors (e.g. HCCC) to provide financial assurances "sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards." [33 CFR 332.4(c)(13)]

When an applicant buys mitigation credits from the HCCC ILF Program to meet a mitigation need for a permitted project, full responsibility for fulfilling the mitigation obligation is transferred from the applicant to the HCCC. The HCCC recognizes and fully accepts responsibility for meeting these mitigation obligations. To ensure adequate funding to meet mitigation obligations associated with any given permitted impact, there are several safeguards "built in" to the HCCC ILF Program to ensure the Program has adequate funds, including:

- Credit prices are based on actual project costs and adhere to full-cost accounting requirements in the federal rule (33 CFR 332.8(o)(5).
- Twenty-two percent of the modeled construction costs of each individual mitigation project will be shifted to a contingency fund for the service area in which the impact project occurs, and will be tracked on a project-by-project basis.
- Inclusion of a land fee in addition to credit fees.
- Allocation of interest from the HCCC ILF Program fund to the contingency accounts and long term management accounts for each Service Area (Appendix F).
- The HCCC will use any available discretionary funds (i.e. not contractually obligated) in its non-ILF accounts to address outstanding mitigation obligations. In the event these discretionary funds are insufficient to cover mitigation obligations, the HCCC Program Manager will brief the HCCC member governments and request, in good faith, input, in-kind support or financial support to meet outstanding mitigation obligations (Exhibit 11).

Given these assurances incorporated into design of the HCCC ILF Program, the Corps and Ecology do not require additional financial assurances at this time. The Corps and Ecology retain the right to reassess the need for additional financial assurances.

R.1. Direction of Funds/ Use of Financial Assurances

If the Corps and Ecology choose to direct HCCC ILF Program account funds in cases of site default, service area default, or Program default, options available to the Corps and Ecology shall include, but not be limited to:

- Directing the HCCC to spend funds at an alternative site or sites to secure necessary credits;
- Directing the HCCC to provide funds to a third party to bring a mitigation project into compliance; or
- Directing the HCCC to secure credits from another third party mitigation provider.

The District Engineer shall direct the use of funds through the issuance of a signed Corrective Action Directive Letter to the Sponsor. The letter will specify what financial and responsive action the Sponsor must take. The letter will also specify a timeframe in which the Sponsor must complete the actions. The Sponsor's noncompliance with the letter may result in HCCC ILF Program closure and legal action.

If the Corps and Ecology direct the HCCC to spend funds from the Program Account, The HCCC shall spend funds in the following order until sufficient funds are provided:

- Funds remaining in any Mitigation Project(s) Accounts associated with mitigation projects found to be in default. (In cases where a mitigation site fails early in its establishment phase, project funds may remain (Appendix F).
- Financial Assurances (see Basic Agreement Article III.F.). Utilization of Financial Assurances shall be appropriate to the phase of the project. For example, for projects in the establishment phase, the Contingency Account funds should be accessed first, and for projects in the Long-term Management phase, funds from the Long Term Management Account should be accessed first (Appendix F).
- Service Area Land Fees. Use of land fees used to compensate for service area default shall be limited to those land fees associated with Impact Project Mitigation Fees used to implement the Mitigation Project(s) found to be in default and use of Land Fees shall be in accordance with Basic Agreement Article III.D. (see Basic Agreement Article III.C.1. and Appendix F).

If the Sponsor has outstanding mitigation obligations at the time of default or closure, which it is unable to fulfill, the Corps and Ecology, in consultation with the IRT, may direct the Sponsor to use remaining funds to secure credits from a third party source of mitigation (see Basic Agreement Article III.E.). Examples of sources of third party include another in-lieu fee program, mitigation bank, or another entity such as a governmental or non-profit natural resource management entity willing to undertake the mitigation activities.

Remaining funds should be used, to the maximum extent practicable, to provide compensation for the amount and type of aquatic resource for which the fees were collected. The Corps itself cannot accept directly, retain, or draw upon such funds.

APPENDIX S NONCOMPLIANCE, FORCE MAJEURE, AND PROGRAM CLOSURE

This section identifies the ways in which the HCCC ILF Program may be in noncompliance under the terms of the Program instrument and the corrective measures available to the HCCC, the Corps and/or Ecology if the HCCC ILF Program is found to be in noncompliance.

Noncompliance may occur at individual sites, within a single AMU or service area or at the HCCC ILF Program scale. Corrective measures available to the Corps and Ecology should be commensurate with the category of noncompliance and the scale at which the noncompliance occurs. Such measures will ensure that mitigation fees collected from project applicants ultimately result in sufficient compensatory mitigation to offset the original impacts. Outlined below are the categories of noncompliance, the characteristics of each category of noncompliance, and the corrective measures that are available for each category of noncompliance.

This section also addresses failures or underperformance at sites arising out of force majeure events or other conditions beyond the HCCC's reasonable control.

Finally, this section contains HCCC ILF Program closure provisions.

S.1. Site Noncompliance

Site noncompliance may occur if the HCCC ILF Program does not adhere to the terms of an Corps and Ecology-approved Mitigation Plan developed for a mitigation site (Appendix K). For example a site may be found to be in noncompliance if the HCCC fails to implement a project element called for in the Mitigation Plan, or if establishment phase monitoring (Appendix N) reveals that a project is failing to meet performance standards outlined in the Mitigation Plan. There are several potential phases of site noncompliance, each with associated corrective measures available to the HCCC ILF Program and/or the Corps and Ecology in consultation with the IRT. The potential phases of site noncompliance include (1) site performance failure, (2) site delinquency, and (3) site default.

Site noncompliance may apply to sites that are still in the establishment phase (i.e. before all credits from a mitigation site have been released) and to sites that have reached the end of their establishment phase (i.e. sites at which all credits have been released).

S.1.1 Site Performance Failure

Site performance failure may occur if, for any reason, a mitigation project fails to comply with terms of an approved Mitigation Plan (Appendix K), including failure to meet performance standards after a project is constructed. If establishment phase site

monitoring reveals a site performance failure, the HCCC, Corps and Ecology, in consultation with the IRT will first attempt to address the failure through adaptive management (Appendix O). If adaptive management efforts are successful, no further responses to site performance failure will be necessary.

S.1.2 Site Delinquency

If the adaptive management measures are not undertaken by the HCCC, or if the HCCC fails to adequately implement adaptive management measures, the Corps and Ecology may notify the HCCC of site delinquency by way of a letter sent to the HCCC ILF Program Manager. This letter will identify the areas of site delinquency and request that the HCCC propose corrective measures or a process for determining appropriate corrective measures. The HCCC shall respond in writing to the Corps and Ecology within 60 days from the receipt of the letter to propose corrective measures.

As soon as practicable after receipt of the HCCC's proposal for corrective measures, the Corps and Ecology shall consult with the IRT on whether or not to authorize the HCCC to implement the proposed corrective measures. By way of a second letter to the HCCC ILF Program Manager, the Corps and Ecology shall authorize implementation of the proposed corrective measures or request revisions; the second letter shall include a timeline for implementation or submittal of revisions, as well as provisions for subsequent review and approval of corrective measures, if necessary.

If corrective measures are implemented successfully, no further responses to site delinquency will be necessary.

S.1.3 Site Default

The Corps and/or Ecology may determine the HCCC ILF Program to be in site default if (1) corrective measures undertaken by the HCCC after notification of site delinquency are unsuccessful, or (2) if the HCCC fails to comply with the terms of the determination and/or implementation of corrective actions specified in the site delinquency letter(s). The HCCC is to be notified of site default by way of a letter from the Corps and/or Ecology. In cases of site default, actions available to the Corps and/or Ecology shall include but are not limited to:

- Decreasing the amount of available credits generated by a site;
- Directing the HCCC to utilize financial assurances to correct identified deficiencies (i.e. access contingency funds) (see Basic Agreement Article III.E. and Appendix R);
- Directing the HCCC to use the HCCC ILF Program account funds to secure necessary mitigation credits (see Basic Agreement Article III.D. and Section 4.0, below); or
- Referring the noncompliance with the terms of this instrument to the Department of Justice.

(Compensatory Mitigation Rule (2008) Preamble p. 19638 and 33 CFR §§ 332.6(c)(2), 332.8(i)(2), 332.8(o)(10).

S.2. Service Area and AMU Noncompliance

If the HCCC fails to abide by the terms of this Instrument in ways that fundamentally prevent the overall successful operation of the HCCC ILF Program in a particular service area or AMU, the Program may be found to be in service area or AMU noncompliance. Service area or AMU noncompliance may have two phases: service area or AMU delinquency and service area or AMU default.

The HCCC ILF Program may be found to be in service area or AMU noncompliance if any of the following occur:

- Conditions at more than one site deteriorate to an extent where the sites are no longer providing ecological functions according to long-term projections in the sites' Mitigation Plans. Service Area or AMU noncompliance provisions shall apply to sites that are in their Long-Term Management phase; sites that fail during their establishment phase shall be subject to site noncompliance provisions above (Section 1.0). Reasons for deterioration at multiple sites may include, but are not limited to the HCCC's failure to properly manage the sites, or other acts or omissions of the HCCC with regard to obligations contained in this Instrument or approved Mitigation Plans applicable to the service area or AMU that do not qualify under the *force majeure* provisions;
- The HCCC ILF Program is improperly accounting for and reporting debits and credits in a service area or AMU;
- The HCCC ILF Program is improperly accounting for and reporting fees collected and expenditures within a service area or AMU; or
- The HCCC ILF Program has improperly managed fees in a service area or AMU resulting in insufficient funds to pay for long-term management activities as required by the Corps and Ecology-approved Mitigation Plan.

S.2.1 Service Area or AMU Delinquency

Should the HCCC ILF Program be found to be in service area or AMU noncompliance, the Corps and Ecology shall notify the HCCC of such noncompliance by way of a letter that informs the HCCC of the service area or AMU delinquency. The letter will identify the reasons for service area or AMU delinquency and request that the HCCC propose corrective measures or a process for determining appropriate corrective measures. The letter shall provide the HCCC with no more than 60 days from the date of receipt of the letter to recommend corrective measures to the Corps and Ecology.

As soon as practicable after receipt of the HCCC's proposal for corrective measures to correct causes of service area or AMU delinquency, the IRT shall advise the Corps and

Ecology whether or not to authorize the HCCC to implement the proposed corrective measures. By way of a second letter to HCCC, the Corps and Ecology shall authorize implementation of the proposed corrective measures or request revisions; the second letter shall include a timeline for implementation or submittal of revisions, as well as provisions for subsequent review and approval of corrective measures, if necessary.

If corrective measures are implemented successfully, no further responses to service area or AMU delinquency will be necessary.

S.2.2 Service Area or AMU Default

The Corps and/or Ecology may determine the HCCC ILF Program to be in service area or AMU default if (1) corrective measures undertaken by the HCCC after receipt of notification of service area or AMU delinquency are unsuccessful, or (2) if the HCCC fails to begin implementation of corrective actions within the timeline specified in the service area or AMU delinquency letter.

In cases of service area or AMU default, actions available to the Corps and/or Ecology shall include but not be limited to:

- Suspending credit sales in the service area or AMU;
- Decreasing available credits;
- Directing the HCCC to utilize financial assurances to correct identified deficiencies (i.e. access contingency funds) (see Basic Agreement Article III.E. and Appendix R);
- Directing the HCCC to use the in-lieu fee program account funds to secure necessary mitigation credits (see Basic Agreement Article III.D. and Section 4.0, below); or
- Refer the noncompliance with the terms of this instrument to the Department of Justice.

(Compensatory Mitigation Rule (2008) Preamble p. 19638 and 33 CFR §§ 332.6(c)(2), 332.8(i)(2), 332.8(o)(10). 332.8(n)(5). (See Basic Agreement Article IV.R. and Appendix F).

S.3. Program Noncompliance

Program noncompliance may result from administrative failures relating to account management, failure to monitor and report, etc. Specifically, HCCC ILF Program noncompliance may result from:

- Failure to establish and maintain an annual ledger report and individual ledgers for each project in accordance with the provisions in Appendix F, Appendix G, and 33 CFR 332.8(q));
- Failure to report approved credit transactions;

- Failure to submit monitoring reports in a timely manner;
- Failure to properly track and manage funds, maintain credit ledgers or provide timely reports; or
- Failure to otherwise comply with the terms of this instrument.

Should the Corps and Ecology determine the HCCC ILF Program to be in noncompliance, there are potentially two phases of such noncompliance: (1) Program delinquency and (2) Program default.

S.3.1 Program Delinquency

The HCCC ILF Program can be found delinquent in cases where the HCCC fails to comply with the terms of this instrument in ways both that do not qualify as site noncompliance or service area or AMU noncompliance and that fundamentally prevent the overall successful operation of the Program. Notification of program delinquency shall be by way of letter from the Corps and/or Ecology to the HCCC identifying the areas of delinquency. The letter will request that the HCCC propose corrective measures or a process for determining appropriate corrective measures. The letter shall provide the HCCC with no more than 60 days from the date of receipt of the letter to recommend corrective measures to the Corps and Ecology.

As soon as practicable after receipt of the HCCC's proposal for corrective measures to address HCCC ILF Program delinquency, the Corps and Ecology shall consult with the IRT on whether or not to authorize the HCCC to implement the proposed corrective measures. By way of a second letter to the HCCC, the Corps and Ecology shall authorize implementation of the proposed corrective measures or request revisions; the second letter shall include a timeline for implementation or submittal of revisions, as well as provisions for subsequent review and approval of corrective measures, if necessary.

If corrective measures are implemented successfully, no further responses to HCCC ILF Program delinquency will be necessary.

S.3.2 Program Default

If issues leading to HCCC ILF Program delinquency remain unresolved by the deadline given in the Program delinquency letter, the Corps and/or Ecology may determine the HCCC ILF Program to be in Program default.

In case of HCCC ILF Program default, remedies available to the Corps and/or Ecology include:

- Suspending credit sales in one or more service areas;
- Decreasing available credits in one or more service areas;

- Directing the HCCC to utilize Financial Assurances to correct identified deficiencies (i.e. access contingency funds. see Basic Agreement Article III.E. and Appendix R);
- Directing the HCCC to use the in-lieu fee program account funds to secure necessary mitigation credits (see Basic Agreement Article III.D. and Section 4.0, below);
- Terminating the HCCC ILF Program instrument (see Basic Agreement Article IV.O. and section 6.0), or
- Referring the non-compliance with the terms of this instrument to the Department of Justice.

(Compensatory Mitigation Rule (2008) Preamble p. 19638 and 33 CFR §§ 332.6(c)(2), 332.8(i)(2), 332.8(o)(10).

S.4. Force Majeure

Any delay or failure of the HCCC to comply with the terms of this instrument shall not constitute a noncompliance if and to the extent that such delay or failure is primarily caused by any force majeure or other conditions beyond the HCCC's reasonable control and the failure significantly adversely affects the HCCC's ability to perform its obligations under this instrument. Additional details about force majeure events are included in Article IV.P. of the Basic Agreement portion of this instrument.

S.5. Closure Provisions

Closure means termination of all HCCC ILF Program operations. If the HCCC ILF Program is closed, the agreed upon terms reflected by certification of this instrument will be terminated, and the HCCC ILF Program will no longer have the right to sell mitigation credits under the terms of this instrument. In the event of closure, the HCCC ILF Program must either fulfill remaining mitigation obligations, or transfer all remaining mitigation obligations and site management responsibilities to an appropriate third party. This third party must be approved by the Corps and Ecology in consultation with the IRT.

Closure provisions are described in Article IV.V through IV.Z. of the Basic Agreement.

APPENDIX T HCCC ILF PROGRAM INTERACTION WITH OTHER JURISDICTIONS

At times it may be preferable to work in partnership with a Hood Canal jurisdiction to implement the best mitigation; the ability to implement mitigation according to a compensation planning framework, irrespective of political boundaries, is likely to be a key component of the HCCC ILF Program in the future. However, due to the complexities of coordinating policies, code authority, and ecological management goals among multiple jurisdictions, establishing procedures and processes for agreements with county and tribal governments and local municipalities will occur after the HCCC ILF Program is certified by the Corps and Ecology. Following initial HCCC ILF Program certification, the Program, if necessary, will propose a set of guidelines and standards for working across jurisdictional lines, and will amend this instrument accordingly in consultation with the Corps and Ecology, in consultation with the IRT. Specific arrangements for operation of the HCCC ILF Program across jurisdictional lines would need to be enumerated in Inter-Local Agreements (ILAs) between the HCCC and other jurisdictions. These ILAs will be negotiated by the HCCC and the other jurisdiction(s) on a case-by-case basis, and made available to the IRT for review and comment. Prior to initiating the process of developing an ILA, the HCCC and the local jurisdiction will estimate the time and cost associated with developing the ILA. The source of funding to cover costs associated with developing the ILA will be determined on a case-by-case basis, depending upon whether the ILA is a necessary instrument to implement the HCCC ILF Program. If so, the HCCC must obtain approval from the Corps and Ecology in consultation with the IRT prior to spending any funds from the HCCC ILF Program account for development of the ILA, with the exception of the 75% of program administrative funds released following the Statement of Sale.

Furthermore, it may be necessary to adjust the base credit price to cover costs for additional administrative duties that may result from working with another jurisdiction (e.g. the need to develop ILAs and meet the specific terms within the ILA).

The choice (or need) to mitigate an impact across jurisdictional lines will be approached on a case-by-case basis to determine feasibility and suitability, and all such agreements between the HCCC and the jurisdictions will be subject to approval through the ILF Program and the regulating agencies.

APPENDIX U TRACKING PROGRAM PERFORMANCE

Tracking performance of mitigation projects is a requirement of the federal rule and as such, guidelines for performance standards and project-scale monitoring plans are outlined in detail in Appendices M and N, respectively.

Tracking performance of the HCCC ILF Program (in addition to tracking performance of mitigation sites) will also be important to inform adaptive management of the Program in order to enable implementation of the best possible mitigation.

There are five simple questions related to tracking HCCC ILF Program performance:

- Is the HCCC ILF Program meeting its goals from Appendix A? Which mitigation objectives are being addressed?
- Are mitigation fees (i.e. credit fees) collected from applicants covering operating costs of the HCCC ILF Program?
- Is the HCCC ILF Program meeting regulatory requirements outlined in the federal rule in a timely and efficient manner? (e.g. is implementation of mitigation projects routinely occurring within three full growing seasons from the time of credit sale?)
- How is the HCCC ILF Program affecting permit processing times relative to historical norms?
- In a given geographic area (e.g. drift cell, AMU, sub-basin, service area) is the overall ecological function enhanced or degraded considering the balance of allowed impacts and resulting mitigation projects implemented by the HCCC ILF Program? Is the Program attaining no net loss of functions and values?

To answer these questions, indicators for tracking HCCC ILF Program performance will relate to fiscal self-sustainability, regulatory "performance" of the Program and the success of the Program in maintaining or improving ecological conditions (i.e. aquatic resource functions and values) in service areas where impacts have been allowed and mitigation projects have been implemented to compensate for the impacts.

Specific types of data will include, but not be limited to:

- Contingency funds in the HCCC ILF Program account versus contingency funds spent on projects;
- Predicted monitoring costs versus actual costs;
- Timeframe for implementation of mitigation projects (from time of credit sale);
- Number and type of regulatory infractions/corrective actions;
- Volume of Impacts (e.g. debits, acreage, plants, lineal feet, etc.) at appropriate scales (e.g. drift cell, AMU, sub-basin, watershed, service area);

- Volume of Mitigation (credits, acreage, plants, lineal feet, etc.) at appropriate scales (e.g. drift cell, AMU, sub-basin, watershed, service area);
- Predicted credits (e.g. from Mitigation Plans) versus actual credits determined at monitoring plan milestones;
- Percentage of in-kind mitigation (e.g. same HGM class) versus percentage of out-of-kind mitigation; and
- Location of mitigation projects (e.g. average distance from impact, percentage of mitigation occurring in same drift cell, AMU, freshwater sub-basin, and/or service area as impacts).

The HCCC ILF Program will track these data through the course of the Program and analyze and report results on a biennial basis in a *HCCC ILF Program Performance Report,* which will be submitted to the Corps and Ecology. This report shall examine the overall effectiveness of the HCCC ILF Program and if necessary, suggest revisions to improve the Program. However, the HCCC shall retain the right to make Corps and Ecology-approved HCCC ILF Program revisions or amendments to the instrument at any time, and these changes need not coincide with an *HCCC ILF Program Performance Report.* This report will also be shared with permitting agencies to enable a more comprehensive review of all mitigation activities (i.e. in-lieu fee mitigation through HCCC ILF Program *and* permittee-responsible mitigation).

Upon receipt of the *HCCC ILF Program Performance Report*, the Sponsor, Corps, and Ecology will hold an IRT meeting to review and discuss its findings and implications. Any member of the IRT may recommend changes in the Instrument to the Sponsor, Corps, and Ecology. Additionally, any member of the IRT may recommend changes to the Instrument at any time, and these changes need not coincide with performance reporting.

While the HCCC ILF Program can request to decrease the frequency of publishing the *HCCC ILF Program Performance Report,* the Corps and Ecology, in consultation with the IRT, retain the right to approve or deny that request.

APPENDIX V PROGRAM AND SCIENTIFIC GUIDANCE

V.1. Program Guidance

Policy guidance for the HCCC ILF Program regarding the enhancement, restoration protection and management of aquatic resources includes.

Washington Department of Ecology (WSDOE), US Army Corps of Engineers Seattle District and Environmental Protection Agency Region 10. March 2006. Guidance on Wetland Mitigation in Washington State. Part 1. Agency Policies and Guidance. Report Pub. No. 06-06-011A.

Washington State Water Pollution Control Act (Chapter 90.48 RCW)

Washington State Hydraulic Code - Construction Projects in State Waters (Chapter 77.55 RCW)

Washington State Shoreline Management Act (Chapter 90.58 RCW, Chapter 173-20 WAC); Washington State Aquatic Resources Mitigation Act (Chapter 90.74 RCW); Washington State Aquatic Lands (Chapters 79.105 - 79.140 RCW).

State of Washington Wetlands Mitigation Banking Statute (Chapter 90.84 RCW)

Washington State's Draft Rule on Wetland Mitigation Banking (Chapter 173-700 WAC)

Washington State Salmon Recovery Act (Chapter 77.85 RCW)

Washington State Environmental Policy Act (Chapter 43.21C RCW and Chapter 197-11 WAC)

Growth Management Act (Chapter 36.70A RCW) and Critical Areas Regulations Best Available Sciences Compliance (Chapter 365-195 WAC)

Washington State Forest Practices Act (Chapter 76.09 RCW)

Washington State Alternative Mitigation Policy, developed by Washington State Department of Ecology

Clean Water Act (33 USC 1251 et seq.)

Regulatory Program of the U.S. Army Corps of Engineers (33 CFR 320-332)

U. S. Army Corps of Engineers Regulatory Guidance Letter No. 02-2

Guidelines for the Specification of Disposal Sites for Dredged and Fill Material (40 CFR 230)

Memorandum of Agreement Between the Environmental protection Agency and the Department of the Army Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines (February 6, 1990)

Federal Guidance for the Establishment, Use, and Operation of Mitigation Banks (60 FR 58605-58614, November 28, 1995)

Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (40 CFR 1500-1508)

Executive Order No. 11990 (Protection of Wetlands)

Executive Order No. 11988 (Floodplains Management)

Endangered Species Act (16 USC 1531 et seq.)

Fish and Wildlife Coordination Act (16 USC 661 et seq.)

Fish and Wildlife Service Mitigation Policy (46 FR 7644-7663, 1981)

Magnuson-Stevens Act (16 USC 1801 et seq.)

National Environmental Policy Act (42 USC 4321 et seq.)

National Historic Preservation Act (16 USC 470)

Hood Canal Coordinating Council Integrated Watershed Management Plan (see www.hccc.wa.gov)

V.2. Scientific and Technical Basis

In general, the scientific, technical, procedural and policy underpinnings of the HCCC ILF Program are based on successful mitigation banking models and other best practices for mitigation. In addition to the collective experience of the highly qualified staff from many agencies and organizations, many resources were used in the development of the HCCC ILF Program, including:

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Butler, R.W. 1995. The patient predator: Foraging and population ecology of the great blue heron, Ardea herodias, in British Columbia. Occasional Papers for Canadian Wildlife Service No. 86.

Collins, Brian, 2000. Mid-19th century stream channels and wetlands interpreted from archival sources for three north Puget Sound estuaries. Department of Geological Sciences, University of Washington, Seattle, WA. 65 pp.

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APPENDIX W EXHIBITS

LIST OF EXHIBITS

APPENDIX X MITIGATION PLANS

As mitigation plans are developed under the HCCC ILF Program, each plan will be appended to this instrument in this appendix.