

POLICY ANALYSIS OF SHORELINE RESTORATION OPTIONS ON PRIVATE SHORELINES OF PUGET SOUND

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Introduction

Puget Sound shorelines have historically provided a diversity of habitats that support a variety of aquatic resources throughout the region. These valued natural resources are iconic to the region and remain central to both the economic vitality and community appreciation of Puget Sound.

Deterioration of upland and nearshore shoreline habitats, have placed severe stress on many aquatic resources within the region (PSAT, 2007). Since a majority of Washington State shorelines are privately owned, regulatory authority to legislate restoration on private property is limited in scope and frequency. Washington States' Shoreline Management Act (RCW 90.58) requires local jurisdictions to plan for appropriate future shoreline uses. Under the Act, future development can be regulated to protect existing ecological functions, but lost functions cannot be restored without purchase or compensation of restored areas. Therefore, questions remains as to the ecological resilience of the region when considering cumulative effect of existing/ongoing shoreline development constrained by limited shoreline restoration opportunities. In light of these questions, this analysis will explore opportunities to promote restoration on privately owned shorelines within Puget Sound. These efforts are intended to promote more efficient ecosystem management and improve ecosystem-wide ecological functions.

From an economics perspective, results of past shoreline management can generally be characterized as both market and government failure in effectively protecting the publics' interest in maintaining healthy shoreline resources. Therefore coastal development has proceeded in spite of negative externalities and market imbalances resulting in inefficient resource management driven by the individual ambitions of private shoreline property owners to develop their property to their highest and best use. Federally derived property rights will protect continuation of existing uses along privately owned shorelines; therefore, a fundamental challenge remains in sustainable management of existing shoreline resources while also restoring ecological functions lost to past mistakes in an effort to increase the ecologic resiliency within the region.

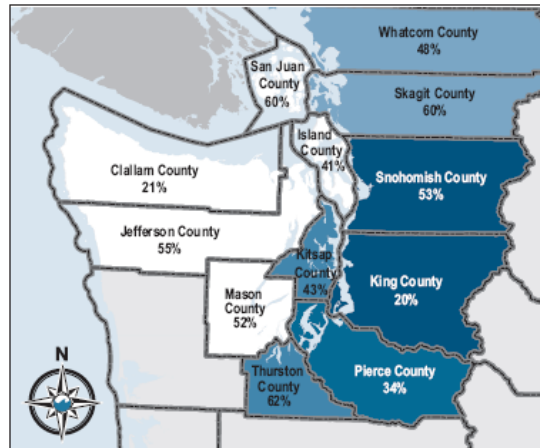
Background - Shoreline Development

According to a 2003 report by the Pew Oceans Commission, more than 150 million people, or half the population of the United States currently live within coastal areas. Over the next 15 years more than 27 million more people are expected to settle within coastal areas (Beach, 2002). A similar trend is forecast in Puget Sound.

As shown in the figure below, the Puget Sound Action Team (PSAT) predicts upwards of 40 to 60% growth within Puget Sound coastal counties over the next 25 years, translating to more than 1.4 million additional residents to the region (PSAT, 2007).

Partially as a result of coastal development, over 800 miles of Puget Sound's 2600 miles of shoreline are already armored with bulkheads protecting residential and commercial shoreline properties (PSAT, 2004). Shoreline armoring is known to cause physical manipulations to shorelines, which can then inhibit important ecological functions that negatively affect aquatic resources (Gerstel & Brown, 2006). Regional sea-level rise of +6" to +50" (UWCIG, 2008) based on IPCC (2007) climate change scenarios in combination with regional population increases (PSAT, 2004) are anticipated to result in additional requests for shoreline armoring, which may displace more shoreline habitat.

Figure 1: Future Growth in Puget Sound (PSAT 2007)

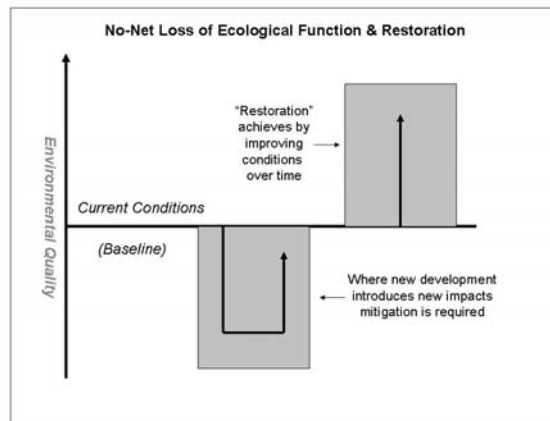


Background - Shoreline Use

The Public Trust Doctrine consists of a principle derived as part of English Common Law. The doctrine acknowledges waters of the state as a public resource owned and available to all citizens of the state. The doctrine, in theory, limits both public and private use of tidelands and other shorelands to protect the public's right to use and enjoy the waters of the state. Protection of this principle is to be the duty of the state and is intended to be carried out in Washington through the implementation of the Shoreline Management Act (SMA). Shorelines within Puget Sound are utilized for a variety of uses, serving as a place to live, work and recreate for many citizens of the State. The inherent balance of shoreline uses with protection is a fundamental tenet of the SMA.

Under the authority of the SMA, local governments (Cities/Counties) are required to plan for "appropriate" uses through the creation and implementation of local Shoreline Master Programs (SMP). Each local SMP must comply with the main policies of the SMA while also reflecting local values. Amendments to the SMA in 2003 require local jurisdictions to update SMP's that will ensure no net loss of ecological function (WAC 173-26) through implementation of the program. This policy does not prohibit new uses within shoreline areas, but does require local governments to identify mitigation or restoration equivalent to anticipated impacts of future development to maintain the ecological baseline ensuring no net loss of shoreline ecological functions (see figure 2 below).

Figure 2: No Net Loss (Department of Ecology)

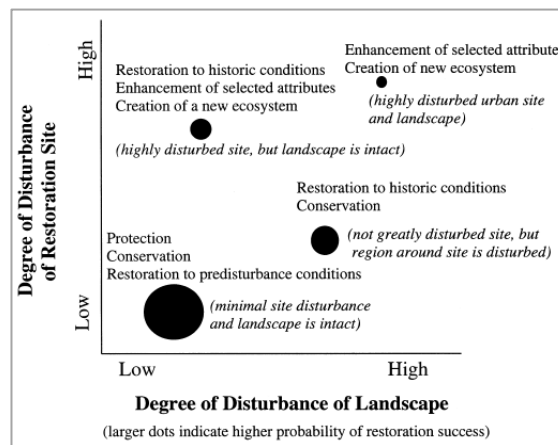


Implementation of the centralized no net loss policy required by the SMA (RCW 90.58) through a more decentralized local Shoreline Master Programs, has the benefit of local involvement reflecting local values, but may result in less consistent implementation of state-wide policies (Hershman et al. 1999).

Background - Shoreline Restoration

It is commonly accepted that there are less overall barriers to instigating restorations projects on publicly owned properties as opposed to owner buy-in/compensation that would be required for restoration on private shoreline properties. Based on this limitation, one of the central concerns raised in this paper focuses on the reality that restoration site opportunity may be more influenced by ownership than ecological principles. In efforts to ensure higher levels of restoration project success, restoration ecologists have recently placed greater emphasis on utilizing appropriate restoration strategies based on the surrounding ecosystem conditions. As illustrated in Figure 3 below, the following restoration strategies: “Creation”, “Enhancement”, “Restoration” and “Protection” are specifically recommended based on the degree of disturbance at both the site and landscape level (Thom et al 2005).

Figure 3: Restoration Strategy (Thom et al 2005)



Large dots within the diagram, depict potential restoration sites characterized by a low degree of both site and landscape disturbance, for which “Protection” of these relatively intact resources would be the appropriate management (restoration) strategy. Alternatively, locations with both a high degree of site and landscape disturbance (depicted by small dots) should focus on either “Enhancement” of existing resources or “Creation” of new ecosystems within this highly degraded environment.

Policy Analysis

The goal of this analysis is to maintain or improve ecological conditions within Puget Sound through more efficient management of shoreline resources. Shoreline management within Puget Sound involves many stakeholders representing a variety of issues and perspectives. Future policy decisions affecting these interests will need to be evaluated utilizing fair criteria ensuring transparency and objective analysis of the issues. In this pursuit, policy alternatives considered within this report will be analyzed by five main criteria: promoting “equity”, ensuring “efficiency” in natural resource management, basing decisions on the “best available information”, while also “acknowledging uncertainty” and finally consideration of the “political feasibility” of each policy alternative analyzed.

The following four policy alternative are defined as: (A1) No Action: This alternative could be described as ‘status quo’, with no changes proposed to current shoreline management related policies or program implementation, (A2) Education/Outreach: This non-regulatory approach would involve a

comprehensive education and outreach program intended to bring broad awareness of environmental problems and solutions associated with restoration on private shoreline properties. Success under this alternative would consist of region-wide willingness of shoreline property owners to allow restoration on their property, (A3) Incentives: A variety of incentives could be used to influence private property owners to allow restoration of privately owned shoreline areas. Incentives could range from financial support such as a property tax break or low interest loans/grant to regulatory relief in the form of setback reduction or height increases for future on-site development, and (A4) Legislate Restoration: This alternative would consider formal regulatory changes to grant more authority to resource management agencies to require restoration of impaired resources on private properties. The scope of this enhanced authority could range in terms of local, state or federal resource management authority. Regulated restoration activities could range from requiring increased mitigation ratios applied to future development to outright eminent domain of private property for ecological restoration activities.

Results

Each alternative was analyzed based on the impact categories identifying the Policy Objective and Policy Criteria. The matrix below provides a summary for each cell of each alternative categorized by color with green representing “High” consistency with Policy Criteria, yellow as “Unknown”, and red as “Low” consistency with Policy Criteria.

Policy Goal – Maintain or Improve Shoreline Ecological Functions through Efficient Management of Shoreline Resources.					
Impact Categories:		Policy Alternatives:			
POLICY OBJECTIVE:	Policy Criteria:	Alternative I: No Action	Alternative II: Education/Outreach	Alternative III: Incentives	Alternative IV: Legislate Restoration
EQUITY:	Environmental Benefit:	Low	Unknown	Unknown	High
	Property Rights:	High	High	High	Low
EFFICIENCY:	Resource Management:	Low	Unknown	High	High
	Costs/Benefit Balance:	Low	Unknown	High	Low
KNOWLEDGE BASED DECISIONS:	Scientific Basis:	Low	Low	Low	High
	Implementation Success:	Low	Unknown	High	Low
	Supporting Information:	High	Low	Low	Low
POLITICAL FEASIBILITY:	Legislative Feasibility:	High	High	High	Low
	Community Acceptance:	Low	High	High	Low

Recommendation

In an effort to utilize a variety of restoration strategies in shoreline management, the most efficient policy would consist of a combination of maintaining Current Shoreline Practices (A1) to protect existing ecological functions within intact ecosystems in combination with Incentives (A3) to promote enhancement or creation of ecosystem functions within highly degraded landscapes. It should be noted that variability in the success of alternative A3 may depend on the net ecological benefit when considering any costs environmental costs associated with incentives as well as the attractiveness of the incentive to private property owners. Education/Outreach (A2) could also be successful depending on the effectiveness in producing environmental benefits.

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