

Thurston County In-Lieu Prospectus

Thurston County Water Resources



March 2013

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Table of Contents

1. Introduction	1
2. Need for Program	1
3. Objectives	3
4. Definitions	3
5. Program Establishment and Operation	7
5.1 Overview	7
5.2 Program Scope	8
5.3 Regulatory Authorities	8
5.4 Mitigation Sequencing and Participating Agencies	10
5.5 Sponsor Qualifications	12
5.6 Interagency Review Team	13
6. Credit and Debit Procedure	13
6.1 Method for Determining Debits and Credits	13
6.2 Advance credits	15
6.3 Pre-capitalization	16
7. Program Account	16
7.1 Mitigation Fees	16
7.2 Calculation of Mitigation Fees	17
7.3 Allocation and Use of Mitigation Fees	18
8.0 Ledger	19
8.1 Mitigation Fee Ledger	19
8.2 Credit Ledger	20
8.2.1 Balancing Credits by Functional Type	20
8.2.2 Wetland Credit/Debit Ledger	21
9.0 Reporting	21
Compensation Planning Framework	23
10.0 Descriptions and Assessments of Service Areas	25
10.1 The Deschutes Watershed – WRIA 13	25
10.1.1 Historic Conditions	26
10.1.2 Current Conditions	26
10.1.3 Threats	27
10.1.4 Aquatic Resource Goals and Objectives	28
10.2 The Nisqually River Watershed – WRIA 11	28
10.2.1 Historic Conditions	29
10.2.2 Current Conditions	30
10.2.3 Threats	31
10.2.4 Aquatic Resource Goals and Objectives	32
11. Site Selection Process	32
11.1 IRT Approval	36
12. Stakeholder Involvement Strategy	36
13. Preservation Strategy	36
14. Site Acquisition and Protection	37
15. Mitigation Project Implementation	38
15.1 Credit Fulfillment Process	38
15.2 Mitigation Plan	40
15.2 Fulfillment of Advance Credits	42

15.3 Credit Release.....	42
15.4 Project Implementation.....	44
15.5 Monitoring and Maintenance	44
15.6 Adaptive Management and Contingency Planning	45
16. Long Term Management/Site Stewardship	45
17. How Mitigation Relates to Restoration Projects	46
18. Evaluation and Reporting	47
References	48
List of Acronyms	51

List of Figures

Figure 1. Vicinity Map showing Thurston County and Pilot Watersheds.....	52
Figure 2. Thurston County Pilot Watersheds	53
Figure 3. Thurston County Sub-Watersheds.....	54
Figure 4. Nisqually Watershed - WRIA 11.....	55
Figure 5. Deschutes Watershed - WRIA 13	56

1. Introduction

This prospectus provides a summary of the In-lieu-fee Mitigation (ILF) Program for Thurston County. This ILF Program was originally proposed to be a pilot for the Puget Sound Partnership (PSP). PSP has reconsidered its role in sponsoring ILF programs in Puget Sound. PSP decided that sponsorship of ILF programs is an implementation role that would be better led by local governments or non-profit organizations. Thurston County Water Resource Program (TCWRP) has assumed the role of ILF sponsor for the Thurston County Program.

PSP continues to support the development of ILF Programs as an important tool to mitigate for impacts to aquatic and other resources. Under Thurston County's program the focus will be on aquatic resources. The development and implementation of ILF Programs are identified as a near-term action item (E.1.6 NTA 1) in the 2012/2013 Action Agenda for Puget Sound.

The following prospectus outlines the circumstances and manner in which the Thurston County ILF Program will serve to satisfy compensatory mitigation requirements of federal, state, and local regulatory programs in select watersheds of Thurston County.

2. Need for Program

Studies of compensatory wetland mitigation in Washington State and across the country generally demonstrate that less than 50 percent of mitigation sites are successful ecologically or in achieving their performance standards and intended goals (Johnson et al., 2002; Mockler et al., 1998; National Research Council, 2001; Sheldon et al., 2005). Furthermore, they fail to effectively replace lost or damaged resources, habitats, and functions (National Research Council, 2001; Sheldon et al., 2005). These studies identify several common flaws, including inappropriate site selection, project design without a landscape or watershed context, poor planning and implementation of projects, lack of oversight, maintenance, and follow-through, and insufficient long-term management and monitoring. In addition, most mitigation projects implemented by permittees are small, less than one acre in size. The environmental benefits of these piecemeal, "postage stamp" projects, even when successful, are often limited in scope. This is because mitigation typically occurs "on the same site where impacts occur ("on-site" mitigation) regardless of whether the mitigation would be successful and sustainable over time or contribute in a meaningful way towards the overall health of watershed processes" (ESA and Ross & Associates Environmental Consulting, Ltd. 2008).

Federal regulations have identified in-lieu fee programs as one potential option to correct some of the shortcomings in existing mitigation techniques (33 CFR Part 332 and 40 CFR

Thurston County In-Lieu Fee Prospectus

Part 230). In-lieu fee programs consolidate compensatory mitigation projects and resources to target more ecologically significant functions, provide financial planning, provide scientific expertise, reduce temporal loss of function, and reduce uncertainty about project success.

The Mitigation That Works Forum also supports development of in-lieu fee programs. The Forum was convened by the Department of Ecology, and included 22-members representing state and federal agencies with mitigation responsibilities, local governments, ports, business, environmental, and land use/conservation interests. The Forum endorsed watershed-based mitigation, such as ILF, which directs mitigation dollars to the places in a watershed that are most likely to be successful and meaningful (ESA and Ross & Associates Environmental Consulting, Ltd. 2008).

The population of the Puget Sound region is expected to grow substantially in coming years. The resulting development activity associated with this growth will require more effective mitigation. Improving mitigation success rates will help achieve regional restoration goals, by preventing a decline in baseline conditions. The Puget Sound Partnership's Action Agenda describes the need to improve the quality of Puget Sound and supports the creation of in-lieu-fee programs around Puget Sound.

Thurston County, including its cities, is one of the fastest growing counties in the State and has experienced considerable population growth in the past decade. Between 2000 and 2010 Thurston County's population increased by 22% to over 252,000 (US Census Bureau, 2011). Increasing population inevitably leads to an increase in new development. Housing units increased 25% in the same period to an estimated 108,182. Housing starts averages 2,037 for the decade ending in 2010 with over 1,400 housing starts in 2010 (TRPC).

New development either results in the direct loss of natural resource acreage and function, or it indirectly impairs processes and function due to urbanization and increases in impervious surfaces. The effects of expanding imperviousness include: increased flooding, erosion, elevated water temperatures, and turbidity, and low dissolved oxygen. All of which adversely affect fish and wildlife habitat. Restoration efforts in key locations could provide significant improvements to hydrologic processes as well as benefits to water quality.

Though development pressures are affecting resource functions throughout the Puget Sound region, the Thurston County ILF Program aims to provide an alternative to permittee-responsible mitigation within select watersheds of Thurston County where currently no alternative exists.

3. Objectives

- A. Provide high quality mitigation for unavoidable impacts to aquatic resources at development sites.
- B. Develop an ecologically-based site selection process to identify the most appropriate mitigation options that result in greater ecological benefit to a sub-basin, basin, or watershed than could be achieved through permittee-responsible mitigation.
- C. Utilize scale efficiencies by combining the unavoidable impacts from individual smaller projects within a service area into mitigation at larger sites.
- D. More efficiently meet regulatory requirements by streamlining the compensatory mitigation process.
- E. Select the best mitigation-receiving sites for the program through a rigorous analysis by a group of professional resource managers and local experts, drawing from personal knowledge and best available science and analyses for a particular basin or watershed.
- F. Develop a self-sustaining program to complete mitigation projects and address “no net loss” of functions on a watershed scale.
- G. Provide an alternative to permittee-responsible mitigation where currently no alternative exists.
- H. Provide an effective and transparent accounting structure for collecting in-lieu fees, disbursing project funds, and compliance reporting.
- I. Work in an efficient and transparent manner with the Interagency Review Team to implement mitigation projects and enact amendments to the program Instrument.
- J. Provide a functionally viable option to mitigate for small unavoidable impacts which may not be fully mitigated because the development may qualify for exemptions or Reasonable Use Exceptions under Thurston County Code (TCC).

4. Definitions

Terms used for in-lieu fee programs may have different meanings than their colloquial usage would suggest. There are also differences in the legal definitions used by Thurston County and the federal agencies. For all terms not described below, the definitions used by the Regulatory Program of the U.S. Army Corps of Engineers and U.S. Environmental

Thurston County In-Lieu Fee Prospectus

Protection Agency [33 CFR Parts 320-331; 40 CFR Part 230] are adopted by Thurston County for the ILF Program.

- A. *Applicant* means an entity seeking a permit for a project that will result in impacts to aquatic resources. Use of the term applicant indicates that a permit has not yet been issued.
- B. *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 resource functions is based on the resources restored, established, enhanced, or preserved (see Section 6). *Credits* may also be provided through preservation pursuant to 33 CFR 332.8(o)(6).
- C. *Credit Fees* are fees paid by a permittee to purchase TC ILF mitigation credits. Credit Fees are used to pay for all aspects of implementing and managing mitigation projects, as well as Long Term Management duties.
- D. *Debit* means a unit of measure (e.g., a functional or areal measure or other suitable metric) representing the loss of aquatic resource functions at an impact or project site. The measure of aquatic resource functions is based on the resources impacted by the authorized activity (see Section 6).
- E. *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. [33 CFR 332.2]
- F. *Establishment* (also *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. [33 CFR 332.2]
- G. *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*.
- H. *Credit/Debit Tool* is the abbreviated title for a functional mitigation assessment methodology that Ecology, with input from King County scientists and policy staff, completed. The full title for this document is *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington: Final Report*. This method is referred to in this instrument as the “Credit/Debit Tool” or as “the tool”. The purpose of the tool is to provide a predictable and reproducible method for assessing mitigation requirements at a given impact project based on losses of

Thurston County In-Lieu Fee Prospectus

wetland functions and values, and similarly, to assess lift in wetland functions and values resulting from a mitigation project. The tool comprises indicators to rate functions in a wetland unit related to habitat, hydrology, and water quality. The tool is not designed for use in aquatic areas. Many indicators used in the tool are the same as those used in the Wetland Rating System for Western Washington (Hruby 2006). The tool is designed for use at both impact sites (to assess functional loss, “debits”) and at mitigation sites (to assess functional lift, “credits”). The output of the tool (for both impact sites and mitigation projects) will serve as the basis for assigning debits and credits, but it will not be the only factor. Depending on site conditions and project variables, regulatory agencies can adjust the mitigation requirements related to an impact project so long as all regulatory agencies with authority approve of the modified requirements and rationale. Similarly, the mitigation credit earned at a proposed mitigation project may differ from the credit suggested by the tool so long as the program Sponsor provides adequate rationale for the modification and the IRT approves; in all cases, the IRT must approve the amount of mitigation credit to be earned and the “credit release schedule” (see Section 15.3) for each mitigation project. The tool is discussed in greater detail in Section 6 of this prospectus, and is available at:

<http://www.ecy.wa.gov/biblio/1006011.html>

- I. *Functional lift* (or simply “lift”) is the increase in aquatic resource functions provided by mitigation work and usually expressed in terms of credits.
- J. *Impracticable* means that site conditions or other constraints exist that would cause “extreme and unreasonable difficulty” in completing mitigation onsite (Black’s Law Dictionary, West Publishing Co., 1996)
- K. *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.
- L. *Mitigation Fees, or credit fees*, are fees paid by a permittee using the TC ILF Program to purchase mitigation credits when used to implement wetland mitigation projects.
- M. *Permittee* means an entity which has been issued a permit by one or more regulatory agencies.
- N. *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

Thurston County In-Lieu Fee Prospectus

functions [33 CFR 332.2]. Preservation may generate mitigation credit (see Section 14).

- O. *Receiving site*, or simply "mitigation site," refers to the area where the compensatory mitigation project will be constructed, monitored, maintained, managed, and permanently protected.
- P. *Regulating agencies* or "agencies with regulatory authority". For credit transactions through the PC ILF Program, each permitted impact and mitigation receiving project will require permits from one or more agencies (e.g. Corps, Ecology, WDFW, Thurston County). For all cases where mitigation will be required, Thurston County will have regulatory authority under the Critical Areas Ordinance (CAO) (Thurston County Code Title 24). In most cases involving wetland impacts, Ecology will also have authority as provided under RCW 90.48. This authority may extend to buffer impacts as well. In many cases federal agencies will also have regulatory authority (e.g. the Corps, EPA, USFWS, NOAA, etc.). However, recent legal rulings have made determining federal jurisdiction over wetlands more difficult (e.g. *Rapanos v. United States* resulted in making determinations of Corps jurisdiction over wetlands more difficult). In cases where the Corps does have jurisdiction, addressing impacts to buffers and adequate buffer requirements on mitigation sites may be required to the extent specified in 33 CFR 332.3(i).
- Q. *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: reestablishment and rehabilitation. [33 CFR 332.2]
- R. *Sending sites* are areas where impacts to aquatic resource are incurred, often called the "impact site".
- S. *Wetlands*. The Thurston County CAO regulates wetlands in accordance with the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region, as amended, except for certain exempted wetlands as defined in Thurston County Code Section 24.30.015. . These wetlands include isolated wetlands that may not be regulated by the Corps and EPA.

Thurston County Code 24.03 defines *wetlands* as:

"Wetland" or "wetlands" means areas that are inundated or saturated by surface water or groundwater 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, and other areas meeting the definition of wetland under RCW 36.70A.030, as amended. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial

Thurston County In-Lieu Fee Prospectus

wetlands intentionally created from non-wetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from non-wetland areas in order to mitigate conversion of natural wetlands. Areas below the ordinary high water mark (OHWM) of a water body, including but not limited to marine waters, lakes, ponds, streams, and rivers, may also qualify as wetlands if they meet the criteria of the 1987 US Army Corps of Engineers Wetlands Delineation Manual and the 2008 Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region.

This ILF Prospectus incorporates all other terms as defined in 33 CFR 332.2.

5. Program Establishment and Operation

5.1 Overview

The Thurston County In-lieu-fee Program (Program) will serve as one of the preferred options available to county, state and federal permitting agencies when requiring permit applicants to provide mitigation for unavoidable impacts to wetland resources. Under the Program, public and private applicants for environmental permits within the defined service area will be encouraged to pay into the ILF fund, consistent with the approved ILF instrument for Thurston County, instead of doing permittee responsible mitigation or “their own” on-site mitigation actions. The amount of payment will be based on the extent of the unavoidable impact to wetland functions and values and the area of impact and monetized based on the full cost accounting as documented in the Program. Proof of payment to the Program will be required before permitted impacts can occur.

Payments into the ILF fund will be used to implement mitigation projects at prioritized locations within the service area. Mitigation projects must be located within the watershed where the impacts occur. Mitigation projects will be selected based on an analysis of their ability to compensate for impacts and provide ecological benefits. Some projects will be initiated in advance of payment. This will reduce the temporal loss of functions associated with ILF programs that typically have a time lag between the site development impact and the completion of compensatory mitigation.

The ILF program will be operated to ensure that unavoidable impacts are fully compensated and ecological benefits are maximized. Current federal, state, and local regulatory requirements to avoid and minimize impacts before allowing compensation remain unchanged. Mitigation-receiving sites will be designed and constructed to ensure success and managed in perpetuity to support ecological functions. Every dollar deposited into the fund will be tracked to ensure that the appropriate actions are funded. The

Thurston County In-Lieu Fee Prospectus

performance of the program will be monitored and reported. Failure to achieve benchmarks or performance measures will be reported and corrected or adaptively managed in coordination with the Corps and Ecology in consultation with the IRT.

5.2 Program Scope

This prospectus addresses in-lieu fee mitigation for freshwater wetlands and their buffers. However, agencies with regulatory authority may determine, on a case by case basis, ILF mitigation provides the most ecologically preferable option to compensate for unavoidable impacts to other aquatic resources.

In this prospectus, TCWRP proposes two initial service areas, also called watersheds. Each of the following proposed watersheds within Thurston County drain to Puget Sound.

(Figure 1):

- WRIA 13 – Deschutes
- WRIA 11 – Nisqually

TCWRP plans to have its ILF program approved and operating in the above initial watersheds of Thurston County. After demonstrating the success of mitigation-receiving sites in these initial watersheds, the sponsor will consider adding other watersheds within Thurston County to its ILF program, dependent on interest, support from state, federal & tribal agencies, resources and need.

As required under federal regulations, TCWRP could add additional watersheds through an amendment to the ILF program instrument. The amendment would include a compensation planning framework specific to each joining watershed. Any proposed amendments to the ILF program would go out for official public notice and comment period. Further, proposed amendments would need approval from the Corps and Ecology in consultation with the IRT. The IRT will likely consist of invited representatives from state, federal, local and tribal entities.

5.3 Regulatory Authorities

Thurston County Water Resources Program (TCWRP) seeks approval of the ILF program through the federal rules for Compensatory Mitigation, published in 2008 (33 CFR Part 332). If approved, the ILF program would become an additional option for permit applicants to provide compensatory mitigation. Specifically, the program allows applicants to pay a fee to the program sponsor in-lieu of completing their own compensatory mitigation projects. However, compensatory mitigation becomes an option only after higher priorities in the mitigation sequence, specifically avoidance and minimization, have been exhausted.

The establishment, use, operation, and maintenance of this ILF program will be carried out in accordance with all applicable authorities. The following list includes the most relevant authorities:

Thurston County In-Lieu Fee Prospectus

Federal

- Clean Water Act (33 USC §1251 et seq.)
- Rivers and Harbors Act of 1899 Section 9 and 10 (33 USC § 403)
- Regulatory Programs of the Corps of Engineers, Final Rule (33 CFR Parts 320-332)
- 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)
- U.S. Army Corps of Engineers Regulatory Guidance Letter 05-1, Guidance on Use of Financial Assurances, and Suggested Language for Special Conditions for Department of the Army Permits Requiring Performance Bonds, U.S. Army Corps of Engineers, February 14, 2005
- Guidelines for the Specification of Disposal Sites for Dredged and Fill Material (40 CFR Part 230, Section 404(b)(1))
- National Environmental Policy Act (42 USC §§ 4321 et seq.)
- Council on Environmental Quality Procedures for Implementing the National Environmental Policy Act (40 CFR Parts 1500-1508)
- Executive Order 11990 (Protection of Wetlands)
- Executive Order 11988 (Floodplains Management)
- Executive Order 13112 (Invasive Species)
- Fish and Wildlife Coordination Act (16 USC §§ 661 et seq.)
- Fish and Wildlife Service Mitigation Policy (46 FR 7644-7663, 1981)
- Endangered Species Act (16 USC 1531-1544, 87 Stat. 884);
- Magnuson-Stevens Fishery Conservation & Management Act (16 USC § 1801 et seq.)
- Coastal Zone Management Act (16 USC 1451-1465);
- National Historic Preservation Act, Section 106 (16 USC§ 470)

State of Washington

- Water Pollution Control Act, Chapter 90.48 RCW and Chapter 173 -225 WAC)
- Environmental Policy Act (Chapter 43.21C RCW and Chapter 197-11 WAC)
- Growth Management Act (Chapter 36.70A RCW and Chapter 365-195 WAC)
- Construction Projects in State Waters (Chapter 77.55 RCW)
- Shoreline Management Act of 1971 (Chapter 90.58 RCW and Chapter 173-20 RCW)
- Salmon Recovery Act (Chapter 75.46 RCW)
- Aquatic Resources Mitigation Act (Chapter 90.74 RCW)
- Aquatic Lands (Chapters 79.105 - 79.140 RCW)
- Alternative Mitigation Policy Guidance For Aquatic Permitting Requirements from the Departments of Ecology and Fish and Wildlife, February 10, 2000.

Thurston County Code (TCC) and other Local Authorities

- TCC Title 2 Administration & Personnel
- TCC Title 17 Environment
- TCC Title 19 Shoreline Master Program
- TCC Title 20 Zoning

Thurston County In-Lieu Fee Prospectus

- TCC Title 24 Critical Areas Ordinance
- TCC Title 21 Lacey Urban Growth Area
- TCC Title 22 Tumwater Urban Growth Area
- TCC Title 23 Olympia Urban Growth Area

TCWRP intends that its ILF program would be available to compensate for unavoidable impacts to freshwater wetlands and their buffers, regulated at all levels of government, including local, state, tribal and federal permits.

5.4 Mitigation Sequencing and Participating Agencies

The Thurston County ILF Program provides project applicants with an option for compensatory mitigation after selecting the least damaging alternative via the regulatory mitigation sequence. Specifically, the program provides applicants the option to pay a fee to Thurston County in-lieu of completing mitigation on their own, transferring the required compensatory mitigation obligation to the County in its role as ILF sponsor.

Local, state, and federal governments require mitigation sequencing for proposals that will adversely affect wetlands and other aquatic resources. Mitigation sequencing refers to a series of steps to reduce or eliminate the need to impact wetland resources. Applicants must follow these steps and revise their project proposals to the maximum extent practicable in order to eliminate or decrease the negative effects of a proposed project. The following are the steps in the mitigation sequence according to the implementing rules of SEPA (Chapter 197-11-768 WAC) and Thurston County Code 24.30.075:

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.

Projects that require Clean Water Act authorization by the Corps must also comply with the Section 404(b) (1) guidelines. These guidelines presume, unless clearly rebutted by the applicant, that less environmentally damaging alternatives to filling special aquatic sites, such as wetlands, are available for non-water-dependent activities. Whether a project is water dependent or not, the guidelines presume that all practicable alternatives that do not involve a discharge into a special aquatic site, which includes wetlands, have less adverse impact on the aquatic ecosystem.

Thurston County In-Lieu Fee Prospectus

The Section 404(b)(1) guidelines prohibit the Corps from authorizing a project under an individual permit unless that project would use the “least environmentally damaging practicable alternative” (as determined by the Corps and EPA). If a less environmentally damaging alternative is available and practicable, then a permit would be denied.

In order to qualify for this in-lieu fee program, a project applicant would have to demonstrate, and regulatory agencies concur, that all practicable avoidance and minimization measures have been taken. In addition, the applicant would need to demonstrate that in-lieu fee compensation offers the most ecologically preferable option for offsetting losses.

The ILF Program becomes an option in the sequence only when the applicant can demonstrate that on-site mitigation alternatives are impracticable or of low ecological value and that greater ecological benefits in the basin or watershed can be achieved through off-site, in-lieu fee mitigation. Also, applicants could also “de-couple” wetland functions so the final mitigation plan for a given impact could consist of on-site and off-site (via ILF) mitigation. Approval for a divided mitigation plan would be favored where specific wetland functions cannot be successfully transferred away from the impacted wetland site.

From the Wetlands section of TC Critical Areas Ordinance:

Thurston County Code 24.30.078. An approved 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, a governmental or non-profit natural resource management entity. Credits from an approved in-lieu fee program may be used when paragraph 1-6 below apply:

- 1. The approval authority determines that it would provide environmentally appropriate compensation for the proposed impacts.*
- 2. The mitigation will occur on a site identified using the site selection and prioritization process in the approved in-lieu-fee program instrument.*
- 3. The proposed use of credits is consistent with the terms and conditions of the approved in-lieu-fee program instrument.*
- 4. Land acquisition and initial physical and biological improvements of the mitigation site must be completed within three years of the credit sale.*
- 5. Projects using in-lieu-fee credits shall have debits associated with the proposed impacts calculated by the applicant’s qualified wetland scientist using the method consistent with the credit assessment method specified in the approved instrument for the in-lieu-fee program.*
- 6. Credits from an approved in-lieu-fee program may be used to compensate for impacts located within the service area specified in the approved in-lieu-fee instrument.*

Thurston County In-Lieu Fee Prospectus

5.5 Sponsor Qualifications

Thurston County Water Resources Program will serve as sponsor of the Thurston County ILF program. TCWRP staff are responsible for a wide range of environmental planning, and stormwater and surface water management authorities, including: watershed planning, stormwater management, water quantity and quality monitoring, hydrogeology analysis, land preservation and protection, and lake management..

TCWRP is a separate, distinct program within the Thurston County Resource Stewardship Department (TCRSD). TCRSD includes the Permit Assistance Center but the permitting function operates independently from the Water Resources Program.

TCWRP staff have the expertise and professional experience necessary to successfully implement and operate an ILF Program:

- Capital Improvement Program – designs and constructs projects that have been highly successful in reducing local flooding, improving surface water quality, and preserving the environment.
- Environmental Permitting and Planning - maintains the scientific expertise to perform environmental services including basin planning, real property management, code amendments, environmental assessments, adverse impact mitigation, and construction of wetlands and riparian restorations.
- Water Quality and Watershed Services – improves ecosystem health in Thurston County by managing stormwater systems, monitoring watersheds, and building partnerships.
- Maintenance – maintains public storm facilities and natural storm systems in unincorporated portions of Thurston County.

TCWRP will retain sole responsibility for ensuring the success of its mitigation-receiving sites and the Thurston County ILF program. As such, TCWRP will perform all roles required of a program sponsor in 33 CFR Part 332.8, including the following:

- Prioritize, identify, select, and acquire sites for ILF projects as described in this prospectus
- Review credit and debit applications of applicants to confirm number and type of credits will adequately compensate for the impact
- Design, permit, and oversee construction of mitigation-receiving sites
- Monitor, maintain, and manage ILF projects as described in this prospectus.
- Ensure the success of compensatory mitigation for which fees have been collected.
- Maintain accounting ledgers, tracking all fees collected and expenditures.
- Attain IRT approval for mitigation plans and expenditures from the ILF account.
- Maintain sufficient funds for the long-term management of mitigation projects.
- Report annually on the progress and status of the program including financial accounting reports, credit transaction reports, mitigation receiving site monitoring and progress toward success, status of long term management endowment account, amount of mitigation provided for authorized impacts/fees collected, and any changes in land ownership or transfers of long term management responsibilities.

5.6 Interagency Review Team

In addition to reviewing and commenting on this prospectus, the Interagency Review Team (IRT) reviews, advises, influences, and ultimately approves of the establishment, operation, and management of in-lieu fee programs. The IRT will review and provide comments on the Instrument and subsequent modifications or amendments. Once the program is approved and operational, the IRT will play an integral role in reviewing and approving the sites selected for mitigation and the proposed mitigation plans. IRT members will also review and may provide written comments on annual monitoring reports and field inspections, credit release requests, and remediation plans. The IRT agencies may also provide expertise on other related matters, such as assessing the achievement of performance standards, reviewing long term management plans, and recommending corrective actions or adaptive management. Some IRT member agencies will also play a role in reviewing permits for impact projects as well.

The IRT is made up of representatives of federal, state, local, and tribal agencies with regulatory authority or natural resource interest. The U.S. Army Corps of Engineers (Corps) and the Washington Department of Ecology (Ecology) will co-chair the IRT. The composition of the IRT will vary depending upon the location of the relevant service areas. Agencies and tribes represented on the IRT will likely change through time depending on the nature of the impacts and location of the proposed mitigation receiving sites.

6. Credit and Debit Procedure

The standard unit of measure used for in-lieu fee programs to quantify an impact is a “debit.” Lift at a mitigation site is measured in “credits.” TCWRP proposes to use *Calculating Credits and Debits for Compensatory Mitigation in Wetlands of Western Washington* (Hruby, et. al., 2011), also called the Credit/Debit Tool, for the assessment of impacts and mitigation needs within the initial service areas in the Thurston County ILF program.

The Credit/Debit Tool is a method that estimates and quantifies:

1. The loss of functions and values when a wetland is altered, also called *Debits*
2. The gain in functions and values that result from compensatory mitigation, also called *Credits*.

The use of the tool offers a critical step needed to establish a functional equivalency of credits and debits.

6.1 Method for Determining Debits and Credits

The ILF process will begin with the assessment of unavoidable impacts to wetland functions resulting from the proposed development. Applying the Credit/Debit Tool will result in the quantification of units of functional loss, or “debits,” associated with the development project. A “debit” equates to one unit of function per acre or square foot of

Thurston County In-Lieu Fee Prospectus

impact. When quantifying an impact to a wetland system, the debits will be divided into three categories based on wetland functions: (1) habitat debits, (2) hydrology debits and (3) water quality debits. Once the number of debits has been determined by the applicant and then reviewed by TCRSD staff, then the appropriate number of credits can be purchased from TCWRP's ILF program to offset the debits.

At the proposed mitigation-receiving site, the Credit/Debit Tool will be applied to document existing conditions (units of function currently being provided). The tool will also be applied to determine the potential lift associated with the conceptual mitigation plan (anticipated units of function provided by the site after the proposed mitigation has been implemented). A "credit" equates to one unit of function gained per acre or square foot of mitigation at the receiving site.

Like "debits," mitigation projects will earn credits in the same three wetland functional categories: (1) habitat credits, (2) hydrology credits, and (3) water quality credits. There may be cases when pre-mitigation project functions in one or more categories are already high. In these cases, the project will only achieve lift in the functional category(s) in which functions were improved (i.e. only when the tool calculates a lift in functions as a result of the project). For example, a reed canary grass-dominated riverine wetland with ample over bank storage may provide high hydrologic and water quality functions in its pre-mitigation project condition. If the mitigation project mainly improves habitat complexity, the project might only earn "habitat credits," and not earn any hydrology credits or water quality credits.

The Credit/Debit Tool is designed to assess freshwater wetland impacts. Determinations of debits (and thereby an applicant's credit requirement) must be approved by regulatory agencies permitting an impact. If all regulatory agencies issuing permits for an unavoidable impact project agree that the TC ILF Program is the most ecologically preferable and practicable way for the applicant to meet mitigation needs, then mitigation requirements must be quantified and approved prior to permit issuance. The tool will provide the initial basis for quantifying wetland impact "debits." However, the number of debits associated with the impact as determined by the tool may be adjusted for site-specific variables such as on-site mitigation or implementation of additional water quality protection measures that exceed best management practices, etc. All regulatory agencies issuing permits for an unavoidable impact project must agree to the mitigation requirements.

Similarly, the Credit/Debit Tool will be used to assess wetland mitigation, including the preservation, enhancement, re-establishment, rehabilitation, and establishment of wetlands. The IRT must review and approve the proposed amount and type of mitigation credit generated by mitigation-receiving sites. Any time best professional judgment is used to alter mitigation requirements or proposed earned mitigation credit, the sponsor will provide detailed rationale based on best available science. The sponsor will document and deliver this rationale to the appropriate entities (i.e. regulatory agencies for impact projects and the IRT for mitigation projects).

Thurston County In-Lieu Fee Prospectus

After the TC ILF Program is approved and getting started, it may be necessary to provide training to local, state, and federal regulatory agencies and tribal representatives. The training would focus on the use of ILF credits and how to equitably interpret the results of the credit/debit tool on both the debit and credit end.

In cases where the tool is inappropriate (e.g. for buffers, estuarine, stream and stream riparian buffer area impacts) or for jurisdictions that strictly adhere to mitigation ratios in their Critical Area Ordinances, mitigation requirements may be determined according to area-based ratios. Mitigation ratios will be based on area and wetland category, as described in the interagency document, *Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance* (Ecology, 2006).

6.2 Advance credits

Advance credits pertain to any credits that are available for sale prior to being fulfilled as specified in an approved mitigation project plan. As described in the federal rule on compensatory mitigation (33 CFR 332.8 (n)(1)), the ILF program sponsor may request advance credits within each service area based on the projected volume of development activity occurring in that service area. Federal rule directs the following considerations be reviewed prior to approval:

1. The Compensation Planning Framework
2. Sponsor's past performance implementing aquatic resource restoration, establishment, enhancement and/or preservation activities in the proposed service area or other areas
3. The project financing necessary to initiate planning and implementation of ILF projects

Advance mitigation credits function conceptually like a pre-approved credit card but with a limit of mitigation credits accounted under wetland functional categories. The advance mitigation credits have a set spending limit that the IRT issues to the in-lieu fee program sponsor based on the track record of implementing successful restoration/mitigation projects, among other considerations such as permit trends in the proposed service areas. When an unavoidable impact project occurs, the sponsor can "borrow" a mitigation credit from the pre-approved advance mitigation account, and in turn sell that mitigation credit to the applicant who uses it to satisfy the compensatory mitigation requirements. The sponsor must then pay off the balance on the "credit card" by fulfilling (i.e. "producing") mitigation credits equal to (or greater than) the number of credits borrowed from the credit card. The remaining allowable "spending limit" on the credit card decreases as mitigation credits are sold to applicants, but increases accordingly when the sponsor "produces" mitigation credits at mitigation projects (i.e. pays off the balance on the card, also referred to as credit fulfillment). Section 33 CFR 332.8(n)(3) of the federal rule describes this concept.

In the ILF Program Instrument TCWRP will provide an advance credit request and rationale for each service area.

Thurston County In-Lieu Fee Prospectus

6.3 Pre-capitalization

TCWRP's ILF program aims to reduce the temporal loss and exposure to risk by pre-capitalizing credits with mitigation-receiving sites that are ready for implementation. Funds allocated by the state legislature are being used to develop a pre-capitalized mitigation –receiving site prior to the collection of fees for unavoidable, permitted impacts.

Pre-capitalized mitigation credits are like a pre-paid credit card. The value of the pre-paid credit card is equal to the amount of mitigation credits that the sponsor has produced (and the IRT has released) prior to an applicant's need to compensate for unavoidable permitted impacts. These pre-capitalized credits are then available for sale from functioning resource sites, avoiding the need to borrow against valuable wetland resources, functions, and values. When an applicant needs mitigation credits to compensate for an unavoidable, permitted impact, the applicant buys the required number of credits from the sponsor. This "purchase" draws down the pre-paid value of the credit card by the exact amount sold to the applicant. If credit sales draw down the balance of pre-capitalized credits to zero, then the sponsor could use advance credits allocated by the IRT (refer to Section 6.2).

TCWRP intends to stay ahead of unavoidable, permitted impacts by continually re-investing funds earned through the sale of pre-capitalized credits to select, design, and implement future mitigation-receiving sites (keeping a positive balance on the pre-paid credit card). The sponsor aims to minimize the use of advance credits, and thereby, reduce the loss of functions typically associated with temporal loss and mitigation failures.

7. Program Account

The sponsor shall establish a mechanism to ensure that funds from in-lieu fee permittees are deposited into a dedicated ILF Program account. This account will be separate from any accounts that receive funds from entities other than permit applicants using the ILF as compensatory mitigation. TCWRP shall ensure that the program account meets applicable federal and state standards for financial accountability and subject to periodic review by the County Auditor's office, as well as the IRT. Fund balances will be invested in an interest bearing account at an institution that is a member of the Federal Deposit Insurance Corporation (FDIC). All interests and earnings accruing to the program account shall remain in that account for use by the ILF Program for the purposes of providing compensatory mitigation.

7.1 Mitigation Fees

According to the federal rule, mitigation fees must represent full-cost accounting. "For in-lieu fee programs, the cost per unit of credit must include the expected costs associated with the restoration, establishment, enhancement and/or preservation of aquatic resources in that service area. These costs must be based on **full cost accounting**, and

Thurston County In-Lieu Fee Prospectus

include, as appropriate, expenses such as land acquisition, project planning and design, construction, plant materials, labor, legal fees, monitoring, and remediation or adaptive management activities, as well as administration of the in-lieu fee program.” 33 CFR 332.8(o)(5)(ii).

TCWRP will ensure that the mitigation fees, also called Credit Fees, will reflect the average costs for implementing all aspects of a mitigation project, including land acquisition. The sponsor will base the average costs upon analyses of recent projects completed by Thurston County within a five year period. The period of analysis may be extended several years if there is insufficient data or unusual transactions.

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.

7.2 Calculation of Mitigation Fees

TCWRP will establish the mitigation fees, or credit price, by accounting for all aspects of mitigation project implementation, including site selection, land acquisition, design and permitting, construction (plus costs associated with contracting), performance period maintenance and monitoring, administration and long-term stewardship. The credit price will also account for inclusion of contingency funds for each project. The sponsor will base the credit price on mitigation or restoration projects within the past five years or longer in Thurston County. TCWRP will use a three-step process to determine a cost per credit for each project (see below). A final credit price will result from a weighted average of costs per credit from the recent projects.

The three-step process for each project will entail:

1. Evaluating the number of credits of lift generated by each project, as determined by using the Credit/Debit Tool. Each analysis will calculate the number of habitat credits, hydrology credits, and water quality credits gained as a result of activities performed at each project.
2. Determining full costs for each project, including all expenditures to date and all expected future expenditures necessary to complete the project (achieve desired performance standards). TCWRP will review and analyze project budgets thoroughly to ensure that budgeted costs will be sufficient to cover all requirements for implementing a mitigation project according to the federal rule.
3. Calculating the cost per credit by dividing the total (adjusted) project costs by the total number of credits (i.e. the sum of all functional credit types) of lift associated with the project.

Thurston County In-Lieu Fee Prospectus

TCWRP would have great difficulty determining which proportion of project costs is associated with generating specific functional subtypes of credits (i.e. habitat, hydrology and water quality). Therefore, the sponsor will assume each type of credit costs the same as the next.

Mitigation fees per credit will be reviewed no less than once every three years and increased or decreased to reflect actual costs associated with implementing mitigation projects through the program.

7.3 Allocation and Use of Mitigation Fees

Upon receipt of mitigation fees, the sponsor will allocate funds to an account specific for the service area in which the impact occurred. Within the service area account, the sponsor will allocate pre-determined percentages of the fee into the following sub-accounts:

- Contingency Fund used to ensure financial resources for construction cost overruns, site repair, implementation of adaptive management plans, and site replacement during the performance period. Any unused contingency funds will be transferred into long-term management fund at the end of the performance period.
- Long Term Maintenance and Management Fund solely for use in long term management, such as long-term monitoring, site protection enforcement, site management and maintenance (if needed), long-term reporting, and all other aspects involved in implementing the long-term management plans included in IRT-approved Mitigation Plans. 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 performance period is complete and all credit associated with a project is released).
- Program Administration Fund will pay for program administration duties, including but not limited to:
 - a. Site selection and concept designs
 - b. Fee and Credit accounting
 - c. Legal services
 - d. Data management (e.g. maintaining spreadsheets and a database)
 - e. Reporting
 - f. Correspondence and meetings with the IRT and other regulatory agencies
 - g. Program development (e.g. working to improve how the program works to ensure highest quality mitigation)
 - h. Other program administration duties as necessary

The remaining money from the mitigation fee (after percentages have been allocated to the above funds) will fund Project Implementation, including the following aspects of future mitigation-receiving site development:

- Land acquisition
- Mitigation-receiving site design and project permitting
- Construction and implementation

Thurston County In-Lieu Fee Prospectus

- Performance period maintenance and monitoring

The process for planning and implementing mitigation projects is described in Section 15.

Prior to using any mitigation fees for land acquisition or project implementation, the sponsor will consult the IRT and adhere to the requirements specified in the federal rule, 33CFR 32.8(i)(2):

(2) The sponsor must submit proposed in-lieu fee projects to the district engineer for funding approval. Disbursements from the program account may only be made upon receipt of the written authorization from the district engineer, after the district has consulted with the IRT. The terms of the program account must specify that the district engineer has the authority to direct those funds to alternative compensatory mitigation projects in cases where the sponsor does not provide compensatory mitigation in accordance with the time frame specified in paragraph (n)(4) of this section.

If advance credits are used, TCWRP's ILF Program will have three complete growing seasons after the first ILF credit is sold in a Service Area to complete ILF receiving site land acquisition and initial biological and physical improvements, unless modified by the district engineer.

8.0 Ledger

The sponsor will maintain two ledgers: one to track mitigation fees and expenditures, and a second to track debits and credits. Both ledgers will be organized by service area, and the two ledgers will be related to each other. 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.

8.1 Mitigation Fee Ledger

The program sponsor will compile an annual ledger report for the District Engineer of the Seattle District, U.S. Army Corps of Engineers (Corps) and the Wetland Section of the Washington State Department of Ecology (Ecology) that will include the following information:

- 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 service area
- All additions and subtractions of credits
- Any other changes in credit availability (e.g., additional credits released, credit sales suspended)

The fee ledger will track all income (Mitigation Fees) and expenditures within the program. The fee ledger will comprise separate "sub-ledgers" for each service areas. Each service area fee ledger will clearly show the following:

Thurston County In-Lieu Fee Prospectus

Mitigation fees collected for each impact project:

- Credit Fee amount
- Impact project Permit Number
- Jurisdictional notation – indicates whether fees collected for unavoidable, permitted impacts involved federally jurisdictional wetlands, non-federal jurisdictional wetlands (i.e., isolated wetlands), locally-regulated critical area resources (i.e., buffer only impacts), or some combination.

Deposits and Expenditures for the Contingency Fund:

- Origin of deposits (Impact Permit Number(s))
- Contingency Expenditures (Mitigation Project Name)

Deposits and Expenditures for the Long-term Management Fund:

- 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 Project Implementation Fund:

- List of expenditures by Task categories covering all aspects of implementing mitigation-receiving projects, e.g., land acquisition, design, permitting, construction, maintenance and monitoring, etc. (See Section 15 for implementation tasks).

8.2 Credit Ledger

The credit ledgers will track credits that are sold, as well as fulfillment credits that will be released once mitigation projects achieve performance standards. From a credit accounting standpoint, the sponsor will seek to maintain a surplus of credits available to sell (pre-capitalized credits and advance credits). TCWRP plans to maintain a positive credit ledger by continually generating credits through mitigation prior to drawing down the total amount of pre-capitalized credits (keeping a positive balance on the pre-paid credit card). The sponsor aims to minimize the use of advance credits and reduce the loss of functions typically associated with temporal loss and mitigation failures.

8.2.1 Balancing Credits by Functional Type

Until the TC ILF program begins to sell credits to offset debits associated with unavoidable, permitted impacts, it is hard to predict how credit in each function category will balance with debits in each function category (see Section 6). For example, identifying mitigation-receiving sites and designing projects to earn habitat credits may prove easy, while implementing mitigation projects that will earn hydrology and water quality credits may be more difficult. Depending on the service area, the identified priorities in a watershed may

Thurston County In-Lieu Fee Prospectus

indicate that an imbalance among function categories is desirable. In other cases, balancing debits and credits across function types may be the goal.

As the 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 IRT (via the Credit Ledger, see below). The sponsor will consult with the IRT to discuss whether the function categories of credits should balance the function categories of debits or if “trading” among function categories would be preferable. Tracking each of the three function categories of debits and credits separately will allow these decisions to be made in a consistent and explicit and transparent way.

8.2.2 Wetland Credit/Debit Ledger

The sponsor will maintain a Wetland Credit/Debit Ledger to account for all wetland and wetland buffer 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 (see Section 15.3, Credit Release).

TCWRP will compile an annual ledger report for the Corps and Ecology that will include the beginning and ending balance of available credits (released and advance credits), permitted impacts for each resource type, all additions and subtractions of credits and any other changes in credit availability (e.g. additional credits released or if credit sales are suspended).

The credit ledger will contain basic information about each impact site and mitigation project. At a minimum, TCWRP will develop a spreadsheet that will contain much more detail about each of the projects. The sponsor will include an example of the spreadsheet in the ILF Program Instrument.

9.0 Reporting

The ILF program sponsor will compile an annual ledger report for the Corps, Ecology, and IRT that will include all financial activity in the program account, the beginning and ending balance of available credits, permitted impacts for each resource type, all additions and subtractions of credits, and any other changes in credit availability (e.g. additional credits released or if credit sales are suspended).

The Sponsor will submit annual reports according to 33CFR 332.8(i)(3), which states:

(3) The sponsor must provide annual reports to the district engineer and the IRT. The annual reports must include the following information:

(i) All income received, disbursements, and interest earned by the program account;

(ii) A list of all permits for which in lieu fee program funds were accepted. This list

Thurston County In-Lieu Fee Prospectus

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 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 in-lieu fee program, and the date the funds were received from the permittee;

(iii) A description of in-lieu fee program expenditures from the account, such as the costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration;

(iv) The balance of advance credits and released credits at the end of the report period for each service area; and

(v) Any other information required by the district engineer.

The following sections of the federal rule describe reporting requirements:
33 CFR 332.8(q) *Reporting*.

- (1) *Ledger account*. 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.
- (2) *Monitoring reports*. The sponsor is responsible for monitoring the mitigation bank site or the in-lieu fee project site in accordance with the approved monitoring requirements 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 and until such time that the district engineer, in consultation with the IRT, has determined that the performance standards have been attained. The instrument must include requirements for periodic monitoring reports to be submitted to the district engineer, who will provide copies to other IRT members.
- (3) *Financial assurance and long-term management funding report*. The district engineer may require the sponsor to provide an annual report showing beginning and ending balances, including deposits into and any withdrawals from, the accounts providing funds for financial assurances and long-term management activities. The report should also include information on the amount of required financial assurances and the status of those assurances, including their potential expiration.

Thurston County In-Lieu Fee Prospectus

Finally, as provided in 33 CFR 332.8(i)(4), “the district engineer may audit the records pertaining to the program account. All books, accounts, reports, files, and other records relating to the in-lieu fee program account shall be available at reasonable times for inspection.”

Compensation Planning Framework

Thurston County contains portions of five major watersheds, or Water Resource Inventory Areas (WRIAs).

- WRIA 11 – the Nisqually watershed
- WRIA 13 – Deschutes watershed
- WRIA 14 – Kennedy/Goldsboro watershed
- WRIA 22 & 23 – Chehalis watershed

The Chehalis watershed includes nearly the entire southwestern quarter of Thurston County with a majority of the watershed in Grays Harbor County. The Chehalis River drains into the Pacific Ocean, not Puget Sound, and therefore will not be included in the initial phase for the ILF Program. The Kennedy/Goldsboro watershed is located mostly in Mason County and will not be included in the initial phase for the ILF program.

Consequently, the Thurston County initial area contains the remaining WRIA watersheds including the Deschutes and a portion of the Nisqually watershed within Thurston County (see Figure 2). Each of these watersheds has some level of degraded function, providing ample opportunities for watershed-based mitigation activities to offset unavoidable, permitted impacts.

TCWRP has developed several basin plans to address problems with flooding, water quality, and lack of floodplain habitat. The basin planning process characterizes the physical, biological, and habitat conditions within each watershed. Then it identifies action items and projects aimed at improving water quality and floodplain habitat and reducing flooding. Additionally, the EPA supported Watershed Characterization process has completed characterization of the Deschutes Watershed and will finalize the Thurston County portion of the Nisqually in 2013.

Watershed characterization is a relative comparison of areas within a larger study area or watershed that are better suited for management actions to support ecological function and processes. The study area is further delineated into “drainage analysis units” (DAUs). The DAUs are approximately 0.25 square miles (160 acres) depending on the actual topography as determined by using 2002 LiDAR with ESRI ARC-HYDRO.

The goal is to analyze and identify the ecological processes and natural resources that maintain a functioning watershed, and to identify how anthropogenic (human) activity has

Thurston County In-Lieu Fee Prospectus

impacted those processes within the study area. The five physical processes and one biological element focused on in this work are listed below.

Physical processes:

- Movement of water
- Movement of large wood
- Movement of sediment
- Movement of Pollutant and nutrients
- Movement of heat

Biological elements:

- Upland habitat connectivity

The alteration of these core processes and elements (or “pathways”) by human activities results in a change in how a site functions. These processes and elements operate over large spatial and temporal scales and have typically not been assessed when evaluating site specific development and natural resource restoration activities. Watershed characterizations evaluate the potential natural resource restoration success in the context of its location on the landscape.

Thurston County’s framework included the following steps:

- Define the appropriate spatial scales to be used in watershed characterization;
- Compile land use/landcover information for pre-development and current conditions;
- Develop an understanding of the ecological processes within drainages occurring in the study area, identify key drivers for those ecological processes, and begin to understand how past and present land use has altered ecological processes;
- Characterize the general condition of ecological processes within the largest acceptable landscape scale; and
- Identify landscape areas that have specific degradation to priority ecological processes under current conditions.

The focus of this work is to identify natural resource sites (i.e., wetlands, riparian areas, and floodplains) that can be restored with a high probability of success given their location in the landscape. The outputs of this work can be used as a first screening tool to evaluate natural resource restoration opportunities and to rank preservation sites for conservation purchases.

Watershed Councils in Thurston County have also developed watershed action plans. Originally formed to identify, reduce, and prevent non-point pollution, these groups advocate more broadly to protect, restore, and enhance their watersheds and to promote stewardship. Watershed council members include representatives from local governments, tribes, businesses, elected officials, environmental agencies, non-profit groups, and private citizens.

Thurston County In-Lieu Fee Prospectus

In the Nisqually Watershed the Nisqually Tribe serves as the “lead entity.” The Nisqually Chinook Recovery Plan prepared by the Nisqually Chinook Recovery Team (2001) provides a resource for priority habitat areas in the Nisqually watershed. The Thurston County Conservation District is the lead entity for salmon habitat recovery in the Deschutes watershed. Additionally, Thurston County is an active participant and Executive Committee member of the PSP’s South Sound Local Integrating Organization, the Alliance for a Healthy South Sound.

10.0 Descriptions and Assessments of Service Areas

For the purposes of TCWRP’s ILF Program, service areas are defined by Water Resource Inventory Area (WRIA) boundaries. Ecology and other state natural resource agencies developed the WRIs as a way to delineate the state’s major watersheds. A watershed is the geographic region that drains water (and everything water carries) into a river, stream, or body of water. In the state of Washington, the WRIA provides a common denominator for natural resource planning. Watershed goals and objectives and watershed plans for improving water quality and water quantity/in-stream flows and recovering salmon are based on WRIs.

TCWRP proposes two initial service areas, which align with the Water Resource Inventory Areas (WRIs) in Thurston County:

- Deschutes – WRIA 13
- Nisqually Watershed – WRIA 11

Figure 2 shows the service area boundaries for the initial phase of the Thurston County ILF.

10.1 The Deschutes Watershed – WRIA 13

The Deschutes River watershed (nearly 120,000 acres) originates in the Bald Hills in Lewis County and terminates at the base of Budd Inlet. This WRIA encompasses the cities of Tumwater, Olympia and portions of Lacey and Rainier with an estimated population in 2010 of nearly 162,000.

Under the Watershed Characterization methodology, Thurston County has divided this WRIA into six sub-watersheds, 29 basins and numerous sub-basins. (See Figures 3 and 5).

The sub-watersheds are:

- Nisqually Reach
- Henderson Inlet
- Budd Inlet (Black Lake basin is not included)
- Eld Inlet (includes east side and McLane Creek)
- Lower Deschutes River
- Middle Deschutes River
- Upper Deschutes River

Thurston County In-Lieu Fee Prospectus

10.1.1 Historic Conditions

The Deschutes River originates within the steep, heavily-forested Bald Hills and flows generally northwest for approximately 60 miles, before discharging into Budd Inlet. Named and unnamed tributaries enter the river throughout its length; however, most are concentrated along the steep bedrock-dominated uplands of the southern watershed. The central and northern watershed is dominated by relatively low-relief woodlands and grass-covered prairies that formed upon glacial terraces, outwash plains, and other remnant features of the most recent continental glaciation. Elevations in the watershed range from a few feet above sea level near Capitol Lake to 3,870 feet at Cougar Mountain in the Bald Hills.

Portions of the present day Deschutes watershed were inundated at least twice during the Pleistocene Epoch, by continental glaciers that advanced south into the Puget Sound lowland from coastal British Columbia. The most recent ice incursion occurred about 15,000 years ago during the Vashon Stage of the Frasier Glaciation. As the Puget (eastern) lobe of the Vashon glacier advanced into the Puget lowland, it blocked previously northward-draining rivers and streams, and diverted them south where they fed large lakes that formed beside and in front of the advancing ice. Sediment-laden melt-water from the glacier and runoff from the surrounding mountains deposited sand, silt, and clay in the progressively deepening lakes. Over time, drainage pathways were opened through topographic lows to the south and west of the ice front, and surface drainage to the Pacific Ocean was reestablished for a short time via the Chehalis River Valley. The WRIA contains 22 named lakes.

Tumwater, the area's first permanent non-native American settlement, was founded in 1845, followed shortly thereafter by Olympia (1846) and Lacey (1848). Olympia was named the Washington State capital in 1889. The central Deschutes watershed supports commercial agriculture, rangeland, Christmas tree plantations, and other small-scale agricultural uses, while the uplands of the southern watershed are actively managed for commercial timber production.

The Deschutes River has viable populations of resident cutthroat trout, steelhead trout, anadromous (sea-run) cutthroat trout, coho, and chinook salmon (Haring and Konovsky, 1999). Anadromous fish distribution along the Deschutes River proper was historically limited to the reach below the lower falls at Tumwater. However, a fish ladder was installed at the falls in 1954 to provide access to spawning and rearing habitat in the upper watershed.

10.1.2 Current Conditions

The Deschutes Watershed consists of the Deschutes River and numerous tributary creeks and streams. This watershed is one of the most intensely farmed basins in western Washington, and the annual precipitation ranges from 40 inches to over 80 inches per year. Most of the precipitation arrives during the winter months when overall water demands are the lowest. During the summer, the snowpack is gone, there is little rain, and naturally low stream flows are dependent on groundwater inflow. At the same time the demand for

Thurston County In-Lieu Fee Prospectus

water for human uses, including irrigation, are at the yearly maximum. This means that groundwater and surface water are least available when water demands are the highest.

There has also been a significant population increase in WRIA 13 over the past 20 years. According to the Thurston Regional Planning Commission (TRPC), the current population in the watershed is projected to increase by 40% to 226,500 by 2030.

10.1.3 Threats

The Deschutes River watershed faces several major threats including:

1. Development, including residential, commercial, industrial, as well as roads, transportation and utility infrastructure, and shoreline armoring – Increased development will result in further alteration of terrestrial, freshwater, and marine habitats, habitat forming processes and foodwebs.

Indirectly, development diminishes opportunities for restoration and habitat enhancement, while at the same time increasing dependency upon structural flood management measures. The Deschutes River basin currently experiences flooding, over roadways and on private property. These problems may be exacerbated as more development and greater densities occur.

2. Surface water loading and runoff from the built environment – As development increases so do the threats posed by surface water pollutant loading and runoff. Existing laws and regulations govern the design of systems to manage surface water loading/runoff for new development. However, in a watershed with shallow groundwater and highly permeable soils, run-off and effluent must be carefully treated to prevent further contamination of groundwater. Studies indicate that septic systems from existing residential developments in the Deschutes River basin substantially contributed to increases in nitrates and chlorides in groundwater.

In addition, water withdrawals and diversions may affect ground water fed aquatic systems and diversion of surface water due to stormwater management could deprive some aquatic systems of hydrologic input.

3. Channelization, and culverts – The creeks within the Deschutes watershed have been highly modified, resulting in streams disconnected from their floodplains, habitats which do not support complex food webs, reduced biodiversity, and threatened survival of some species, such as salmon.
4. Climate change – Increased temperatures, changes in volume and timing of precipitation and stream flows, as well as a reduction in snowpack will have major implications for in-stream flows, which are already so low in certain reaches that adult salmonids are unable to migrate further upstream and juveniles are stranded. Ecosystem health, fish and wildlife, forests, and agricultural practices are also likely to be affected. A rise in sea level would likely affect the Port of Olympia and the City of Olympia. Probable effects could include increases in coastal erosion, landslides,

Thurston County In-Lieu Fee Prospectus

inundation and flooding.

5. Invasive species (terrestrial, freshwater, and marine) – Whether they are introduced deliberately or inadvertently, invasive species may out compete native species for resources, prey upon native species, reduce the resiliency of ecosystems, and change the character of habitat. Climate change may exacerbate the threats posed by invasive species within the Puget Sound Basin.

Clearly, some of the threats to this watershed are beyond the scope of the TCWRP’s ILF Program to address. For example, climate change is a global problem that mitigation through the ILF Program will be unable to ameliorate. However, by understanding that climate change will affect the watershed, mitigation activities can be planned for in the context of this threat.

10.1.4 Aquatic Resource Goals and Objectives

The TCWRP’s ILF Program aims to address the following goals and objectives within the Deschutes watershed:

- Restore and protect the natural conveyance system and flow regimes, such as channel sinuosity and complexity, sediment delivery, connection to floodplains, wetland flood storage, and natural water quality treatment.
- Improve surface water quality by preventing excess nutrients, sediment, and pollutants from discharging into waters, particularly those waters that flow into Puget Sound. Similarly, improve groundwater quality by preventing excess nutrients and pollutants from infiltrating and contaminating groundwater supplies
- Restore and protect the following habitats:
 - Wetland – to provide flood storage, improve water quality, and enhance habitat for flora and fauna
 - Vegetated corridors – to provide connections for wildlife movement between upland, riverine, estuarine, and open water habitats
- Reduce flood damage by restoring hydrologic processes, where possible, and restoring and creating additional wetland habitat

10.2 The Nisqually River Watershed – WRIA 11

The Nisqually River originates from the Nisqually Glacier on the south slope of Mount Rainier. It flows northwest approximately 78 miles to the Nisqually Estuary, where it discharges into the Puget Sound. The watershed encompasses about 768 square miles (see Figure 4). The La Grande Canyon provides a natural break between two physiographic areas in the watershed. Downstream of the canyon the Nisqually watershed consists of low hills and prairie plains of glacial outwash. Upstream of the canyon volcanic rock and steeper mountainous terrain dominate the area. The canyon itself contains 200-foot sheer cliffs. Major tributaries include Mineral Creek, Little Nisqually River, Mashel River, Ohop

Thurston County In-Lieu Fee Prospectus

Creek, Tanwax Creek, and Muck Creek. The major tributary streams within Thurston County are McAllister, Thompson and Yelm creeks.

The Nisqually River straddles the Pierce-Thurston County line, while the southern portion of the watershed lies within Lewis County. The western portion of the watershed lies in Thurston County and encompasses the cities of Yelm, and portions of Lacey. The eastern portion lies in Pierce County and contains the cities of Roy, and Eatonville. The lower watershed is predominately under federal management. The Nisqually National Wildlife Refuge manages the delta and estuary and the lower reaches are on the Fort Lewis Military Installation. The Nisqually Indian Tribe also manages a portion of the lower reaches of the Nisqually Valley as Reservation land. Much of the upper watershed is outside of Thurston County and federally managed as either National Park or National Forest

Thurston County Water Resources Program has divided the portion of the watershed that lies within Thurston County into two sub-watersheds, ten basins and numerous sub-basins (See Figures 3 & 4). The two sub-watersheds are:

- McAllister Creek
- Nisqually River

10.2.1 Historic Conditions

The Nisqually River is the traditional territorial center of the Nisqually tribe, who have lived and fished within the watershed for thousands of years. Historically, the watershed contained heavily forested mountain slopes, shrubs in the lowlands, and grasses in the prairie lands and meadows. Before European settlement, Nisqually people burned much of the prairie land each fall. Burning prevented the establishment and growth of trees into these areas. Once burning practices came to an end, fir-dominated forests replaced most of the former prairie areas and oak forests (Nisqually watershed plan).

Three dams have been built on the Nisqually River for hydroelectric power production, the Centralia Diversion Dam for Yelm Hydroelectric Project, the Alder Dam, and the LaGrande Dam. The dams have altered the river's hydrologic flow through impoundment, diversion, or both. The Yelm Project was installed in the 1930s. It diverts a portion of the river through a 9-mile canal and a powerhouse before returning the flow to the Nisqually River nearly 14 miles downstream. A standard fish ladder was installed in the 1950s.

In the 1940s Alder Dam and La Grande Dam were built to impound the Nisqually River for hydroelectric power production. Tacoma Power manages these dams today. The La Grande Dam prevents anadromous fish from ascending further upstream. However, before the construction of the dams, an impassable waterfall in the La Grande canyon prevented salmon from migrating further upstream. Flooding on the Nisqually River is related largely to the amount of water released from La Grande Dam. This, in turn, is related to how much water is released from Alder Dam.

Thurston County In-Lieu Fee Prospectus

Historically, the Nisqually River estuary was the largest in the South Sound. Estimates indicate it was greater than five square-miles, contained by steep bluffs on the sides and a steep drop off at the outer edge of the delta. This area provided several types of habitat, including mudflat, emergent saltmarsh, a transition zone between salt and fresh water, and tidally influenced, freshwater riverine.

Over time, a variety of development activities have significantly altered the Nisqually River estuary. The construction of dikes in the early 1900s converted most of the Nisqually River estuary into pasture. Beginning in 1912, railroad construction along the north end of the Nisqually Reach resulted in shoreline armoring to prevent erosion of the railroad bed. This armoring has drastically reduced sediment contribution to the beach, thereby damaging nearshore habitat. In the 1960s construction of Interstate-5 over the Nisqually River area not only filled but also hydrologically disconnected a portion of the historic estuary.

10.2.2 Current Conditions

The Nisqually watershed is considered much less altered and degraded than the majority of Puget Sound's lowland rivers. This can be attributed to the fact that the upper watershed is predominately forested and managed for forestry and recreation. In addition, significant stretches of the river below the dams are in protected ownership. Public ownership includes the Nisqually National Wildlife Refuge, Joint Base Lewis-McChord, Nisqually Tribe Reservation, Tacoma Power mitigation lands, Centralia City Light mitigation land, and Nisqually Mashel State Park. The Nisqually Land Trust also owns and protects land. Currently 73 percent of the river shoreline is in protected ownership.

The mainstem of the river is still a very productive habitat for all species of salmon that are currently found in the Nisqually. However, modifications such as dikes, levees, and riprap confine and simplify some segments of the rivers and streams in the Nisqually Watershed. This prevents natural channel migration, disconnects rivers from their floodplains, and eliminates recruitment of large woody debris. All of these reduce aquatic habitat suitability and contribute to an increase in flooding problems. Losses of habitat result from declines in channel stability, habitat diversity, food availability, and key habitat features.

In general, water quality in the Nisqually Watershed is considered excellent. However, Ecology has designated portions of several streams, as well as several lakes, as polluted. Primary water quality impairments are elevated phosphorus concentrations, elevated temperature, not enough dissolved oxygen, and fecal coliform.

Population is much less compared to WRIA 13, with only about 38,000 in 2010. However, the population is projected to nearly double to over 65,000 by the year 2030, according to TRPC.

Significant restoration activities are underway in the Nisqually Basin. Primarily, the Nisqually Tribe and the Nisqually National Wildlife Refuge have removed over 10,000 feet of dikes and restored more than 900 acres of estuary. In addition, portions of a few major

Thurston County In-Lieu Fee Prospectus

tributaries to the Nisqually River are being restored along with associated wetland and floodplain habitat.

10.2.3 Threats

The Nisqually Watershed faces several major threats including:

1. Development, including residential, commercial, industrial, as well as roads, transportation and utility infrastructure, and shoreline armoring – The Nisqually Watershed is the least developed in the South Puget Sound. Despite federal protection or management of large portions of the watershed, the cities and other urban areas are growing rapidly. Fort Lewis in particular is experiencing high levels of growth, with an estimated current population of 29,000 active duty soldiers, plus families and civilian personnel. The City of Yelm has experienced a 42 percent population increase from 2000 to 2009. Increased development will result in further alteration of terrestrial, freshwater, and marine habitats, habitat forming processes and foodwebs. The resulting impacts are often irreversible or prohibitively costly to restore.
2. Flooding – The Nisqually mainstem flooding problems are complex and have the potential to cause extensive damage.
3. Surface water pollutant loading and runoff from the built environment – As development increases so do the threats posed by surface water loading and runoff. Existing laws and regulations govern the design of systems to manage surface water loading/runoff for new development. However, diversion of surface water due to mandated stormwater treatment could deprive some aquatic systems of hydrologic input.
4. Climate change – Increased temperatures, changes in volume and timing of precipitation and stream flows, as well as a reduction in snowpack will have major implications for in-stream flows, ecosystem health, fish and wildlife, forests, and agricultural practices. A rise in sea level is likely, which would affect the railroad line along the east side of the Nisqually Reach. Probable effects could include increases in coastal erosion, landslides, inundation and flooding.
5. Dikes and levees – The Nisqually River watershed contains dikes and levees, which result in: the disconnection of rivers with their floodplains; habitats which do not support complex food webs; reduced biodiversity; and threatened survival of some species, such as salmon.
6. Invasive species (terrestrial, freshwater, and marine) – Whether they are introduced deliberately or inadvertently, invasive species may out compete native species for resources, prey upon native species, reduce the resiliency of ecosystems, and change the character of habitat. Japanese knotweed (*Polygonum cuspidatum*) has become a

Thurston County In-Lieu Fee Prospectus

significant concern along river and stream corridors. Currently, there are large infestations of knotweed in the upper watershed with pockets of occurrence in the lower watershed. Reed Canary Grass (*Phalaris arundinacea*) chokes many small channels and off-channel areas, which appears to have reduced potential spawning habitat for salmonids. Within the Nisqually River watershed, prairies are particularly vulnerable to the effects of invasive species colonization. Scotch broom (*Cytisus scoparius*) and tall oatgrass (*Arrhenatherum elatius*) are examples of plant species that have undermined the ability of prairie areas to support native species. Climate change may exacerbate the threats posed by invasive species.

10.2.4 Aquatic Resource Goals and Objectives

TCWRP proposes that the ILF program will help to meet the following general resource goals for the Nisqually River watershed:

- Wetland, channel migration zone, and floodplain preservation through property acquisition
- Wetland restoration
- Revegetation projects
- Reduce flood hazards, i.e., property loss and damage from flood events and adverse impacts to streams from flood events
- Improve water quality, i.e., reduce number of impaired waterbodies and risk of groundwater contamination

11. Site Selection Process

One of the main objectives of TCWRP's ILF program is to provide compensation for resource impacts that result in greater ecological benefit to a sub-basin, basin, or watershed than could be achieved through permittee-responsible mitigation. In addition the program aims to achieve "no net loss" of functions on a watershed scale. Therefore, sites will be prioritized based on their ability to meet watershed goals and restore watershed processes.

TCWRP's ILF Program will use a method based on the Puget Sound Watershed Characterization Project as an initial screen (<http://www.ecy.wa.gov/services/gis/data/pugetsound/characterization.htm>) coupled with assessments and recommendations within existing basin plans.

Thurston County's Watershed Characterization method establishes a framework to identify science-based data that enables "informed solutions" and actions to address the impairment of ecological processes in the watershed. One method for conducting this characterization is outlined in Methodology to a Watershed Based Approach to Clean Water and Natural Resource Management. It is available at <http://www.co.thurston.wa.us/waterresources/chara/chara-home.html>.

Thurston County In-Lieu Fee Prospectus

The results of the Thurston County watershed characterizations include information on five upland ecological processes, as well as the current condition of natural resource sites, and habitat fragmentation. The assessment of ecological processes and wetlands, riparian areas, and floodplains, within the context of their location in the landscape will provide scientific information to guide sound planning decisions.

The goal of watershed characterization is to identify areas within each watershed that are more suitable for:

- Restoration actions;
- Protection; and
- Higher intensity development.

In combination with other available data, watershed characterization information provides an ecosystem perspective of the ecological functions and processes to support watershed-level planning and the development of land use policies and decisions.

Watershed characterization has integrated information from several environmental assessments to provide an ecosystem view of the landscape. The results of this characterization are useful for local governments in many ways. For the purposes of ILF the results can help to develop restoration and protection strategies within a watershed.

The characterization results prioritize general areas for restoration based on the following:

- The importance of the area for providing specific watershed processes (e.g., surface water storage, recharge, and discharge, and sediment export)
- The level of degradation the area has experienced which has reduced an area's ability to contribute to the performance of watershed processes

TCWRP plans to use the characterization results to prioritize the sub-watershed within a service area where mitigation activities would provide the greatest potential improvement to watershed processes (i.e., important but degraded). Characterization results can be considered in total, or for a specific watershed process. For example, if flooding is a major issue in a service area, the sponsor would focus on the characterization results that prioritize the best areas to restore surface water storage processes.

In addition, as regulators approve the use of ILF credits as compensation for unavoidable, permitted impacts, the acreage and functions lost will be recorded as debits within general function categories (refer to Section 6.1). If there is an imbalance in the number of debits across function categories (e.g., many more debits to a specific function category, such as water quality), it may influence the site selection prioritization (refer to Section 8.2.1). For example, if impact projects have many more debits to the water quality function, this may use up all the water quality credits and result in a surplus of hydrologic and habitat function credits. For the next selection of a mitigation-receiving site, the sponsor, in consultation with the IRT, may focus on the characterization results that prioritize the best areas to restore water quality processes. An imbalance of credits among function groups may also influence the site-scale selection. In the example of more debits to water quality

Thurston County In-Lieu Fee Prospectus

functions, the sponsor may focus on sites with a high potential to improve water quality functions.

After basins have been prioritized, the sponsor will review more detailed information to narrow the focus to a specific sub-basin or down to the level of potential sites within a couple of the prioritized sub-basins. The ILF sponsor will utilize the following existing plans and lists that identify priority habitats needing particular attention, vulnerable locations within the watershed, and areas most likely to benefit from restoration, creation, enhancement, and preservation:

- Salmon Conservation and Recovery Plans and three year work plans
- Watershed Action Plans, developed through Chapter 400-12 WAC
- Watershed Plans, developed through RCW 90.82
- County Basin Plans
- County Rivers Flood Hazard Management Plan
- Ecoregional Assessments: Willamette Valley/Puget Trough/Georgia Basin (Nature Conservancy, 2004)
- Thurston County Biodiversity Network Plans
- Staff resources: PSP Ecosystem Recovery Coordinators, Ecology Watershed leads; Tribal biologists

In addition, the sponsor will consult with local non-governmental organizations, special districts, and community organization to gain an understanding of recent local developments, conditions, and opportunities.

At the site-scale, TCWRP will refer to *Selecting Wetland Mitigation Sites Using a Watershed Approach* (Hruby, et. al., 2010) and TC's Watershed Characterization process to review the ecological suitability of any potential sites. This review will generally assess the ability of a site to provide benefits at a watershed scale. Further, the review will evaluate whether, and to what degree mitigation activities will be able to remove constraints on a site, thereby restoring processes and providing a lift in functions.

The sponsor will review and consider the following basic information to further refine the list of possible sites:

- A. Watershed-scale characteristics, such as aquatic habitat diversity, habitat connectivity, surface water areas (wetlands and streams), ground water flow patterns (including recharge, discharge, and storage areas), other landscape scale functions, and the degree of impairment of these characteristics
- B. Extent to which the site has potential to contribute to the restoration or protection of watershed processes
- C. Potential of the mitigation-receiving site to successfully contribute to a gain in functions as a result of mitigation activities
- D. Hydrologic conditions, soil characteristics, and other physical and chemical characteristics

Thurston County In-Lieu Fee Prospectus

- E. The size and adequacy of buffers necessary to protect the mitigation-receiving site from adjacent development or land use
- F. Location and availability of hydrologic sources (including availability of water rights, presence of State-Owned Aquatic Lands) and other ecological features
- G. Compatibility with adjacent land uses and watershed management plans
- H. Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources (e.g., shallow sub-tidal habitat, mature forests), cultural sites, or habitat for federally- or state listed threatened or endangered species
- I. Other relevant factors including but not limited to:
 - 1. Development trends
 - 2. Anticipated land use changes
 - 3. Habitat status and trends
 - 4. 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)
 - 5. Water quality goals
 - 6. Floodplain management goals
 - 7. The relative potential for chemical contamination of the aquatic resources.
 - 8. The relative locations of the impact and mitigation receiving sites in the stream network
 - 9. Cost of acquisition and implementation
 - 10. Location with respect to urban centers.

TCWRP believes that special consideration should be given to sites within urban areas, despite the challenges of restoring wetland functions in an urbanizing area. As an organization often tasked with engineering solutions to water flow problems that have resulted primarily from wetland loss and alteration of natural water flow processes, TCWRP recognizes the importance of preserving and rehabilitating the remaining fragments of wetland and green space in urban and residential areas. These areas continue to provide critical ecosystem services to the environment and for the benefit of the neighboring communities. The TCWRP is confident they will be able to identify and acquire sites in proximity to urban areas that can be restored and maintained despite their higher costs in comparison to rural sites. Our goal is to develop a range of sites, from rural to urbanizing, throughout the service area and thereby counteract the trend for compensatory mitigation sites to be located in primarily in rural areas. (Brass, 2009).

Ecologically appropriate, watershed-based site selection, particularly for an in-lieu fee program, requires a process. And the process needs to be flexible to meet the needs of any participating stakeholders in the service area. For example, in WRIA 11 and 13, several basins run through Joint Base Lewis-McChord (JBLM). In this case, the site selection process would need to be flexible enough to encompass the needs and unique opportunities present on the base.

Thurston County In-Lieu Fee Prospectus

11.1 IRT Approval

When the sponsor has identified an appropriate site, the sponsor will formally submit the proposed site to the IRT for approval. The selection will be supported with the results of the watershed characterization process, landuse plans and other selection criteria. If approved, subsequent site visits will occur to collect additional data, such as:

- Rating the aquatic resource using HGM criteria and the Wetland Rating System for Western Washington (2004) as appropriate
- Applying the Credit/Debit Tool (or another IRT-approved mitigation assessment tool) based on existing conditions
- Assessing whether existing conditions are conducive to generating the desired number of credits.

The data collected will be used to create a conceptual mitigation plan specific to the selected site.

12. Stakeholder Involvement Strategy

TCWRP anticipates working with stakeholders, such as land trusts, conservation district, tribal organizations, cities and non-governmental organizations to identify potential sites within the subwatersheds prioritized for mitigation within each of the geographic service areas. The sponsor anticipates meeting with local stakeholders to help narrow the focus to a specific basin or sub-basin or down to the level of potential sites within a couple of the prioritized sub-basins. The stakeholders will provide input based on local priorities, individual expertise, and on-the-ground understanding of site feasibility, important ecological characteristics, and expected development pressures.

The Thurston County Water Resources Program will place special emphasis on coordination with the Nisqually River Council, Thurston County Conservation District, Squaxin Island Tribe and Nisqually Tribe. These organizations are already invested in improving wetland and watershed functions in the proposed service areas and bring critical understanding of local developments, conditions, situations and wetland restoration opportunities.

13. Preservation Strategy

Preservation of high value aquatic resources that are under immediate and verifiable threat of impact, i.e. conversion to residential development, commercial development, silvicultural forest practices, or other activity that would significantly alter ecosystem functions and values, may be used as a compensatory mitigation strategy by the ILF Program. In general, these lands must be determined to be consistent with the preservation criteria in the Federal Rules (33 CFR 332.3(h)) and must meet the above referenced selection criteria before the sites can be considered for compensatory

Thurston County In-Lieu Fee Prospectus

mitigation. In cases where preservation is proposed, project planning and implementation funds from the credit sale may be used to secure the property to be preserved.

To the extent appropriate and practicable, preservation shall be done in conjunction with aquatic resource restoration, creation, enhancement, or a combination of activities. In such cases, the Credit/Debit Tool will be used to assess existing conditions relative to the potential effects of conversion of the aquatic resources and adjacent terrestrial areas that support them (if present). This assessment will consider the likelihood of impacts actually occurring and weigh the assessment accordingly through application of risk and time-lag factors.

14. Site Acquisition and Protection

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

TCWRP will secure project sites primarily through fee simple purchase or long-term management and facility plans (for publicly-owned land). All sites will be permanently protected by a permanent conservation easement or restrictive covenants held by a local, regional or national land trust or a state or federal agency authorized to hold an interest in land. The TCWRP may also enter into separate contracts for stewardship services with the easement grantee. If ownership or stewardship is transferred, the TCWRP will retain the exercise of a contingent right to enforce the terms of the conservation easement or deed restriction should it become necessary. In all cases, legal responsibility for long-term site protection remains with the ILF sponsor. Where a real estate instrument, such as an easement, is used to protect the site, the document will include a provision requiring 60-day advance notification to the sponsor and Corps before any action is taken to amend, transfer or modify the document, including transfer of title or ownership.

Conservation easements placed on ILF sites will grant the sponsor the right to construct a mitigation project on the land, access the mitigation-receiving site for maintenance and monitoring, and to enforce the terms of the easement in perpetuity. Each easement will be negotiated individually based on specific attributes of the property, but there will be a template easement to use as a starting point included with the program Instrument, and this template will be made available to landowners upon request.

Lands that are already encumbered with conservation easements may also be eligible as ILF mitigation-receiving sites. Although sites already protected would not be eligible to earn any preservation credits, such encumbered properties may have a lower purchase cost and represent a financially prudent alternative to unprotected sites, provided wetland restoration activities are allowed. In these cases, the existing easements will be reviewed

Thurston County In-Lieu Fee Prospectus

to ensure they are consistent with the provisions of the model conservation easement used by TCWRP's ILF Program. If they are not, the landowner and the sponsor will negotiate changes to the existing conservation easement to incorporate any additional protections and allowances required for the site to conform to TCWRP's ILF mitigation-receiving site criteria.

In the event that a site is not adequately protected, and the landowner intentionally or unintentionally fails to abide by the terms of the conservation easement resulting in compromised functions of the applied mitigation, the sponsor or qualified stewards will enforce conservation easements, restrictive covenants, and other protection mechanisms through application of 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 conservation easement,
- File a civil suit against the landowner for failure to meet the terms of the conservation easement.
- If stewardship or ownership of a site has been transferred to another party, the sponsor will regain stewardship or re-purchase that site, if necessary.

Following the signing and recording of the conservation easement, the sponsor will coordinate initiation of project design and construction according to the steps described in Section 15 *Mitigation Project Implementation*.

15. Mitigation Project Implementation

TCWRP has extensive experience designing and implementing restoration, aquatic resource mitigation, and other water flow improvement projects. TCWRP plans to use this experience to successfully develop and implement mitigation-receiving sites that will generate/fulfill wetland mitigation "credits" to use in its ILF program.

TCWRP will design and complete the permitting process for mitigation-receiving sites. TCWRP will select a qualified construction contractor through a competitive bidding process and perform contract management and oversight. Once construction is complete, TCWRP will monitor and maintain mitigation-receiving sites throughout the regulatory performance period. TCWRP anticipates performing the long-term maintenance and management of its mitigation-receiving sites.

15.1 Credit Fulfillment Process

The fulfillment process will generally follow the following sequence:

- A. Mitigation-receiving site selection and assessment

Thurston County In-Lieu Fee Prospectus

1. **Select a 'preferred' mitigation receiving site** according to process outlined in Section 11. There may be one or more preferred sites presented to the IRT as options for mitigation-receiving sites.
2. **Submit preferred site and preliminary concept plans to IRT for review**, including the site description and any 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.

The sponsor shall submit a copy of an unsigned conservation easement or other legal site protection mechanism approved by the Corps and Ecology that would protect the land in perpetuity.

The sponsor shall also submit a concept plan for the proposed site. At minimum, the concept plan should provide a simple graphic representation of key project elements and a short narrative description.

3. Pending IRT approval to proceed, TCWRP will develop a draft Mitigation Plan and cost estimate.
 4. Publication of a joint Ecology/Corps Public Notice on draft ILF Mitigation Plan
 5. Apply the Credit/Debit Tool to determine the number of potential credits the mitigation project should generate.
- B. TCWRP will begin data collection and validation of assumptions to confirm suitability of preferred mitigation receiving site.
- C. TCWRP will complete a final Mitigation Plan, which will be incorporated into the program instrument, as an amendment, in the *Mitigation Plans* section at the end of the instrument, upon IRT approval.

In addition to the required components of a Mitigation Plan outlined in Section 15.2, the sponsor will also:

1. Identify project goals and objectives, as well as preliminary performance measures and goals.
2. Include plans and specifications, including identification of necessary local, state and federal permits for proposed project.
3. Identify affected stakeholders and provide a plan for stakeholder involvement
4. Propose maintenance and monitoring plan with specific performance standards.
5. Propose adaptive management and contingencies plan.

Thurston County In-Lieu Fee Prospectus

6. Propose a Long Term Management Plan
 - D. Develop site protection instrument (e.g. conservation easement or restrictive covenants) and long-term stewardship plan.
 - E. Negotiation with and approval by the IRT of monitoring periods and credit release schedules. The credit release schedule identifies (1) when, during the performance phase of the project, and (2) how many credits will be “released” i.e. the point at which the sponsor has met the obligation for fulfilling the credit.
 - F. Modify Program Instrument. The federal rule [33 CFR 332.8(g)] describes the process by which the 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)].
 - G. Final IRT approval of Mitigation Plan and site protection instrument.
 - H. Obtain all requisite permits and approval to construct ILF Mitigation.
 - I. Implement approved Mitigation Plan

15.2 Mitigation Plan

TCWRP will produce mitigation plans and site designs for each site selected to compensate for unavoidable, permitted impacts. The plan will include a description of the proposed mitigation credits to be established.

The mitigation plan will meet the requirements specified in 33 CFR §332.4(c) and contain the following elements:

1. Objectives: A description of the resource type(s) and amount(s) that will be provided, the method of compensation, and the manner in which the resource functions of the project will address the needs of the watershed.
2. Site Selection: A description of the factors considered during the site selection process.
3. Site Protection Instrument: A description of the legal arrangements and instrument that will ensure the long-term protection of the project site.
4. Baseline Site Information: A description of the ecological characteristics of the proposed site.
5. Determination of Credits: A description of the number of credits to be provided, including a brief explanation of the rationale for this determination.
6. Mitigation Work Plan: Detailed written specifications and work descriptions for the project, including geographic boundaries; construction methods, timing, and sequence; source(s) of water, including connections to existing waters and uplands;

Thurston County In-Lieu Fee Prospectus

methods for establishing the desired plant community; plans to control invasive plant species; the proposed grading plan; soil management; and erosion control measures.

7. Maintenance Plan: A description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.
8. Performance Standards: Ecologically based standards that will be used to determine whether the compensatory mitigation project is achieving its objectives.
9. Monitoring Requirements: A description of parameters to be monitored in order to determine if the compensatory mitigation project is on track to meet performance standards and if adaptive management is needed. A schedule for monitoring and reporting on monitoring results will also be included.
10. Long-term Management Plan: A description of how the project will be managed after achievement of performance standards to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.
11. Adaptive Management Plan: A management strategy to address unforeseen changes in site conditions or other components of the project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect the project's success.
12. Financial Assurances: A description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with its performance standards.
13. Other 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 as necessary for inclusion in the Mitigation Plan

All Mitigation Plans for the TC ILF Program will adhere to the requirements for Mitigation Plans outlined in the federal rule, and the IRT will review and approve all Mitigation Plans.

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 jeopardize creation of credits such as trail corridors, certain utility easements, prior mitigation projects without any available additional credit, and functioning restoration projects.

Thurston County In-Lieu Fee Prospectus

15.2 Fulfillment of Advance Credits

For fulfillment of the sale of “advance credits,” a compensatory mitigation project plan will be submitted to and approved by the IRT, and the initial physical and biological improvements will be initiated by the end of 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 IRT will include a credit release schedule. Generally, the sponsor will request credit release consistent with target schedules identified in Section 15.3.

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 unavoidable impact that generated the advance 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 and Ecology approval following consultation with the IRT.

15.3 Credit Release

For each mitigation-receiving site, a credit release schedule will be negotiated with the IRT. Generally, credit release will correspond with the achievement of specific performance standards as observed during official monitoring events identified in the monitoring schedule.

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

Thurston County In-Lieu Fee Prospectus

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.

Additionally, other entities on the IRT (e.g. Ecology) will have the opportunity and obligation to set and modify the credit release schedule. Furthermore, 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 IRT. The table below provides an example credit release schedule. Actual credit release schedules for each project may differ from the example below depending on site conditions and project variables.

Example Credit Release Schedule

Proposed Project Milestone	Portion of Credit Released	Cumulative Portion of Fulfillment
Site acquisition by sponsor and site protection mechanism in place (mitigation-receiving site plan approved by IRT)	1/8	1/8
Installation (approval of As-Built)	1/8	1/4
Year 1 performance standards achieved (primarily hydrologic)	1/8	3/8
Year 3 performance standards achieved	1/8	1/2
Year 5 performance standards achieved	1/8	5/8
Year 7 performance standards achieved	1/4	7/8
Year 10 performance standards achieved (including delineation, running credit debit tool) and transition to long-term stewardship (IRT sign-off on achievement of performance standards)	1/8	Credit fulfilled

Credit releases for in-lieu fee projects must be approved by the Corps and Ecology, in consultation with the IRT. 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

Thurston County In-Lieu Fee Prospectus

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, Ecology, or both 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 Ecology, after consultation with the IRT, may 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 IRT and the sponsor shall identify appropriate adaptive management and contingency measures and devise a plan for implementation.

15.4 Project Implementation

Once the IRT has approved a project plan and credit release schedule, the sponsor will request spending authorization to initiate implementation of the mitigation project. The sponsor will oversee contract development, select a qualified construction contractor following a competitive bidding process, 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 as necessary.

15.5 Monitoring and Maintenance

Monitoring will require qualitative and quantitative assessments of physical, chemical and biological characteristics of the project as appropriate, using scientifically appropriate analytical methods. The purpose of monitoring is to determine the level of compliance with ecological performance standards established in the site-specific mitigation plan. In addition, monitoring data will help to identify problems that may trigger maintenance activity, contingency plans, remedial action, or adaptive management measures.

Monitored parameters depend in large part on the type, scale and scope of a proposed project, but will generally include hydrologic conditions, vegetative cover, soil stability, and presence/extent of noxious weeds and nuisance species.

As necessary, the sponsor will coordinate with land managers and appropriate contractors to outline maintenance protocols for each mitigation project. Active maintenance practices will generally follow a three to ten year program that may include repair/replacement of engineered structures, nuisance species control, and adaptive management measures, such as grade or hydrology modifications, species substitutions, replanting, replacement of habitat features, and temporary fencing.

15.6 Adaptive Management and Contingency Planning

Once ILF mitigation projects are installed, they will be adaptively managed in response to the outcome of regular and routine maintenance and monitoring events. If any monitoring data reveal that a mitigation project is failing in whole or in part, the sponsor will determine whether conditions can be remedied through maintenance activities. If the failure is beyond the scope of routine maintenance, the sponsor will submit a Contingency Plan to the IRT. The Contingency Plan may range in complexity from a list of plant substitutions, to cross-sections of proposed engineered structures. Once approved by the IRT, the contingency plan will be implemented and will replace the approved mitigation plan. If the failure is substantial, the sponsor will extend the maintenance and monitoring period for that project.

16. Long Term Management/Site Stewardship

Projects will be designed, to the maximum extent practicable, to be self-sustaining once performance standards have been achieved. The ILF sponsor will ensure that projects are maintained and managed to protect their long-term viability as functional aquatic resources.

Following the performance period (i.e., regulatory monitoring period) and release of all credits, ILF mitigation projects will be managed in accordance with long-term stewardship guidelines. Credit pricing will reflect the costs associated with long-term management obligations. In addition to long-term monitoring and management specified in the ILF program instrument, the sponsor will ensure the protection of ILF mitigation-receiving sites in perpetuity.

The ILF sponsor will either retain ownership of ILF project properties or transfer interests in property in part or in whole to a qualified local land manager such as a tribe, conservation district, or a non-profit land trust or other non-profit that has experience in conservation land management. However, the new owner cannot be conservation easement grantee. The holder of the conservation easement may accept title to the protected property only after transferring the easement to a different entity qualified to hold and enforce conservation easements. The sponsor will also either transfer maintenance funds to the new owner or enter into an agreement to provide the necessary long-term maintenance through other means.

TCWRP anticipates that a site protection mechanism, such as a conservation easement, deed restriction or restrictive covenant, will be placed on all mitigation-receiving sites. The site protection mechanism must grant the sponsor access for monitoring and enforcement, and stipulate long-term protection obligations. TCWRP will include templates for a conservation easement and a restrictive covenant with the program Instrument.

The sponsor will submit an annual site monitoring report for all mitigation-receiving sites. The report will include any ownership changes, field observations and results of any field

Thurston County In-Lieu Fee Prospectus

visits. Site visits will be conducted as needed but must occur immediately prior to and after any changes in ownership. Site visit will include a review of all real estate instruments, will list current ownership and easements, detail current land uses, and include site photographs. Annual site monitoring reports will be based on prior site visits, subsequent status changes reported to the sponsor through real estate instruments, and changes initiated by the TC ILF Program.

17. How Mitigation Relates to Restoration Projects

Mitigation credit shall not be available from other County, State or Federal restoration projects in existence outside the TC ILF Program. In cases where mitigation sites are adjacent to or near to existing or proposed restoration sites, the Mitigation Plan will clearly show areas of restoration (where no credit is available) and where mitigation credit can be generated.

TCWRP will not derive credit from any project(s) already funded with Salmon Recovery Fund money or any projects already planned and funded or completed to meet a permit condition. However, there may be cases when ILF mitigation fees can be used to implement a salmon recovery project or other restoration project. For this to occur, all of the following must apply:

- The project is not funded
- There is not a restriction related to the funding used to acquire a site where the project will occur
- The project is not a requirement associated with a permit (e.g. a mitigation project)

The federal rule, [332.3(j)(2)] states:

“Except for projects undertaken by federal agencies, or where federal funding is specifically authorized to provide compensatory mitigation, federally-funded aquatic resource restoration or conservation projects undertaken for purposes other than compensatory mitigation, such as the Wetlands Reserve Program, Conservation Reserve Program, and Partners for Wildlife Program activities, cannot be used for the purpose of generating compensatory mitigation credits for activities authorized by DA permits. However, compensatory mitigation credits may be generated by activities undertaken in conjunction with, but supplemental to, such programs in order to maximize the overall ecological benefits of the restoration or conservation project.”

If mitigation fees are used to implement projects or portions of projects prioritized in a Salmon Recovery Plan, the unavoidable, permitted impacts for which mitigation fees were collected must be accounted for when measuring progress toward watershed-wide salmon recovery goals. For each mitigation project implemented through the TC ILF Program, the sponsor will provide details of the mitigation project to WRIA Forum staff for entry into the Habitat Work Schedule, which is an online mapping and tracking tool used to measure

Thurston County In-Lieu Fee Prospectus

progress and increase accountability for implementation of salmon recovery projects statewide. At minimum, information added to the Habitat Work Schedule database will include the amount of funding from mitigation fees, the type and amount of enhancement, restoration, creation, etc. to aquatic resources and buffers at the mitigation project, and the reports about unavoidable, permitted impact projects from which mitigation fees were derived. Mitigation projects will be clearly categorized as such in the Habitat Work Schedule database so it is evident to salmon recovery planning staff that ecological lift at mitigation projects is achieved at the expense of allowing permitted ecological impacts elsewhere in the watershed.

18. Evaluation and Reporting

In addition to annual monitoring reports, which describe how well individual sites are doing at achieving performance standards, objectives, and goals, the ILF sponsor will annually review how the program as a whole is doing at meeting the goals and objectives within each service area. Furthermore, the ILF sponsor will review and update the goals and objectives for each service area based on new information, changing conditions, and the effects of restoration activities completed by other programs. The ILF sponsor will submit an annual report to the IRT describing the progress the ILF program has made within each service area. This report will also identify any changes that may be needed in the Compensation Planning Framework (CPF). If changes are needed, the report will include an explanation of how the CPF will be revised.

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List of Acronyms

BMP	Best Management Practice
CAO	Critical Areas Ordinance
CFR	Code of Federal Regulations
DA	Department of the Army (usually indicating Corps permits)
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCD	Flood control District
GIS	Geographic Information Systems
HGM	Hydrogeomorphic
IGA	Inter-governmental Agreement
ILF	In-lieu fee
IRT	Inter-agency Review Team
LWD	Large Woody Debris
NOAA	National Oceanic and Atmospheric Administration
TC	Thurston County
TCC	Thurston County Code
TCD	Thurston Conservation District
TCRSD	Thurston County Resource Stewardship Department
TCWRP	Thurston County Water Resources Program
TRPC	Thurston Regional Planning Council
PSP	Puget Sound Partnership
RCW	Revised Code of Washington
SMG	Site Management Guidelines
WR	Water Resources
SWM	Surface Water Management
USFWS	United States Fish and Wildlife Service
WDFW	Washington Department of Fish and Wildlife
WRIA	Watershed Resource Inventory Area

Thurston County In-Lieu Fee Prospectus

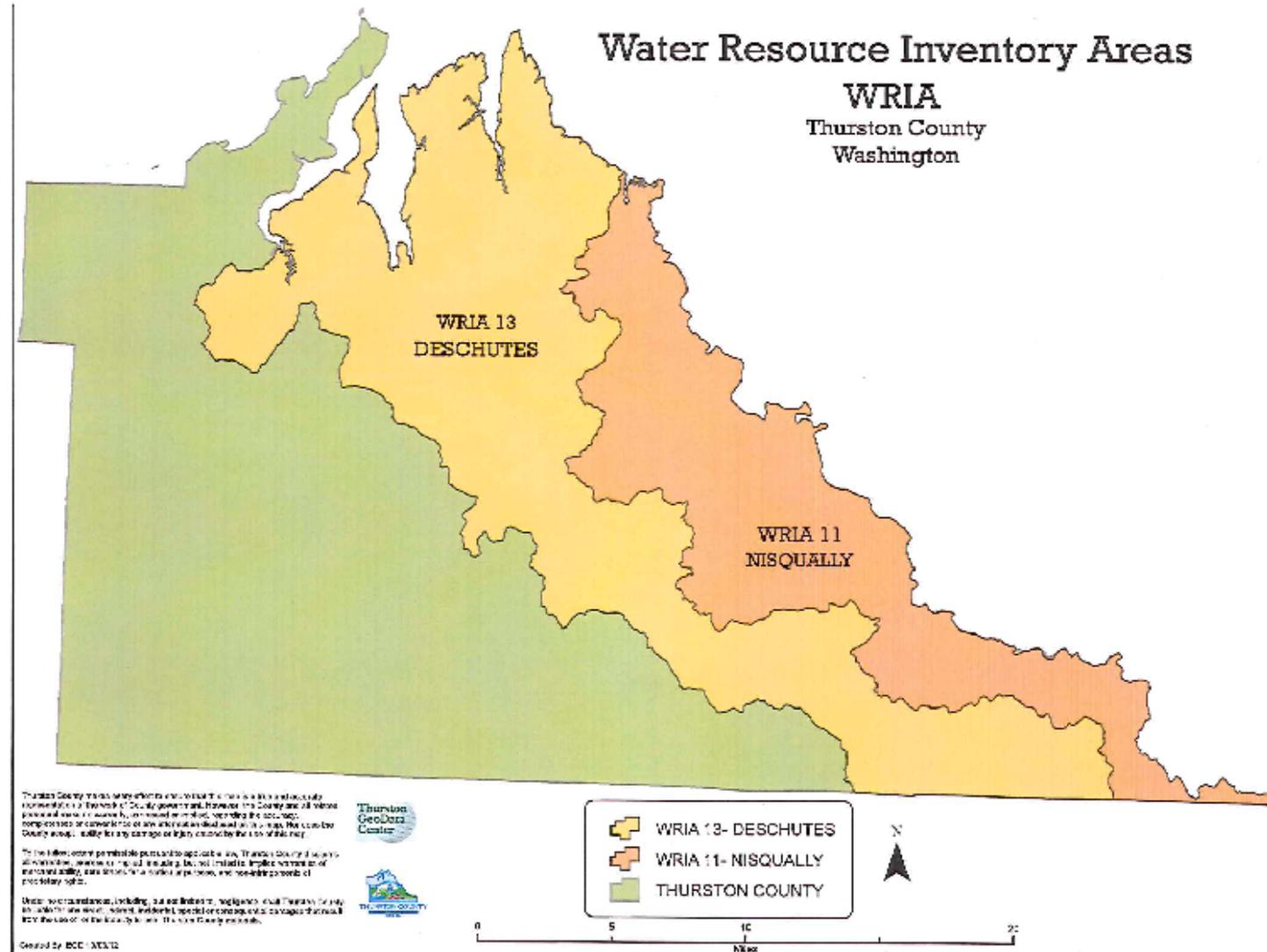


Figure 2. Thurston County Initial Service Area Watersheds

Thurston County In-Lieu Fee Prospectus

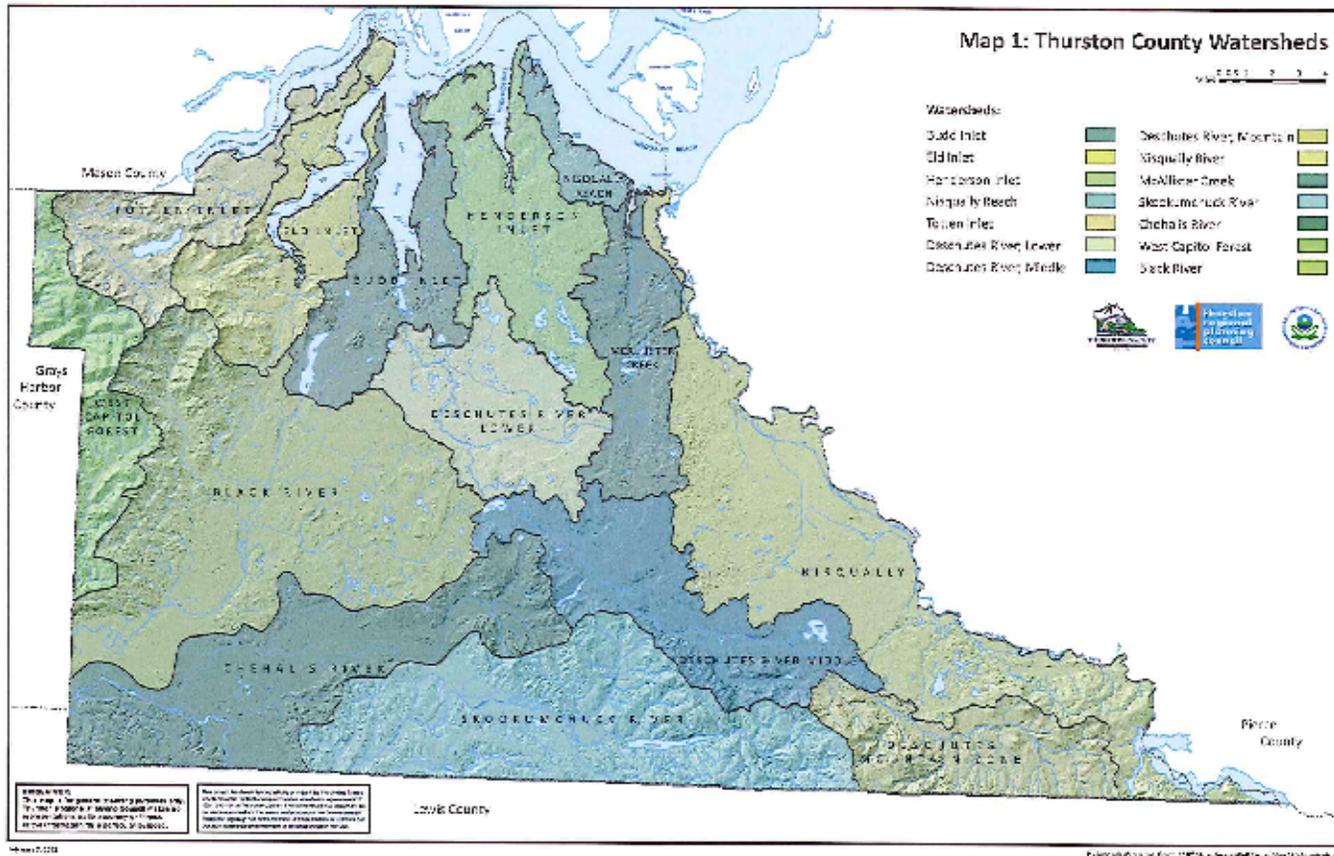


Figure 3. Thurston County Sub-Watersheds

Thurston County In-Lieu Fee Prospectus

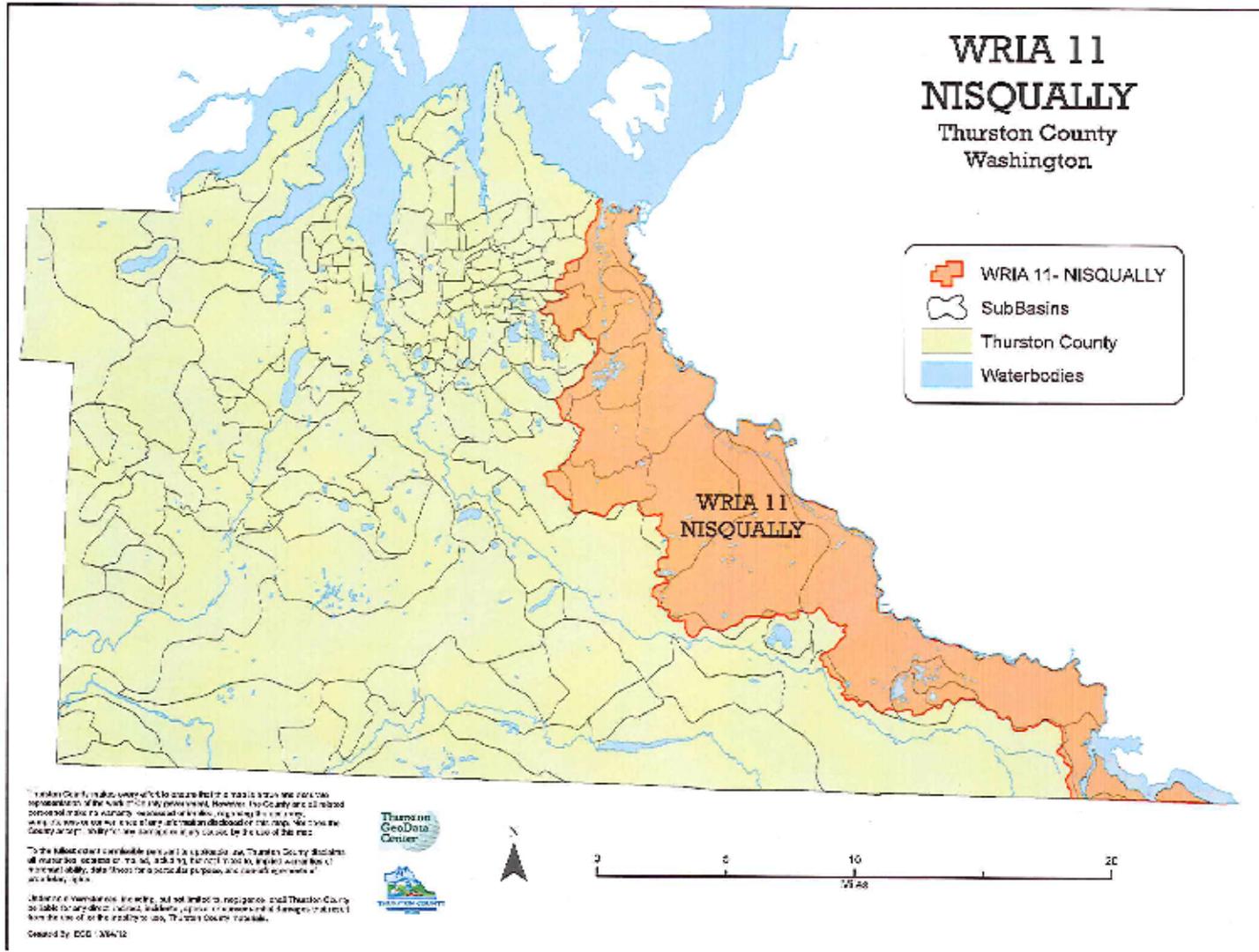


Figure 4. Nisqually Watershed – WRIA 11

