



# Managing Washington's Coast

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*Washington State's Coastal Zone Management Program*



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## Washington's Coastal Zone Management Program

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*Editor:* Therese Swanson, who wishes to acknowledge the contributions of previous editors: Doug Canning, Sharonne O'Shea, Bonnie Shorin and Tim Trihimovich.

*Design:* Tim Schlender

*Inquiries about this document should be directed to Therese Swanson  
at 360-407-6789 or [tswa461@ecy.wa.gov](mailto:tswa461@ecy.wa.gov)  
Ecology is an equal opportunity agency. If you have special accommodation needs, contact Felicia Curtis at  
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# Executive Summary

This report is called the “Washington Coastal Zone Management Program Document.” This document explains Washington’s coastal zone management program and how the Department of Ecology administers the program. Basically, Washington’s program consists of two parts: 1) the six state laws, or “authorities” and their implementing regulations that Washington uses to manage activities in the coastal zone; and 2) the tasks that Ecology staff perform in accordance with the Coastal Zone Management grant in furtherance of the purposes of the Coastal Zone Management Act (CZMA).

Washington manages its coastal zone through a partnership with the federal government - a partnership expressed in the federal Coastal Zone Management Act. Passed in 1972, the Act calls for the “effective management, beneficial use, protection, and development” of the nation’s coastal zone and promotes active state involvement in achieving those goals.

As a means to reach those goals, the Coastal Zone Management Act requires participating coastal states to develop management programs that demonstrate how states carry out their obligations and responsibilities in managing their coastal areas. Upon federal approval of a state’s coastal zone management program, the state benefits by becoming eligible for federal coastal zone grants. A state’s grant allocation is based on the total number of shoreline miles and shoreline population density within the state’s jurisdiction.

Besides receiving federal funds, another benefit of having an approved program is the review authority that states have over certain federal agency actions. That authority allows the states to determine whether federal projects; or activities requiring federal licenses or permits; or those using federal funding are consistent with the state’s coastal program. Commonly referred to as “federal consistency,” this authority can enhance a state’s ability to manage its coastal zone in accordance with its particular goals and objectives.

Upon passage of the state Shoreline Management Act in 1971, the Washington State Department of Ecology became the lead agency for developing a comprehensive blueprint for managing the state’s shorelines. Ecology’s Shorelands and Environmental Assistance Program works with local governments and others to flesh out plans aimed at maintaining and improving shoreline quality, while at the same time allowing for reasonable and appropriate shoreline uses.

Because the federal Coastal Zone Management Act and the state Shoreline Management Act meshed so well, the Department of Ecology was best-suited to house Washington’s Coastal Zone Management Program. In 1976, Washington became the first state in the Nation to have a federally approved coastal zone management program. Since that time, Washington has benefitted from annual coastal zone grants of \$1.5 to \$2.9 million and has served as an example of a cooperative federal-state partnership.



This version of Washington's Coastal Zone Management Program (WCZMP) document (or "program document") replaces the 1976 document (the "orange book") and the 1979 Amendments (the "green book"). It finalizes interim draft documents submitted by Ecology in 1995 and 1999. This rendition replaces all those earlier documents but makes no substantial changes to Washington's coastal program. Rather, this final version updates and refines the original document to reflect changes made over the past quarter century.

Washington's program document is organized to first acquaint the reader with the fundamentals of the CZMA. In Chapter 1, you will find the important language of the CZMA that launched a nationwide effort to protect the nation's valuable and sensitive coastal areas.

To evoke a sense of "place," Chapter 2 thoroughly describes Washington's coastal zone and the resources found within its boundaries. The coastal zone is comprised of the fifteen coastal counties that border on the Pacific Ocean and/or the Puget Sound. Organizationally, the document divides the coastal zone into two regions: the Pacific Ocean Coast and the Puget Sound Basin and their associated upland or watershed areas. The coastal zone's geography, geology, and climate are generally described. The Ecosystems and Living Resources section discusses the different habitat types that are found in the coastal zone, including wetlands, intertidal areas, ocean waters, riverine areas, forests, and mountains.

Chapter 2 also includes a description of ten areas in the coastal zone that are Areas of Particular Concern - so called because they meet certain criteria spelled out in the CZMA that guide states in designating such areas. Information on other specially designated areas follows the discussion of the Areas of Particular Concern.

Chapter 3 is a brief description of the Indian tribes of the Pacific Northwest and the role they play in Washington's economy. Chapter 4 discusses the resource-based industries that contribute to the coastal zone economy followed by a summary of the impacts resulting from those activities.

Chapter 5 provides a background of the operations of the Coastal Zone Management Program within Ecology's Shorelands and Environmental Assistance Program. A description of the CZMP's "Authorities" outlines the state laws that are used to manage the state's land and water uses. Those authorities are: the Shoreline Management Act; the State Environmental Policy Act; the Clean Water Act; the Clean Air Act; the Ocean Resources Management Act; and the Energy Facilities - Site Location Act (commonly referred to as the Energy Facility Site Evaluation Council or EFSEC). Within these authorities and their implementing regulations are the enforceable policies.

Chapter 5 also describes how Washington complies with the CZMA and includes some of the important activities carried out with coastal zone funding. The "federal consistency" process is discussed here. Unique to coastal zone management, the federal consistency process is the network for permits, public notice, and decision-making through which federal actions are demonstrated to be consistent with the state's enforceable policies. Chapter 5 also explains the

state's procedures that must be followed in order to be consistent with Washington's Coastal Zone Management Program.

Also included are the "Protecting Coastal Water Quality" (Section 6217) and "Coastal Zone Enhancement" (Section 309) grant programs. Chapter 5 contains a brief description of some important state laws and programs that complement the implementation of the CZMP's authorities and enforceable policies. These include the Growth Management Act, the Hydraulics Project Approval, the Puget Sound Plan, the Watershed Planning Act, and several others.

Chapter 5 also contains a description of the local government grants available through the Coastal Zone Management Act. In recent years, Washington has passed nearly 20% of its federal coastal zone grant funds directly to local governments for a variety of projects.

The appendices that follow contain contact information, a glossary, a listing and summary of each program authority, the national requirements of the CZMA, and a list of federal programs subject to consistency review.



## Chapter 1 -

# The Coastal Zone Management Act

In 1972, the United States Congress passed the Coastal Zone Management Act (CZMA) as an expression of its concern over the then-current and future health of our nation's coastal areas. Introducing the CZMA, the lawmakers proclaimed:

*"There is a national interest in the effective management, beneficial use, protection, and development of the coastal zone."*

Congress described the nation's coastal zone as one rich in valuable natural and commercial resources, but recognized that demands upon coastal lands and waters had resulted in the loss of those resources. Noted as extremely vulnerable were ecologically fragile areas and the marine life found therein. Congress asserted that the nation's important cultural, historic, and aesthetic values also were being irretrievably lost.

Alarmed at the rapid pace of development in America's coastal areas and the resulting impacts associated with such growth, our elected representatives saw fit to ensure that those areas and their important resources would receive proper protection. Congress recognized our dependence and reliance upon all our coastal resources from fin and shellfish to energy reserves and navigable waterways. Without some form of protection, our nation would not only lose resources crucial for environmental health, but also would be placed at a disadvantage in a competitive global marketplace.

While the members of Congress were keenly aware of the delicate balance between a healthy environment and a robust economy, they pointed out an imbalance in the manner by which many of the coastal states managed their own coastal lands and waters. Hence, at the time of the CZMA's passage, Congress addressed the ability of the coastal states to provide adequate protection to their coastal areas. In somewhat blunt terms, the CZMA states,

*"In light of competing demands and the urgent need to protect and to give high priority to natural systems in the coastal zone, present state and local institutional arrangements for planning and regulating land and water uses in such areas are INADEQUATE." (emphasis added)*

Fortunately for the country, the lawmakers had the vision and foresight to prepare our nation to enter the 21st century as a healthy player in the global economy. Such protection would come from handing the reins to the states with the assurance of support, assistance, and cooperation from the federal government. Congress believed that encouraging the coastal states to "exercise their full authority over the lands and waters in the coastal zone" would lead to more effective protection and use of those areas. The key lay in "assisting the states...in developing land and water use programs for the coastal zone."

## A. National Policies

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Following the language describing the serious condition that the lawmakers found the nation's coastal lands and waters to be in, Congress unveiled six national policies to guide the states in meeting the requirements of the Law. The first policy is quite clear and direct:

*"It is the national policy to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations."*

In furtherance of this policy, Congress declared the second national policy:

*"to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs"*

These programs would be aimed at the "wise use" of the land and water resources of the coastal zone, while fully considering ecological, cultural, historic, and aesthetic values as well as the need for compatible economic development. The states' coastal programs should at least:

- Protect wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife habitat;
- Manage coastal development to minimize the loss of life and property caused by improper development in flood and/or erosion-prone areas and in other vulnerable areas and by the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands;
- Manage coastal development to improve, safeguard, and restore coastal water quality;
- Prioritize coastal-dependent uses and their locations;
- Provide public access to the coasts for recreation purposes;
- Assist in redevelopment of urban waterfronts and preservation of historic, cultural, and aesthetic features;
- Support comprehensive planning, conservation, and management for living marine resources;

### Congressional Findings

Our coastal zone is rich in a variety of natural, commercial, recreational, ecological, industrial and aesthetic resources of value to our Nation.

Demands upon the lands & waters have resulted in the loss of living marine resources and wildlife, damage to ecological systems, decreasing open space and shoreline erosion.

Ecologically fragile areas and the living marine resources and wildlife that inhabit them are extremely vulnerable to destruction.

Ecological, cultural, historic and aesthetic values important to all citizens are being irretrievably damaged or lost.

Demands for food, energy, minerals, defense needs, recreation, waste disposal, transportation and industrial activities are stressing the Nation's coasts.

Land uses in the coastal zone may significantly affect the quality of the coastal waters and habitats, and efforts to control coastal water pollution from land use activities must be improved.

Sea level rise could seriously affect the coastal zone, and states must anticipate and plan for such occurrence.

- Develop plans to address the adverse effects of land subsidence and sea level rise.

The remaining four nationally significant policies of the CZMA are summarized as follows:

*To encourage the preparation of special area management plans which provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas.*

*To encourage the participation and cooperation among the public, state and local governments, and interstate and other regional agencies, as well as federal agencies.*

*To encourage coordination and cooperation among the above-mentioned parties in collection, analysis, synthesis, and dissemination of coastal management information, research results, and technical assistance that will support state and federal regulation of land use practices affecting the coastal and ocean resources.*

*To respond to changing circumstances affecting the coastal environment and coastal resource management by encouraging states to consider ocean uses as potentially affecting the coastal zone.*

## **B. General Description of Grants**

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Several grant programs are available through Coastal Zone Management Act funding. There are six categories of grants discussed below:

### ***1. Administrative (Section 306)***

The Secretary of Commerce can make grants to any coastal state for the purpose of administering that state's management program, as long as the state matches any grant according to certain ratios of Federal-to-State contributions. The Secretary can give a grant to a coastal state only if the Secretary finds that the management program for the coastal state meets all applicable requirements. Before approving a state's coastal zone management program, the Secretary of Commerce must find that the management program includes required program elements, or "National Requirements." Please refer to Appendix C for a description of how Washington's CZMP meets the National Requirements.

Grants are allocated to coastal states with approved programs based on rules and regulations which take into account the extent and nature of the shoreline and area covered by the program, population of the area, and other relevant factors.

## ***2. Coastal Resource Improvements Grants (Section 306A)***

Coastal states with approved programs and making satisfactory progress toward achieving the objectives outlined in the “Policies” section of the Act may be eligible for “Coastal Resource Improvement” grants. Such moneys can be used to preserve or restore special areas designated in the state’s program due to their conservation, recreational, ecological, or aesthetic values, or areas that contain one or more coastal resources of national significance or to restore or enhance shellfish production. Additional uses are: to redevelop deteriorating and underutilized urban waterfronts and ports; to provide public access to public beaches and other public coastal areas; and to develop a coordinated process among state agencies to regulate and issue permits for aquaculture facilities.

Projects meeting the above objectives can be used for: buying land; low-cost construction projects (paths, walkways, fences, parks); buying or fixing piers for public access; installing or repairing bulkheads to increase public safety or access; removing or replacing pilings to provide increased recreation in urban waterfront areas; engineering designs or specifications; and educational, interpretive, and management costs.

## ***3. Protecting Coastal Waters - Section 6217***

In 1990, Congress passed the Coastal Zone Act Reauthorization Amendments (CZARA) amending the CZMA. Section 6217 of the amended law, known as “Protecting Coastal Waters,” provides grants to states to prepare and submit for approval to NOAA and the Environmental Protection Agency, a “Coastal Nonpoint Pollution Control Program.” The programs must develop and implement management measures for nonpoint source pollution to restore and protect coastal waters.

## ***4. Coastal Zone Enhancement Grants - Section 309***

The 1990 CZARA also added Section 309 and Congress expanded the Section in 1995. Congress set aside special funding to encourage the states to improve their approved coastal zone management programs in one or more specific improvement areas.

Refer to Chapter 5 for a full discussion of the grants programs available under the CZMA.

## ***5. Coastal Zone Management - Section 310 (Technical)***

Funding is provided to the Northwest Straits Marine Conservation Initiative (1999-2005). This Initiative is discussed in Chapter 2, Section E.3.

## ***6. Coastal Zone Management - Section 315***

This grant section creates and implements the National Estuarine Research Reserve System and supporting research, education, monitoring, acquisition and resource management at the Padilla Bay N.E.R.R. The Reserve is discussed in Chapter 2, Section D.3.

## Chapter 2 - Washington's Coastal Zone

When Washington citizens think of their coastal zone, a variety of images come to mind: craggy coastlines scattered with remnants of towering trees; the Space Needle rising like a spire on the urban Puget Sound skyline; Native Americans catching the tenacious salmon as they return to spawn in mountain streams; vast, floating ships gliding into port with cargo from around the world; sandy beaches adorned with ephemeral castles, Frisbees, and kites. The diversity of coastal uses and resources seems boundless.

*The quality of life, cultural heritage, and continued revenues of the state all depend on a vital coastal zone as do innumerable species of flora and fauna. The Coastal Zone Management Program endeavors to provide an method for making those tough choices necessary to ensure Washington's coastal zone remains a valued and treasured part of a Washington citizen's life.*

In reality, limits exist. With a multitude of opportunities come choices about how to use the coastal zone to maximize and maintain those opportunities. The coastal zone is home to two-thirds of the state's population, a population expected to increase approximately forty percent by the year 2010. Development, increased demands for public access, and heavier use of the coastal zone will accompany this growth.

People are not the only species that enjoy living along the water; seventy percent of Washington's wildlife depends upon the plants along riverbanks for habitat during all or part of the year. For example, several fish species depend on wetland and riparian areas to serve as spawning habitat or as nurseries for their young. The state fish, the steelhead trout, is among them. It is one of the most popular fishes for

recreational sport fishing and was adopted as a state symbol in 1969. Marshes and other riparian areas recharge ground water, maintain water quality, stabilize shorelines, as well as play a role in flood control. They also are valued for their aesthetic and recreational capacities. Humans have attempted to duplicate and maintain these functions in the form of water treatment plants, bulkheads and other engineered creations, but these efforts are less effective and very costly to the public.

As human impacts increase, salmon runs threaten to die as indicated by their listing as threatened or endangered. This has severe economic implications since salmon account for nearly one-third of the fishing industry's value. From January through October 1996, 1.3 million fishing licenses, totaling \$3.9 million, were sold in the state of Washington alone. When combined with revenues from bait, fuel, and other fishing expenses, it is clear how economically significant fisheries are to coastal communities. Oysters, crab, shrimp, and other shellfish also figure prominently as commercial fisheries. Native Americans depend upon fisheries for their livelihood, as well for spiritual and cultural purposes.

Tourism contributes approximately \$4.8 billion to Washington's economy. Visitors may come to fish, visit the national parks, hike in the mountains, or ride the Puget Sound ferries. State parks in the coastal counties had almost 30 million





visitors in 1996. These visitors undoubtedly appreciate the variety of activities available to them in the state, as well as the scenic beauty.

The quality of life, cultural heritage, economic vitality, and natural resources all depend on a vital coastal zone. The Coastal Zone Management Program is one method for ensuring that Washington's coastal zone remains a valued and treasured part of our state.

## A. The Setting

In order to put the state's administration of its coastal program into context, a good understanding of the coastal zone - its resources and processes - is necessary. The following sections describe: where the coastal zone is; how it's been shaped; the flora, fauna, and other natural resources found there; and some special areas contained within its borders.

### 1. *Legal Boundaries*

Washington's coastal zone is comprised of the following fifteen counties: Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pacific, Pierce, San Juan, Skagit, Snohomish, Thurston, Wahkiakum and Whatcom. Each of the counties borders saltwater, either on the Pacific Ocean or Puget Sound. Because the Columbia River contains measurable quantities of salt water upstream to Pillar

Rock, Wahkiakum County is included as a coastal zone county.

The coastal zone includes all lands and waters from the coastline seaward for three nautical miles. For the areas that abut the ocean, the coastline is defined as the position of ordinary low water. The coastline along the inland marine waters is located at the seaward limit of rivers, bays, estuaries, or Sound. The inland political boundaries of the counties are used as the coastal zone limit because they generally follow drainage divides, such as the Cascade mountains, the Black Hills, and the eastern edge of the Willapa Hills.

The Coastal Zone Management Act specifically excludes from the coastal zone, those lands that are, by law, subject solely to the discretion of, or held in trust by, the federal government. The CZMA's regulations provide that states must exclude from their coastal zone designations the lands that the federal government owns, leases, holds in trust, or otherwise has sole discretion to determine their use. These "excluded federal lands" within the boundaries of Washington's coastal zone are:

- Military reservations and other defense installations (e.g. Fort Lewis, Bangor Naval Submarine Station, Naval Air Station Whidbey Island);
- All lands within National Parks, including private inholdings (e.g. Olympic National Park, Mt. Rainier National Park);
- Indian lands held in trust by the federal government;
- National Forest lands and National Recreation Areas owned or leased by the federal government (private in holdings are within the coastal zone).

## ***2. Geographic Regions***

Washington's coastal zone can be broadly characterized as two geographic regions: 1) the Pacific Ocean coastal area and its uplands; and 2) the Puget Sound basin including the upland area to the crest of the Cascade Mountain Range. Both of these regions' upland watershed areas include most of the river basins which have a direct and significant impact on the Pacific Ocean, Puget Sound, the Columbia River Estuary, and other coastal waters.

### **Pacific Coast**

The Pacific Ocean coastal area includes the Pacific Ocean and the coastal strip of rocky shores and sandy beaches. Washington's Pacific Coast stretches from Cape Flattery, at the northern tip of the Olympic Peninsula, south to the mouth of the Columbia River. In between lie some spectacular beaches and dramatic rock formations. The north coast is characterized by narrow, rocky beaches backed by high, forested



*Photo - Tom Mark*

bluffs. Rocky outcrops and islands are common offshore. Although a few fishing villages are located along the northern coast of Olympic Peninsula, the state's northern Pacific Coast is sparsely populated and remains largely unadulterated. Most land falls within the Olympic National Park or the Quinault, Makah, Hoh, and Quileute Indian Reservations. The south coast is a broad coastal plain with wide, sandy beaches, dunes, and extensive lowlands. The southwest coastal area is home to the most heavily used recreational beaches in the state.

In the southern part of the coast, powerful rivers spill into the sea, forming intertidal estuaries that attract countless species of birds and other wildlife. Three large coastal estuaries are Grays Harbor, Willapa Bay, and Columbia River estuary. Grays Harbor and Willapa Bay are shallow estuaries heavily devoted to shellfish culture. Grays Harbor serves seagoing vessels, and both areas support fishing fleets. The Columbia River estuary is a large, dynamic river mouth with international port, fishing, and pleasure boat facilities.

Commercial, industrial, and population centers are located at Aberdeen and Hoquiam at the mouth of the Chehalis River in Grays Harbor, at Raymond and South Bend on the mouth of the Willapa River in Willapa Bay, and Ilwaco and Long Beach near the mouth of the Columbia River Estuary.

Much of the coastal interior is densely forested, featuring some of the world's biggest trees and exotic plants that grow nowhere else in the world. The Willapa Hills are largely owned by timber companies and are used primarily for commercial forestry.

Poised between the Pacific Coast and the Puget Sound Basin lies the *Olympic Peninsula*. It is a mountainous landscape cut by deep canyons. The Olympic Mountains are not very high - the highest, Mount Olympus, is just under 8,000 feet - but they rise almost from the water's edge and intercept moisture-rich air masses that move in from the Pacific. As this air is forced over the mountains, it cools and releases moisture in the form of rain or snow. The prevailing theory about the origin of the mountains is that they arose from the sea when the plate that formed the ocean floor inched toward North America and most of the sea floor slid beneath the continental land mass. Some of the sea floor was scraped off and jammed against the mainland, creating the dome that was the forerunner of today's Olympics. Powerful forces fractured, folded, and over-turned rock formations, which helps explain the jumbled appearance of the Olympics.

Major land owners on the Peninsula include the Olympic National Park, the Olympic National Forest, private timber companies, and the State of Washington. Rivers and streams on the Peninsula flow into the Pacific Ocean, the northern bays, the Strait of Juan de Fuca, and the Puget Sound.

## **Puget Sound Basin**

Nestled between the Cascade and Olympic Mountains in northwest Washington, lies the Puget Sound Basin. The Basin covers more than 16,000 square miles of land and water. Roughly eighty percent is land and twenty percent water. The Basin includes the Strait of Juan de Fuca, the straits and bays in the San Juan



*Seattle and Mount Rainier*

*Photo - Chris Sollart*

Archipelago and the entire Puget Sound including the Hood Canal. Puget Sound offers a breadth of landscapes unique in the world - the rocky shores of the San Juan Islands, the forested slopes of the Olympic Mountains, Skagit Valley's fertile floodplain, and rich, tidal mudflats in the southern inlets. The Puget Basin watershed extends

landward from its shorelines to encompass streams and rivers originating in the Cascade, Coast, Vancouver Island, and Olympic Mountain ranges. This watershed supplies an annual flow of about 39 million acre feet of freshwater to the Basin through a drainage network of more than 10,000 streams and rivers. The character, distribution, abundance, and health of Puget Sound species and habitats are closely linked to the quantity and quality of freshwater delivered by this vast watershed. Sediments, nutrients, and contaminants are other critical inputs entering the Sound by way of watershed drainage.

Between the protected bays of Puget Sound and the forested foothills of the Cascade Range, lie rich farmland and Washington's greatest urban concentration - the metropolitan corridor of Bellingham, Everett, Seattle, Bellevue, Tacoma, and Olympia. This region offers a kaleidoscope of waterfronts, mountain backdrops, parks, and recreation areas. More than 3.5 million people live in the Puget Sound Basin.

Within the two broad geographic regions described above, Washington's 2,337 miles of marine shoreline encompass 157 miles of Pacific coastline, 144 miles of coast along the Strait of Juan de Fuca, 89 miles in Grays Harbor, 129 miles in Willapa Bay, 34 miles on the Columbia River, and 1,784 miles bordering Puget Sound and the Strait of Georgia. These figures include the shorelines of 172 significant islands of the San Juan Archipelago. Of the shoreline, beaches represent 73 percent and the remaining 27 percent include rocky headlands, marsh areas, and other shoreline types.

## **Watersheds**

Stand anywhere in Washington, even in the dry eastern part of the state, and you will be in a watershed. That's because the land surrounding you at any given time drains to a stream, river, lake, aquifer, reservoir or directly to the Puget Sound or Pacific Ocean. Washington's watersheds

*The word "Watershed" means a "gathering place, a collecting of water," and is often used to describe a region, big or small, in which an amassing of moisture occurs.*

Nisqually Watershed

David Gordon

## The Hydrologic Cycle

*Within a watershed, snow, rain, rivers, streams, lakes, ponds, wetlands and groundwater aquifers are all links in an intricate chain called the hydrologic cycle. In this cycle, rain falls on the land and soaks into the ground. Some of the water evaporates, some is absorbed by trees, shrubs, grasses and ground covers, and some flows across the land to feed creeks and streams.*

*Water that soaks into the ground follows a maze of cracks in the bedrock, replenishing groundwater supplies. Slowly metered from subterranean storehouses, this groundwater nurtures streams, wetlands and, in most watersheds, people whose drinking water comes from shallow springs and deep wells.*

*Much of the water that runs across the land finds its way to progressively larger bodies of water - from creeks to rivers, rivers to bays and bays to seas. In western Washington, most surface water empties into Puget Sound, a vast mixing bowl for fresh and salt water supplies that was deeply scoured by glacial activity during the late Pleistocene, some 15,000 years ago. An estimated 140 billion cubic feet of fresh water pours into the Sound each year. Half of the volume that enters southern Puget Sound flows from the Nisqually River.*

*Carried to the Pacific Ocean by tidal currents and winds, much of this water evaporates, rising skyward to form clouds. Drifting inland, these clouds eventually release their moisture as snow and rain - and the hydrologic cycle continues, as it has for many millions of years.*

*Every part of a watershed is linked by the hydrologic cycle, so every change, no matter how small or remote, has the capacity to affect everything else. In nature, these changes, may be as quiet as the twigs and branches that collect behind a fallen log, gradually altering the path of a stream. Or they may be as dramatic as winter floods that sweep away houses, property and even people in their paths. "The Nisqually Watershed" - David Gordon*

may be covered with forest or farmland, or be almost entirely developed.

Water from falling rains and melting snows generally drains into ditches, streams, wetlands, groundwater supplies, lakes, or coastal waters. A watershed includes the area of land over which water drains to these waterbodies. A watershed may be large or small. The Mississippi River, for example, drains a one-million-square-mile watershed made up of thousands of smaller watersheds. In smaller watersheds, a few acres of land may drain into small streams, which flow into larger streams or rivers. The lands drained by these streams make up a larger watershed. Watershed boundaries are defined by the topographic features that dictate natural drainage patterns within an area, rather than political or ownership boundaries. They provide useful geographic units for resource management aimed at protecting the health of aquatic ecosystems.

The types of aquatic ecosystems supported within a particular watershed are determined by a number of natural features:

- The slope of the basin from its highest points to its lowest;
- The amount, frequency, and intensity of rainfall or snowmelt that normally occurs within the watershed;
- The types of soils that cover the basin's topographic features; and
- The vegetation and associated animal communities found in different areas of the basin

### 3. Geology

The coastal zone consists of two types of land formation: glaciated regions in the north; and coastal plains to the south and west. Giant glaciers sculpted the **northern** area, including Puget Sound, the north shore of the Olympic Peninsula, and the Pacific Coast south to the Quinault River, leaving behind rugged mountains and glacial valleys. An

important geological component of the Washington outer coast and offshore region is the material that formed during the glacial episodes that began 1.5 million years ago. Glaciers, which at their maximum reached from Canada through



Photo - Tim Ransom

*Visitors to the Pacific coast come to witness the rumble and crash of the cold northern Pacific, to marvel at the rocks, the cliffs, the rolling dunes. They come to smell the Sitka spruce, to watch the alders sway in the wind and the raindrops bead up on the glossy salal leaves and fern fronds. Eagles glide on the steady winds, seals bark from rocks, deer come timidly to the forest's edge, the occasional bear saunters by, and whales spout offshore. This is the coast of the Makah, the Quileute, the Quinault, and Hoh peoples, and their legends and spirits seem to drift with the mist off the sea and into the forests.*

approximately the northern third of Washington state, left thick, widespread deposits of unconsolidated sand and gravel that thin out toward the coast. Rock debris from extensive glaciation in the Olympics was transported to present-day coastal areas by meltwater from glaciers. Some of this debris was actually deposited directly by the ice, indicating that glaciers once stood near or even beyond the present-day coastline. These glaciers played an important role in sculpting the land into forms seen today. Along the coast, some of the thickest beds of this glacial material may be seen overlying bedrock sea cliffs and sea stacks just south of the Quillayute River and near the mouths of the Hoh River and Goodman Creek.

Narrow, rocky beaches line the northern Pacific Coast, backed by high, forested bluffs. It is a seismically active coast, with basalts erupting below sea level and lava forced to the surface in some places. The beaches and offshore areas in the northern portion of the state are therefore dotted with rocky outcrops and islands. These harder rocks resist erosion longer than do softer sedimentary materials, forming rocky headlands that alternate with stretches of

recessed sandy beaches. Large river floodplains and deltas provide low flatlands and excellent agricultural land. The general lowering of the land and rising of sea level 10,000 years ago following the melting of the glaciers caused extensive flooding of low valleys and river mouths which formed the large, marine dominated estuarine areas in Puget Sound. Shales, siltstones, sandstones, and other uplifted marine sedimentary materials make up the bulk of the land around the southern portion of Puget Sound, while harder rocks are more abundant to the north.

The **southern** part of the coast consists of broad sandy beaches, dunes and extensive lowlands. These southern beaches were formed with the melting of the glaciers as rivers brought sand to the coast and the rising sea level eroded coastal bluffs. Sand in this region comes from the Columbia River and is provided by the northward drift of sediments along the Pacific Coast. The extensive, elongated dunes have formed major estuaries at the mouths of the Chehalis and Willapa Rivers, which drain this area.



*Photo - Brian Voigt*

#### **4. Climate**

The entire coastal zone experiences a maritime climate with generally mild winters and cool, moderately dry summers. On the Pacific Coast, summers are mild, with temperatures cooler than inland. Winter can bring dramatic storms with high winds and driving rain. More than 100 inches of rain per year fall on the Olympic Peninsula. At higher elevations in the Olympic Mountains, the precipitation may reach 120 inches. The coastal strip and the mountains behind it constitute one of the wettest areas in North America. The storms that approach the Olympics come principally from the southwest and drop most of their rain at the coast and on the mountains, so little is left for the area just beyond. On the east side of the Peninsula, precipitation drops off sharply. This region is referred to as the rain shadow lowlands. At Port Angeles, the annual average is around 32 inches, and still farther east, at Sequim and Port Townsend, it is only about 24 inches. Locally referred to as Washington's "banana belt," this area experienced considerable growth in the last decade of the 20th Century.

Nestled between the Olympics and the Cascades, the Puget Sound climate especially reflects marine influences. The two mountain ranges, combined with the prevailing ocean breezes cause wide variations in precipitation among localities. Precipitation can vary from up to 100 inches per year in the Cascade mountains and western slope of the Olympic Peninsula, to a more moderate 35 to 50 inches in Puget Sound.

## **B. Ecosystems and Living Resources**

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Western Washington has one of the most diverse sets of ecosystems in North America. It includes the waters of Puget Sound, the Strait of Juan de Fuca, and the Pacific Ocean; the lowland forests of the Puget trough and southwest Washington; the rain forests of the Olympic Peninsula; and the vast forests of the Cascade Range.

Although there is no doubt that the Pacific Coast and Puget Sound Basin regions differ from each other in their physical and biological characteristics, they are linked through the routing of both fresh and marine water. The presence and distribution of plants and animals are determined by a combination of physical factors such as salinity, wave exposure, sediment type, and temperature. Organisms that survive best in a particular kind of environment form communities of interdependent plants and animals. These communities are referred to as ecosystems or habitats.

These different ecosystems overlap various geographic regions, and their boundaries are often bridged by marine species in various stages of their life cycles. For example, waves and currents carry materials such as detritus from eelgrass beds to rock and cobble habitats. Eggs and larvae of many groundfish can be found in open water habitats, yet these fish spend time in nearshore or subtidal habitats to spawn as adults. Salmon use offshore habitats for adult migration, intertidal and shallow subtidal habitats for feeding and protection of juveniles, and upland freshwater streams for spawning. Birds that nest exclusively on undisturbed rocky islets may forage for food across several habitats, with specific feeding habits changing with the seasons.

Such examples of linkages among species, and their use of various habitats, are common features within the rich and diverse estuarine and ocean ecosystems. Because of food chain interactions, habitats, and movements of organisms throughout the coastal zone, the interconnection of species is complex and often poorly understood.

The following is a description of six different habitat types: (1) Coastal waters, (2) Rocky intertidal, (3) Exposed sand and gravel beaches, (4) Sand dunes, (5) Sheltered marine environments, (6) Upland forests and freshwater environments, and the plants and animal common to them. Some of these habitat types overlap as one moves from the southern Puget Sound, north through the Straits and to the outer coast or inland and upwards. It is not unusual to see a mix of habitats along a relatively short stretch of the coastal zone.

### ***1. Coastal Waters***

The outer coast of Washington is oriented in a roughly north-south direction for about 150 miles from Cape Disappointment at the mouth of the Columbia River to Cape Flattery at the mouth of the Strait of Juan de Fuca. The coast is flanked by a relatively shallow, flat, submerged area of land under the Pacific Ocean called the Continental Shelf. This shelf extends offshore to a depth of approximately 600 feet



(100 fathoms). At this point (the shelf break), the bottom drops off more steeply to form the continental slope, which is indented by several major submarine canyons. Beyond the shelf and slope lie the deep Pacific Ocean waters. State ownership extends seaward three geographic miles from the coastline, generally remaining within the relatively shallow shelf waters. Although the earth's coastal shelf waters comprise only about seven percent of the total ocean area, they support more than ninety percent of the fisheries because of the high concentration of plankton upon which fish larvae and their prey feed. The sea floor, which in large part determines the plant and animal life common to the area, can be soft bottomed or rocky.

As described earlier, the Puget Sound ecosystem was shaped thousands of years ago through the movement of land masses, glaciation, sea-level rise, and erosion and deposition. The resulting estuarine (or fjord) processes partly define the physical nature of the Puget Sound ecosystem. The mixing of Pacific Ocean seawater with the freshwater inputs represents a critical factor affecting all living marine resources and habitats within the Sound. The movement of currents, tides, winds, and waves within the unique marine basins of the area, combined with freshwater inputs, shape the distribution and character of the marine habitats found throughout the region.

A unique component of the open water habitat is the marine microlayer - the upper fifty micrometers of the water's surface. The microlayer is habitat for bacteria, eggs, and larvae that drift with the currents. Eggs and larvae of many species that inhabit deep water or the bottom as adults, such as cod, hake, English sole, octopus, crab, shrimp, snails, urchins, and worms can be found in this floating layer.



*Sea otter amidst a kelp bed*

Along open coasts, in waters from about fifteen to ninety feet deep, float giant kelp beds. These large brown seaweeds are so thick and well anchored to the sandy bottom that they significantly moderate wave action, helping to protect beaches from erosion. Bull kelp has long hollow stems ending in inflated gas bladders that keep it floating at the water's surface. Dense canopies of kelp provide habitat to coastal animals including the giant kelpfish, striped seaperch, and a small, but expanding, population of sea otters. Sea otters were native to the outer coast of Washington but were eliminated by hunting before about 1910. Descended

from Alaska, the recovering population is listed as endangered in the state. Sea otters are often spied rolling over and over in the water in what seems almost a playful manner. This behavior is, in fact, an effort to keep warm. Because they

lack a blubber layer, they must trap air in their fur to retain body heat. Invertebrates living in the coastal waters upon which the otters feed include abalone, sea urchins, crabs and mussel. Other animals that live at the sea bed include scallops, worms, sea cucumbers, sea pens, and sand dollars as well as flatfish like sole and flounder.

Although thick beds of seaweed are found along the open coasts, ninety-five percent of the marine vegetation is invisible. Free floating microscopic algae are found in the thin surface of water known as the photic zone. The depth at which light penetrates limits the productivity of these plants, which convert energy from the sun into carbohydrates and supply the primary food source for life on earth. The depth of the photic zone varies from place to place and from time to time, depending on cloud cover, turbidity, season, and wave conditions.

Open oceans of rocky coasts are home to crevice-dwelling fish including eels, gunnells, pricklebacks and fish popular among anglers including rockfishes and surfperches. Further offshore, though less ecologically productive than the shallow nearshore waters, the deeper waters are home to the most commercially valuable fish species. Among these are the Pacific herring, the anchovy, and sardine. Salmon [some salmon living in Washington include Chinook, Coho and Sockeye] are fish with a particularly interesting lifecycle. They spend part of their adult life in the open waters, before traveling inland up freshwater rivers to spawn. This complex lifecycle makes their populations extremely sensitive to habitat-encroachment pressures and presents a challenge to wildlife managers. Another animal found in open coastal waters is the opalescent squid, which is both predator and prey to fish and marine birds found in open, as well as inland shelf, waters.

Birds that spend most or all of their life on or in marine waters are called pelagic. They have special adaptations to living at sea including webbed feet, special salt excreting glands that allow them to drink saltwater, and an acute sense of smell used to track fish underwater. Birds of this type that live along the Washington coastal waters include the Black footed Albatross, four species of shearwater, seven species of gulls, tufted puffins, rhinoceros auklets, scoters, the Pacific and red-throated loons, western grebes, brown pelicans, and three species of cormorants.

Of all the open coastal water inhabitants, the large marine mammals are perhaps the most inspirational to humans. The abundance of marine mammals off the Pacific coast reflects the tremendous availability of food resources. In the spring, the shallow Arctic Ocean experiences an explosive bloom of algae, making it the most productive area in the world for phytoplankton. As a result the area is among the richest in fish and shellfish. Consequently, it has the most numerous and varied marine mammal population, many of which migrate through Washington's coastal waters. Cetaceans are whales, dolphins, and porpoises. The most abundant cetaceans in Washington are the harbor porpoise and the California Gray whale. The endangered Humpback whale is rarely sighted. These whales travel along the coast, migrating from the south in the early spring to feed

on krill (planktonic crustaceans and larvae) and herring. The Gray whale has the longest migration of all mammals, traveling from its summer feeding areas in the Arctic to lagoons in Mexico. Orcas (killer whales) are found in the waters of



*Sea lions*

Washington and British Columbia, and schools of dolphins and porpoises abound. Other regularly sighted cetaceans are the Minke whale, Dall's porpoise, and the Pacific white-sided dolphin. Federally endangered species include the Right whale, Fin whale, Sei whale, Blue whale, and the Sperm whale.

Pinnipeds include seals and sea lions. The harbor seal is the most abundant pinniped species in Washington and the only species that breeds in the state. Pinniped haul-out sites for resting, birthing, and nursing are found on nearshore rocks and reefs along the Olympic coast as well as on low sand bars in the coastal estuaries. Harbor seals eat fishes such as eulachon, herring, smelt, anchovy, tomcod, sole, flounder, and salmon in the Grays Harbor, Willapa Bay, and Columbia River estuaries. Frequently seen migrants include the Northern fur seal, the Northern elephant seal, the Northern or Stellar sea lion, and the California sea lion.

## ***2. Rocky Intertidal***

Rocky areas shape beaches whenever there are hard rock outcroppings along the coastline, in areas where wave action is strong enough to prevent sediment from accumulating and burying the rocks, and in regions where the rock face is too steep to allow sediment to collect. Permanent tide pools and gullies in which water sloshes up and down after waves break make it possible for certain organisms to live at appreciably higher levels on the beach than they otherwise could. Areas where sedimentary rock is stratified or layered can result in smooth broad platforms in the intertidal area where the beach is affected by the rising and falling tides. In other cases, cliffs undercut by waves form into sea caves or rock arches. During storms and heavy surf, rocks can calve or slide off leaving large boulders in the near shore. Softer sedimentary rock that is exposed to heavy surf will eventually erode into shingle or cobble beaches.

During the Ice Age, ice in the Puget Sound region attained a thickness of more than a mile. As the ice sheets retreated, new areas of continually evolving coast were opened up. Heavy, durable basalt rocks erupted beneath the water and were forced to the surface in areas such as Dosewallips Falls near Hood Canal. Hard rocks like granite lie along the coast and form headlands that alternate with recessed pocket beaches fed by eroded materials.

Although the geologic history of rocky shores on the Pacific Coast versus Puget Sound is distinct enough to discuss them as two separate regions, it is important to understand that there is overlap and sometimes organisms generally found in the Sound, for example, are found in less exposed regions on the Outer Coast. The Strait of Juan de Fuca, which connects the open ocean with Puget Sound, the Strait of Georgia and the waters surrounding the San Juan Archipelago, displays a gradual change from open coast conditions to those characteristic of the quieter, inland waters.



*Intertidal area*

*Photo - Nancy Sefton*

Areas of rugged headlands and cliffs characterize the north coast, from Cape Flattery to Point Grenville. Washington's north Pacific coast is home to the major headlands: (from north to south) Cape Flattery, Portage Head, Point of Arches, Cape Alava, Cape Johnson, Teahwhit Head, Hoh Head, Cape Elizabeth, and Point Grenville. Differing erosion-resistance of rocks composing the shoreline led to this series of headlands separated by pocket beaches. For example, Hoh Head is made up of more resistant sandstone rocks flanked by less consolidated, and therefore more erodible, rocks. Point Grenville is made up of highly resistant volcanic rocks strewn onto the seafloor millions of years ago.

Resistant outcrops form numerous offshore islands and rocks off the coast, including Tatoosh, Destruction, Ozette, Alexander James, Tunnel, Willoughby, and Abbey Islands, and Split Rock. Numerous nearshore rocks and islets, including

Giants Graveyard and the Quillayute Needles dot the north coastline. Destruction Island, located about 3.5 miles offshore north of Kalaloch, is the largest island off the coast of Oregon and Washington and the first major island north of the Farallon Islands (a national marine sanctuary) near San Francisco. Approximately forty acres in size, it is the westernmost major bedrock outcrop exposed above sea level along the central Washington coast and is covered by Ice Age sand and gravel deposits.

Where an organism lives in the intertidal depends on both physical and biological factors. The water level, which is influenced by seasonal and daily tide changes, along with wind, waves, and temperature are



*Sea urchins*

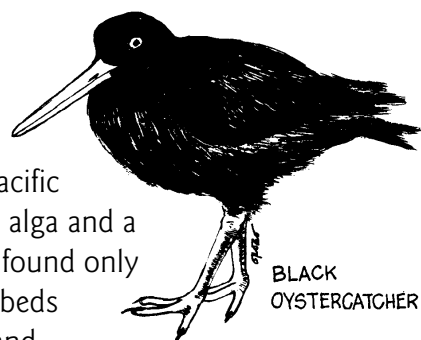
*Photo - Nancy Sefton*

factors in determining the distribution of organisms. The biology of the organism however will also have a significant influence on its abundance across and along the beach. Factors such as the seasonality of lifecycle, mobility, and whether the creature is solitary or communal, predation and competition also influence its place on the beach.

Vegetation common to the rocky coasts of Puget Sound are lichens, which are associations of both algae and fungi. Higher up on the beach, in areas that are usually dry unless wetted from sea spray or rain, is a species that resembles flaking bright orange paint called. Surf grass grows in tidepools. As one moves closer to the water, the zone becomes blackish in color, as this area is regularly drenched by sea spray. Other vegetation is blue-green algae, lichens, and bacteria covered in gelatinous sheaths that absorb water and protect them from drying out in the sun. These species, in conjunction with the slippery seaweeds such as Turkish towel, feather boa, and sharp acorn barnacles covering the rocks can make climbing along the rocky shores a treacherous undertaking.

Other abundant organisms along the shore of Puget Sound include chitons, purple and red sponges, limpets, snails, worms, starfish, sea anemones, sea urchins, sea slugs, octopus, and at least twenty species of hermit crabs, and other crabs. Mussels can be found, though they tend to be in greater abundance along more exposed shores. Sculpins, pricklebacks, clingfishes, and gunnels are small fish found in the tide pools and channels of rocky shores. All these fish and invertebrates provide a large food resource for coastal birds. Many shorebirds are migratory and are seen along the beach only when they are passing through. However, on the Puget Sound it is quite common to see black oystercatchers, great blue heron, killdeer, crows, and ravens.

Many of the plants and animals found on rocky coasts of the Sound are also found along the outer coast rocky beaches. Other species are abundant mainly along the open Pacific coast beaches. Among the plants are a strictly open-coast red alga and a rockweed. The black turban snail is an often-observed animal found only along open coasts. The California mussel dominates shellfish beds in exposed rocky situations. Rock scallops, abalone, shrimp, and several crab are found predominantly along the open coast. The Guillemot, bald eagles, and the surfbird are found along exposed rocky coasts. Pinniped preferably haul-out onto rocky coasts.



BLACK  
OYSTERCATCHER

### ***3. Exposed Sand and Gravel Beaches***

A beach can be technically defined as noncohesive material affected by wave action along a body of water. There are many types of beaches, composed of particles of different sizes and subject to varying degrees of exposure to the surf. Beaches in Washington are made up of materials ranging from fine sand, mud, and shell fragments to gravel and cobbles. The composition depends on the sediment source, the distance of the beach from the source, and exposure to wave energy. Much of Puget Sound and the Straits are composed of mixed material. This reflects

the beaches' proximity to eroding bluffs throughout the Sound, which continually contribute sediment to the beaches. On the outer coast, the sand is constantly stirred by strong wave action and is therefore well-sorted, meaning it's more



*Photo - Tom Mark*

evenly mixed than sand found along the Sound.

The sediment size, wave action, and tidal level all contribute to beach slope. Areas of severe wave action, particularly on the outer coast, generally result in coarser grained, steeper beaches. In coastal areas not exposed to such wave action, the beaches are flatter-sloped with finer sand. Beaches along Puget

Sound however are not as easily explained using this rule of thumb. The nearness of the eroding bluff sediment source is as responsible for beach shape and sediment characteristics along the Sound as is the wave energy.

Sand is transported as a current, running parallel along shore in the direction of the prevailing waves. This longshore movement of sediment is referred to as littoral drift. Sediment can also be moved off-shore and back on as a result of storms but tends to remain within the longshore boundaries of drift cells which are defined by physical features such as headlands. Sometimes sand is carried along with the current and deposited on a headland or projection. Wave action and a perpetual sediment source can result in the formation of natural features such as the Dungeness Spit. In other areas, embayments or canyons act as a sink for sediment, and sediment is eroded from a beach and deposited into these sinks.

The high wave energy on these beaches results in a moveable substrate that is unsuitable for attachment by larger plant species shoreward of the dunes. Instead, microscopic plants called diatoms live attached to and between the sand grains. Beds of surf grass - a seed plant that flowers and pollinates itself underwater - grows in gravelly areas that are partially covered with sand. When gravel predominates the substrate, rockweed is not uncommon. In pocket beaches eelgrass and surfgrass beds thrive. Further shoreward, near the base of the dunes where wave action is minimal, beach silvertop and beach primrose can be found.

Microscopic fauna are also abundant. These animals consist of protozoans, and tiny worms called nematodes, annelids, and small crustaceans called copepods. Slightly larger animals survive in this zone are all capable burrowers. Many are filter feeders such as the Pacific mole crab and the Pacific razor clam. Scavengers living on the beach are often found among the remains of seaweeds and animals that are cast up during high tides and storms. Sand fleas and isopods (related to garden sowbugs or pillbugs) and the gorgeous purple olive snail are the most common. Predatory animals include blood worms, crustacea called amphipods (beach hoppers), and the moon snail which lays thousands of eggs

that are cemented into mucus rings often found washed up along the beach.

Larger scavengers/predators include the most familiar of beach birds, the sea gulls, which not only pick the beach clean of what's dead and dying but also feast on shellfish by carrying them high into the air and dropping them to their deaths on a hard surface. Other shore birds, including sanderlings, dunlins, western sandpiper, and godwits race up and down with the surf, probing the sand for worms and beach hoppers.



*Sea gulls at Padilla Bay*

*Photo - Sharon Riggs*

Some fish come up onto the beach and lay their eggs during a high spring tide. The eggs develop in the sand and, if all goes well, hatch the next time the water level reaches the same cross-shore height. Among these fish are the sand lance, smelt, and herring, all of which are important prey species for salmon.

#### **4. Sand Dunes**

Washington's southern coast, from Point Grenville to the mouth of the Columbia River, is composed of beaches nourished primarily by sediment from the Columbia River. Much of the south coast is backed by sand dunes - relatively recent geological features originally formed by sediments transported along the coast. The dunes' shapes are controlled by sand supply, wind, water, and stabilization by plants. Dune segments form spits or peninsulas at the mouths of Grays Harbor, Willapa Bay, and the Columbia River. Foredunes, closest to the ocean, form an important defense against ocean storm damage. Dunes are fragile entities, however, and are easily destabilized by construction activities and vegetation destruction. The troughs between the foredunes and the inner dunes hold groundwater reserves.

Wind plays an important role in shaping and shifting the dunes. The dunes consist of finer sand than is found on the beaches that they border. They tend to form in areas where sand is abundant and low lying land extends inland behind beaches that are subject to strong offshore winds. The southern third of Washington's outer coast, in Grays Harbor and Pacific Counties, is fronted by sand dunes. Dunes appear as ridges parallel to the shoreline and have wavelike shapes. The dunes can act as a barrier to high water or floods resulting from high tides and surging storms.

The sand dune environment is a very dynamic system that includes dry shifting sands, ephemeral pools, and salty winds. Plants inhabiting sand dunes must be able to tolerate long periods of desiccation, high winds, occasional burial, abrasion, and a shifting, low nutrient substrate. The plants found on the seaward

side of the dunes are pioneer species - hardy annuals including the beach morning glory, the silky beach pea, and American dune grass. Moving further away from the beach, one encounters slower growing species including the seashore lupine, red fescue, and the beginnings of the shrub/forest community where Huckleberry and Shore Pine are common.

Animal life is surprisingly diverse among the dunes. Common residents include the three bears, black-tailed deer, voles, mice, raccoons, and rabbits. Osprey and eagles hunt the smaller creatures, stopping to rest on the dead tree snags. At the base of the sand dunes, plovers scrape nests in the sand, depositing perfectly camouflaged, speckled eggs.

## ***5. Sheltered Marine Environments - Estuaries and Bays***

Much of western Washington's landscape is defined and characterized by large estuaries - in Puget Sound, Nisqually Delta, Grays Harbor, Willapa Bay and at the mouth of the Columbia River. Bodies of water that form at the mouths of rivers, where marine and fresh waters mix, are called estuaries. These often murky areas are among the earth's most productive environments, providing an extremely rich and important habitat for a great variety of life. Estuaries may be simple river mouths, like those on the Columbia, Hoh, and Quinault. They also may be rivers that directly enter the sea or that enter enclosed bays such as Grays Harbor and Willapa Bay. Estuaries typically have a basic current circulation pattern: fresh water flows outward at the surface, and saltier ocean water pushes into the estuary along the bottom. Deltas, mudflats, and saltmarshes are all coastal wetlands and parts of estuaries. These are low wave energy environments, consisting of fine silty sediments where water tends to pool. High levels of nutrients accumulate, which feed plankton and plants. These, in turn, nourish oysters, clam, crab, salmon, and birds.

Estuaries can be thought of as "biological supermarkets." They provide great volumes of food that attract many animal species. These animals use these areas for part or all of their life cycle. Dead plant leaves and stems break down in the water to form small particles of organic material called "detritus." This enriched material feeds many small aquatic insects, shellfish, and small fish that are food for larger predatory fish, reptiles, amphibians, birds, and mammals. The functions of an estuarine wetland and the values of these functions to human society depend on a complex set of relationships between the plants and animals in the system.

Estuaries play an integral role in the ecology of the coastal zone. Their broad expanse of sheltered, shallow water and their high productivity make them particularly rich environments. Many marine animals find essential shelter in various habitats. Several important fish and shellfish species use estuaries as nursery grounds during some portion of their life cycle. Estuaries are also important wintering grounds for some species of waterfowl. Additionally, some smaller fish species and early life stages of larger fish species use kelp or eelgrass beds as shelter from large predators.



Two ecologically important species of eelgrass are abundant in certain shallow intertidal and subtidal areas of estuaries, where water is sheltered from surf. Eelgrass grows on soft sandy/muddy bottoms from roots, which draw nutrients from the sediment and help stabilize sediments and minimize erosion. Thousands of intertidal and subtidal acres in Willapa Bay and Grays Harbor are covered with eelgrass. This eelgrass supports a community of microalgae and small seaweeds living on its leaves and sharing the sediment, which increase the productivity of the community. These accompanying plants may equal or exceed the productivity of the eelgrass they depend on. Additionally, dying eelgrass releases large quantities of dissolved nutrients that help other plants' growth. Eelgrass is a favorite food for black brant geese, and other duck species eat eelgrass and associated vegetation. Like seaweeds, however, eelgrass is important less as a direct food source than as a source of detritus and as a habitat and shelter for many animal species.

Nutrient-rich waters, intertidal areas, and small islands make estuaries abound with bird life, especially during migration seasons and winter. Sooty shearwaters, brown pelicans, gulls, loons, western grebes and cormorants use the estuaries for roosting and foraging areas. Double-crested cormorants nest on sand islands in Grays Harbor and on pilings in the Columbia River near the Astoria Bridge. After nesting, many stay in the region for the winter. The great blue heron is a resident species in coastal bays and estuaries. Heron nest in colonies in trees near the three estuaries. They wade through exposed tidal areas, foraging in shallow water and at the edge of deeper water areas. Terns are common in the bays and the Columbia River. They dive from the air to catch prey, usually fish, at or just below the water surface. Caspian terns nest on sand islands in all three areas, and forage in the bays and rivers along the outer coast. They leave Washington waters during the winter.

Mammals common to these habitats include sea otters (which also live in kelp beds along exposed coasts) and the Pacific harbor seal. The harbor seals can dive to depths of three hundred feet and remain submerged for nearly half an hour. They are quite curious and will often pop up their heads to inspect kayakers as they paddle along. Other mammals found in protected coastal environments are also found in shoreward regions of exposed coasts and inland upland areas such as the coast mole, voles, the white-footed mouse, raccoons, the spotted skunk, and the American opossum.

## ***6. Forests and Non-Marine Aquatic Habitats***

The remaining habitats are the non-marine water areas and the upland forested areas. The water areas include freshwater wetlands, and river and lake environments. The uplands exhibit the stereotypical rugged northwestern terrain. The Cascade and Olympic peaks soar from 5,000 to over 14,000 feet high. Most slopes are covered with conifers and some peaks are glaciated, notably Mount Rainier. Mount St. Helens, famous for its 1980 eruption, sits in the Cascade Range, the crest of which forms the eastern border of Washington's coastal zone.

## Forests

Forests can be categorized as: young (40-80 yrs); mature (81-195 yrs); or old growth (196-900+ yrs). Before the Europeans settled Washington in the early nineteenth century, these different forest classes were well distributed across the state. Today, outside national forests, most forests are younger than fifty years. In western Washington, fifty-one percent of the forests are young compared to fifteen percent in eastern Washington; old growth forests account for only three percent in western Washington and fifteen percent in eastern Washington. In general, the young forests are at lower elevations on sites where Douglas fir, western hemlock, and Sitka spruce survive. These forests provide habitat for some wildlife species, such as deer, elk, and black bear.

The biggest and most obvious difference between old-growth forests and younger forests is the presence of large live trees, standing dead trees, and downed logs. Old growth forests cycle energy, nutrients, and water more slowly and efficiently than a younger forest. Within these forests are the world's largest Douglas fir and western hemlock reaching 300 feet in height and twenty-three feet in circumference. Many wildlife species, such as the spotted owl, rely exclusively on old growth habitat for nesting, breeding, or feeding.

Most of the publicly owned old growth forest in the state has been cleared, with only pockets remaining in the Olympic National Park. These are also the only temperate rain forests on the North American continent. The rain forest in the valleys of the Quinault, Queets, and Hoh Rivers are protected inside Olympic National Park, even though the ecosystem stretches along the coast from Oregon to Alaska. What defines a rain forest is rain, and lots of it. Precipitation ranges from 140 - 167 inches every year. The mountains to the east protect the rainforest from severe weather extremes.

The forest canopy intercepts rainwater, thereby reducing the flow of water down slopes which helps to minimize sediment loading to streams. Tree and shrub roots stabilize the soil, decreasing erosion. Forests also serve to cleanse the air by removing carbon dioxide, a gas that has been linked to global warming.

The dominant species in the rain forest are Sitka spruce, western red cedar, big leaf maple, red alder, vine maple, and black cottonwood. Nearly every bit of space is taken up with a living plant. Some plants even live on others. These are the epiphytes - plants that do not come into contact with the earth, but anchor onto trees. They are partly responsible for giving the rain forest its "jungly" appearance. Mosses, lichens, and ferns cover just about anything else. Many seedlings germinate on fallen, decaying trees. As they grow, they send their roots down the log to the ground. Eventually, the log rots completely away, leaving a row of young trees. The dark, moist forest floor provides the perfect conditions for fungi. These live on dead organic material, playing a role in recycling forest nutrients. In coastal forests, fungi are very abundant in May and June and from October through December. The thick and protective vegetation of rainforest also provides excellent habitat for animals who, in turn, contribute to the health of the forest by keeping vegetation overgrowth under control through their browsing. Common

animals in the temperate rainforest include Roosevelt elk, cougar, black bear, river otter, Douglas squirrel, jumping mouse, and shrew.

Birds native to these moist forested regions include the gray jay, the dark-eyed junco, the chestnut-backed chickadee and the American dipper. Some of the other animals found in the forested areas include mountain lions, wolves, and mountain goats. Mountain lions are native to the area and rather common in places like Mt. Rainier national park. However, they are elusive and their big-pawed tracks are sometimes the only sign of their presence. Wolves, which are protected under the Endangered Species Act, were thought to be gone from Washington by the 1930s. However, recent monitoring indicates that wolves may be in the early stages of recolonizing the northern Cascades of Washington and, possibly, the southern portion as well. The chunky marmot, resembling a cross between a beaver and guinea pig, frequents the meadows, while mountain goats are often seen scampering up the steep slopes of the Cascades. Mountain goat population density and distribution is not well known, however, and is currently a topic of study within the national parks.

## **Wetlands**

Freshwater wetland ecosystems include ponds, marshes, seasonally flooded meadows and certain riparian areas. Until recently, wetlands were commonly thought of as wastelands, and many were filled, dredged, and developed for industry, housing, and agriculture. Today, we know that wetlands serve important functions, including flood protection, filtering of sediments and pollutants, erosion protection, and water storage for release during droughts. They provide habitat and food for many species of plants, animals, fish, insects and other microscopic organisms. Additionally, they provide economic benefits such as fish, and opportunities for recreation, education, and research.



Wetlands are lands transitional between terrestrial and deep-water habitats, where the water table is at or near the land surface or the land is covered by shallow water. Inland wetlands are most common on along rivers and streams (riparian wetlands), in isolated depressions surrounded by dry land, along the margins of lakes and ponds, and in other low-lying areas where the groundwater intercepts the soil surface or where precipitation sufficiently saturates the soil (vernal pools and bogs). Wetlands are defined by the presence of certain soil types, plant species adapted to the moist environments and, of course, water.

## **Rivers and Streams and Riparian Habitat**

As described previously, all water runs downhill to the streams and rivers within the watershed and is eventually carried to the oceans. This freshwater network is the very lifeblood of Washington's living communities, including human society. Rivers provide drinking water for many of Washington's cities, as well as water for other domestic and industrial uses; they also serve as transportation corridors and provide food, recreation, and scenic beauty. The water's downhill pathway is integral to the health of aquatic and terrestrial resources throughout the basin.

The timing and quantity of stream flow and water storage in aquifers and wetlands and periodic natural flooding play an important role in creating habitat and providing conditions for various plant and animal species throughout much of the river system.

Riparian habitat is the area adjacent to rivers, perennial or intermittent streams, seeps, and springs. Riparian areas contain elements of both aquatic and terrestrial ecosystems which mutually influence each other and occur as transitions between aquatic and upland habitats. Such areas provide a rich and vital resource to Washington's fish and wildlife because of their high productivity, diversity, continuity, and critical contributions to aquatic and upland ecosystems.

Overhanging vegetation protects streams and rivers from summer and winter temperature extremes that could seriously stress, or even kill, fish. Plant and tree roots stabilize stream banks, preventing erosion and maintaining channel stability. Streamline vegetation slows and disperses floodwaters, and reduces damage to fish spawning and aquatic insect production areas, and to homes, farms, and businesses downstream. Vegetation along streams and rivers also provides cover, places for nesting and perching, and corridors for wildlife to travel from one place to another.

The streams and rivers shaded by riparian forests provide ideal habitat for anadromous fish such as salmon and steelhead. These fish require clean, free-running and well-oxygenated water. Natural sand and gravel bars create calm areas and back eddies, providing much-needed resting places. Woody debris along river banks and bars shelters tiny fish from larger predators. Large waterfalls often form a natural barrier and define the upstream limit of fish migration.



*Chinook Salmon* Photo - Richard Grost

The lifecycles of salmon and steelhead provide an example of the connection between the coastal and upper watershed ecosystems. They spend much of their life at sea but after two to four years they make their way back upriver to spawn in gravel beds. On the salmon's trip upstream, bears take advantage of the easy prey. After laying thousands of eggs, the adult salmon die, and their carcasses line the riverbanks supplying a wealth of nourishment to forest animals.

Animals found in riparian habitats are Pacific giant salamander, red-legged frog, tailed frog, great blue heron, harlequin duck, belted kingfisher, American dipper, water vole, beaver, and river otter.

### **Lakes**

Lakes in Washington can be found under a variety of geologic conditions. The Puget Sound lowlands that most lakes occupy are depressions in the surface of

glacial drift. Glacial drift consists of sand, gravel, silt, clay, and till laid down by the Puget lobe of continental glaciers during the Ice Age. These depressions are either elongate troughs cut by the passing of ice sheets or are more circular-shaped kettle lakes formed by melting stagnant ice blocks.

In the adjacent foothills of the Cascade range and Olympic Mountains, most lakes occupy depressions eroded in the bedrock by the passing continental glacier. Lakes in the higher mountains are in basins cut by local alpine glaciers. Many lakes have been formed, or increased in size, by human activities. Numerous reservoirs are located in valleys or the Cascades and Olympics and dammed for a variety of purposes that include municipal water supply, irrigation, electrical power generation, flood control, and recreation.

## D. Specially Designated Areas

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### *Areas of Particular Concern*

This section identifies Washington's "Areas of Particular Concern" (APC). The CZMA requires coastal zone management programs to describe the state's criteria to designate areas of conservation, recreational, ecological, or aesthetic values and to preserve or restore them. Washington prepared criteria and identified areas of particular concern during the preparation of the original program document in 1976. Washington uses the following criteria:

1. The area contains a resource feature of environmental value considered to be of greater than local significance or concern;
2. The area is identified as an area of particular concern by state or federal legislation, administrative and regulatory programs, or land ownership; or
3. The area has the potential for more than one major land or water use or has a resource sought by ostensibly incompatible users.

These criteria led to the identification of ten Areas of Particular Concern, which are discussed below. No additions have been made since the 1976 adoption. Ecology has addressed the issues related to the areas of particular concern through shoreline master programs, shoreline permit review, special area management plans, the CZMA local grant program, and technical assistance to local governments.



*Western Washington coastal counties and areas of particular concern.*

## ***1. The Hood Canal***

Hood Canal is a sixty-one mile long fjord, bounded by the Olympic Mountains on the west and the Kitsap Peninsula's low hills on the east. The Canal's waters fall within Mason, Jefferson, and Kitsap Counties. Timber companies, federal, state, and local governments as well as private property owners, all own pieces of the Canal. Its commercial fishing and shellfish production are prominent activities, and the Canal is also known for its production of market and seed oysters. The relatively unspoiled nature of the region provides excellent opportunities for education and research on such subjects as oyster culture, water pollution, and bivalve bioassay procedures.

Fragmented ownership leads to problems in managing the Canal. State-owned uplands managed by the Department of Natural Resources (DNR) are scattered throughout the region. The DNR owns and manages approximately forty miles. State Parks manages an additional three miles included within seven state parks. Most federally controlled land is in Olympic National Park and Olympic National Forest, although only one small segment of the National Forest actually extends to the shoreline. The United States Navy occupies several miles of shoreline between Bangor and Vinland on the Toandos Peninsula. Navy operations at Bangor require acres of uplands and shorelands for munitions handling and shipping. The Navy port at Bangor is home to the Trident nuclear submarine.

The Canal's popularity, coupled with the small amount of publicly owned areas, leads to considerable crowding and use-conflicts between recreational users and residents. In taking advantage of the waterfront locations, many homeowners have filled the intertidal areas to build homes. This development has led to lost tidelands and resulted in crowded conditions and a decrease in aesthetic enjoyment.

Most of the Canal's south and west sides are bordered by extremely steep slopes which, when coupled with filled tidelands, render ineffective many septic drainfields. Widespread drainfield failures pose a threat to both water quality and to oyster and clam beds. The slow flushing rate in the Canal makes maintenance of good water quality in the Canal a complex problem. Because six months are needed for the Canal to complete its flushing, it is difficult to assimilate industrial and municipal wastes.

Responding to increased public awareness of problems facing the Canal, then-Governor John Spellman directed the Ecological Commission and Ecology to prepare a regional policy for the area. The resulting Hood Canal Coordinating Council (HCCC) was created in 1985. The Council adopted the Hood Canal Regional Planning Policy in 1986, and the Water Quality Guidelines in 1988. The HCCC now focuses on implementation of the policy and guidelines by federal, state, and local agencies, coordinated management of the Canal, and ongoing education and public involvement activities. The education components stress individual responsibility to prevent further pollution.

## 2. Nisqually River and Estuary

Unique to Washington State, if not the nation, the River's headwaters originate in a national park (Mount Rainier) and run to its delta within a national wildlife refuge (Nisqually NWR). Along its seventy-eight mile course, the Nisqually traverses forested mountainous terrain and rolling farmlands in three counties,



*Nisqually River*

*Photo - Mark R. Lembersky*

past small towns, through the Fort Lewis Military Reservation and the Nisqually Indian Reservation before entering Puget Sound. The Nisqually delta sits close to the first European settlement in the region.

The Nisqually's outstanding features led to its recognition under the 1972 Shoreline Management Act as a river of "statewide significance," and Washington's 1976 Coastal

Zone Management Program classified the river and estuary as an Area of Particular Concern. The Nisqually delta remains one of the largest undeveloped estuaries in Puget Sound, second only in size to the Skagit River delta. The estuary serves as an important nursery area of Puget Sound fisheries and as the nesting place for some 160 species of migratory waterfowl and marsh birds. The delta is on the major fly line of the Pacific flyway and is the only place of any size left in Puget Sound for migratory birds to rest.

The Nisqually River accounts for approximately half of the total fresh water flow into south Puget Sound. Compared to other rivers in the region, the Nisqually's water quality is exceptionally high and is used as a benchmark for water quality comparisons. Multiple salmon species and the largest run of wild steelhead in south Puget Sound swim in the Nisqually. Characterized by undeveloped forests and occasional farms, the River's riparian zone remains in relatively good condition. Deer, elk, bear, cougar, river otters, bald eagles, and a myriad of other species live in the area.



*River otter*

*Photo - Tim Ransom*

As one might imagine, the Nisqually provides significant recreational opportunities. Wildlife photography, fishing, digging for clams, oysters, and geoducks in the summer months, and hunting in the fall are but a few of the popular activities. While human impacts are lower as a result of limited access to the area, the river and delta are classic examples of areas where many uses compete over limited resources.

## Padilla Bay National Estuarine Research Reserve

National Estuarine Research Reserves (NERR) are a nationwide system of protected sites designed to promote informed management of estuarine and coastal habitats through connected programs of stewardship, education, monitoring, and research. State and local governments manage each site with administrative and designative functions held by the federal government. In Washington, Padilla Bay is a cooperative program of Ecology and the National Oceanic and Atmospheric Administration (NOAA).

As early as 1974, state and federal groups began identifying areas in Washington that would be eligible for Estuarine Reserve status under the CZMA. Among forty sites, Padilla Bay was eventually selected due to its unique physical and biological qualities. In 1979, the Governor's Padilla Bay Sanctuary Steering Committee and Technical Advisory Subcommittee established the original proposed boundary for the Padilla Bay NERR. Approximately 13,535 acres, including uplands and tidelands, comprised the proposed boundary. (Hat Island was added to the overall Reserve area in 1998)

Historic sale and subdivision of the tidelands led to 1,789 separate parcels in fragmented private ownership. Over the past years, the Reserve has purchased property within the proposed boundary from willing sellers. Following eleven years' of litigation, the State settled with the Orion Corporation in 1993, which transferred title to 8,004 acres to the Department of Ecology. At the turn of the 21st Century, the Padilla Bay Reserve owned over 11,000 acres of

tidelands and marshlands. Washington State Department of Ecology is responsible for administering and on-site managing the Reserve.

The Padilla Bay NERR houses a 7,000



*Photo - Sharon Riggs*

square foot interpretive center with salt water aquaria, theater, lab and classroom. The center hosts workshops, coastal management seminars, college and adult education courses, and K-12 learning. Recent research at the reserve has examined the value of eelgrass to Dungeness crab and salmonid life cycles, and *Spartina* eradication methods. Significant research is underway on agricultural nonpoint issues at the Padilla Bay Research Farm. Since its inception in 1980, the Padilla Bay NERR has provided hands-on educational program opportunities for over 150,000 people.



Unbelievable as it may now seem to those who enjoy the area for its natural amenities, the delta had long been intended by port and industrial interests as a major harbor area on the Sound. Fortunately for the 4,000-acre delta, conservationists and others recognized its value as one of the few remaining unaltered wetland areas on the nation's West Coast.

In the years following designation as an APC, the Nisqually National Wildlife Refuge acquired significant areas of the lower delta. As one might suspect, issues began to emerge with respect to the entire river system. The concerns were diverse, including public access, water pollution, flood damage reduction, and urban sprawl resulting from Washington's highest regional population growth rate centered in Olympia, the state capital.

Legislative efforts to protect the Nisqually culminated in a 1985 law directing Ecology to develop a Nisqually River Management Plan emphasizing balanced stewardship of the area's environmental, cultural, and economic resources. To produce the Plan, Ecology established the Nisqually River Task Force, comprised of timber, agriculture, and hydropower interests, conservation and environmental organizations, private landowners, resource management agencies, and the Nisqually Indian Tribe. The Task Force addressed public access, flood control, fish and wildlife protection, land use, and private property rights, among other issues.

In 1987, the state legislature adopted the Plan, which called for the River Council - an interagency body committed to protect and enhance the River system through education, advocacy, and coordination. The Council represents a variety of interests including: Mount Rainier National Park, University of Washington Pack Experimental Forest, Nisqually National Wildlife Refuge, Lewis, Pierce, and Thurston Counties, and Cities of Roy, Yelm, and Eatonville, the Nisqually Indian Tribe, several state agencies, and others. Twenty-one citizens sit on the Council's Citizen Advisory Committee. They represent citizen interests and concerns, and assist in developing recommended policies and activities.

### ***3. The Skagit and Padilla Bays***

The Skagit River delta lies within the Puget Sound-Georgia Basin region, a fjord estuary. Glaciers carved out the estuary and then retreated approximately 10,000 to 20,000 years ago. The Skagit River system accounts for over thirty-five percent of the fresh water entering the Straits of Juan de Fuca and Puget Sound. All five species of salmon and two species of anadromous trout (trout that go from freshwater to saltwater and return to spawn upriver) begin life in the cool, gravel bottoms of the Skagit River system. In 1996, 152,000 chum salmon - a ten year high - also returned to the Skagit.

The river created the largest area of tide flats in the Puget Sound Basin. While the extensive estuaries of and Padilla Bays are now physically separated, their creation from sediments from the same river and their connection by the Swinomish Channel make it appropriate to treat them as parts of one natural system.

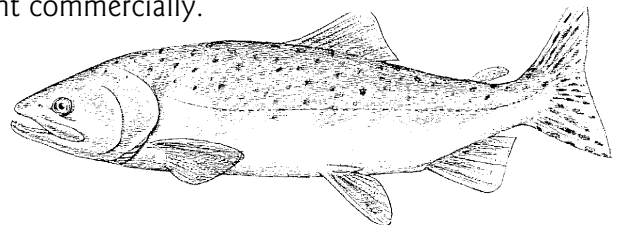
The Skagit River estuary is among the most diverse, least disturbed, and most biologically productive of all the major estuaries on the Puget Sound. It is an important area for rearing of sub-yearling chinook. Fish species occurring in the estuary include the five Pacific salmon species, char (Dolly Varden), rainbow, and cutthroat trout.

Padilla Bay is just one small bay in the larger Puget Sound-Georgia Basin estuary. Approximately fifty miles north of Seattle, the Padilla Bay estuary lies at the saltwater edge of the Skagit River delta. This eight-mile long, three-mile wide estuary is filled with Skagit River sediment, resulting in a very shallow, flat, and muddy bottom. In fact, the Bay is so shallow that it is almost completely intertidal. While the Sound floods it at high tide, the entire Bay empties at low tide, exposing miles and miles of mud flats. These mud flats make an ideal place for unusually large eelgrass meadows to flourish.

The almost 8,000 acres of eelgrass serve as a nursery for salmon, crab, and herring. Millions of worms, shrimp, clams, and other invertebrates live there and feed great blue herons, bald eagles, river otters, seals, as well as humans. The terrestrial flora around the Bay, aside from agricultural fields and diked areas, consists of second-growth forests of mixed conifers, broad leaf trees, and occasional pastures. Douglas Fir, western red cedar, red alder, Pacific Madrona, and big leaf maples dominate the forests. Salal, Oregon grape, stinging nettle, Indian plum, and ocean spray comprise the forests' understory.

Marine invertebrates are abundant in Padilla Bay's eelgrass, mud, and sand. Salmon and Dungeness crab are important commercially.

Juvenile Chinook, Coho, Pink, and Chum salmon migrate through the Bay finding food and shelter. Resident species include English, Dover, and rock sole, starry flounder, three-spined stickleback, gunnells, sculpin, and bay pipefish.



During the winter, 50,000 ducks of twenty-six different species inhabit the Bay. Large colonies of great blue heron live nearby and feed inside the Bay. The overall bird index for the Padilla Bay area exceeds 240 species, making it one of the most diverse birding areas in the state. Some spectacular residents include the bald eagles, five species of falcon, rough-legged hawks, brant geese, and osprey. Marine mammals are plentiful - during low tide, as many as 150 harbor seals haul out on the sand islands of Padilla Bay. Terrestrial non-marine mammals include the black-tailed deer, raccoon, red fox, coyote, muskrat, beaver, porcupine, and long-tailed weasel.

Early Native Americans lived in the general Padilla Bay-Skagit area for 5000 years. The Noo-Wha-Ah, Samish, and Swinomish Tribes were the dominant tribes in the area. Spanish explorers traveled through Skagit and Padilla Bays in the 1790's and named Padilla Bay after the Viceroy of Mexico.

In the early 1800's, white trappers, traders, and settlers brought diseases, which decimated many Native Americans in the area. By the late 1800's, the

surviving native people moved to the Swinomish Reservation, just south of Padilla Bay along the Swinomish Channel. There, the Swinomish Tribe established their tribal center, adjacent to the town of La Conner. The Swinomish have hunted and fished in the area for hundreds of years.

In 1867, white settlers recognizing the agricultural and timber potential of the area, built a trading post on the Swinomish Flats at La Conner. Logging operations began in 1867, reaching a peak between 1902 and 1909, when one of the state's largest companies bought or leased much of the land surrounding the Bay. As settlers farmed the "stump farms," extensive diking supported a strong agricultural movement which thrives to this day.

Today, the Skagit Valley is one of the most fertile valleys in the world. Twenty-five percent of the nation's frozen peas and eighty-five percent of the cabbage and beet seeds grow in the valley. Crabbing and salmon harvesting occur in the area, but are no longer the productive enterprises they once were.

Intensive industry dominates the western fringe of Padilla Bay. March Point harbors Equilon and Tesoro huge oil refineries, which refine crude oil into gasoline, diesel, and other products. The oil companies treat their wastewaters, and there is no evidence of major impacts from several minor spills. Fertilizer, seed and feed processing facilities sit at the southern end of the Bay, servicing the large agricultural valley.

The Skagit System Cooperative (SSC) is a planning and research consortium of the Swinomish, Upper Skagit, and Sauk-Suiattle tribes. The SSC conducts fisheries research in the estuary under the auspices of the Northwest Indian Fisheries Commission, sponsor of the Skagit River Chinook Restoration Research Program. The research focuses on chinook juvenile life history and habitat use in the estuary, estuary habitat restoration studies, and historical reconstruction of estuarine habitats in the Skagit Delta.

The SSC's work has driven the Skagit Watershed Council's Restoration Strategy. The Strategy identified key habitats throughout the Skagit watershed - high value salmon rearing areas such as side channels, sloughs, and floodplains. Many of the sloughs and distributary channels in the estuary warrant consideration as habitat restoration projects. The Army Corps of Engineers, Seattle City Light, and a coalition of organizations are exploring the potential of such projects. Ecology and several sponsors developed a water clean-up (TMDL) restoration program for tributaries to the South Fork Skagit River.

#### ***4. The Snohomish River Estuary***

The Snohomish River system releases the second largest volume of fresh water entering Puget Sound from a single source and has formed an extensive delta and estuarine complex. Lying just to the north of industrial Everett, the state's fifth largest city, the tidal area has accommodated much of Everett's economic development and was targeted for additional industrial growth.

In 1971, the delta was designated a shoreline of statewide significance and received attention from a gubernatorial mediation team established for land use

planning and flood control for the Snohomish Basin. In 1974, the team recommended that the seaward extensions of the delta and biologically functioning surge plains be maintained in a natural state. The mediation team recommended a feasibility study for allocating certain areas for industry.

In 1985, Snohomish County used CZMA funds to develop a comprehensive wetlands and aquatic resources management program. The Snohomish River Wetland Units Preservation Management Plan identified 1,360 acres for preservation through acquisition. By 1992, Snohomish County and the State Department of Wildlife had acquired over one thousand acres of wetlands and the acquisition program is continuing. In 1995, the Snohomish Estuary Wetland Integration Plan divided the Basin into 367 hydrological units, called wetland complexes, which helped identify seven areas in the basin to focus on for restoration and preservation. A technical advisory committee in cooperation with a citizen advisory committee prepared a management plan addressing wildlife habitat preservation and enhancement, public access, recreation, interpretive education, scientific research, and cultural resource preservation. Despite these successes, the area still faces significant water quality problems though these issues are specifically being addressed through Ecology's Snohomish River Estuary dry season total maximum daily load (TMDL) study. The study was initiated in 1993, with a full tributary report completed in 1997. The major concern was increased demands on the wastewater treatment plants (WWTPs) permitted to discharge to the river and sloughs.

## ***5. Northern Strait and Puget Sound Petroleum Transfer and Processing Area***

The Northern Straits (now commonly referred to as the "Northwest Straits") are located in the northwestern most corner of the contiguous U.S. The waters encompass the San Juan Islands, northern Puget Sound and the Strait of Juan de Fuca. The Strait is an inlet of the Pacific Ocean between Vancouver Island, British Columbia, and Washington, linking the Strait of Georgia and Puget Sound with the Pacific and forming part of the U.S.-Canada border. Victoria, British Columbia, the Strait's largest city, is located at its eastern end; ferries connect it with the U.S. Mainland.

These waters and adjacent upland areas are within a petroleum transfer corridor which includes terminal areas for tanker shipments of crude petroleum. This area was originally designated an Area of Particular Concern because of its vulnerability to oil spills and the numerous competing uses of the area. At the time of designation, over 310,000 barrels of crude petroleum passed daily through the area to seven refineries with a combined capacity of 363,000



*San Juan Islands*

*Photo - Tim Ransom*

barrels. Any increase in shipping was expected to increase the likelihood of future spills.

Washington is one of the West Coast's largest crude oil refining centers and conduits for Pacific Rim trade. Significant petroleum transport, delivery, and refinery activities take place within and adjacent to the waters of the Northwest Straits. Incoming tankers, and other vessels regularly transport crude petroleum products to Northwest Straits refineries, such as those at Anacortes and Ferndale. Additionally, these vessels deliver refined petroleum products to other sites within the region, including receiving terminals at Bellingham, Edmonds, Everett, and Port Angeles, as well as to Oregon and California.

In 1999, over 15.1 billion gallons of oil and 11,000 ocean-going ships moved through the Strait of Juan de Fuca. Records indicate that the Strait of Juan de Fuca and Northern Puget Sound have witnessed more than a dozen near misses involving major tankers, cargo ships or barges since 1994. While the characteristics of crude oil and other petroleum products coming into Puget Sound may vary greatly, approximately eighty-eight percent of the inbound tankers to Puget Sound contain Alaskan crude oil.

## ***6. Dungeness Estuary and Spit***

Dungeness Spit is the longest natural sand spit in the United States. Extending five miles into the Strait of Juan de Fuca, Dungeness Spit has grown about fifteen feet per year for the past 120 years. Complex winds, waves, and eroding bluffs build Dungeness Spit. Wind and waves bring sandy sediments from the west. Strong northeast winds during summer and winter storms reverse shore drift and have formed a hook called Graveyard Spit. The Spit shelters a large inner bay, tideflats, and an estuary. Most of the refuge is located on the spits, which are characterized by sand and cobble beaches surrounded by tidal mudflats and eelgrass beds. There are also two tidal ponds, a large one at the junction of the two spits and a smaller one about ½ mile east of Graveyard Spit on the Bay side of Dungeness Spit. Graveyard Spit is closed to the public and set aside as a Research Natural Area because of its unique vegetation.



In 1915, the 756-acre Dungeness National Wildlife refuge was established here as a resting and wintering place for Black Brant and other birds. More than 250 species of birds, forty-one species of land mammals, and eight species of marine mammals have been recorded in the refuge, some of them threatened or endangered. Wildlife can find food and protection here from wind, waves, and pounding surf, while shorebirds and waterfowl feed and nest along the beaches. Seals haul out of the water to rest in the sun, and shorebirds such as turnstones, phalaropes, and sandpipers search along the swash probing the sand for clams, crabs, oysters, and other shellfish. The Refuge is an important stop for many birds during migration that hunt for food along the water's edge. About ninety-one

## Grays Harbor Special Area Management Plan

The Coastal Zone Management Act contains provisions which encourage Special Area Management Plans (SAMP) for defined areas with resource management problems unresolvable within the framework of existing federal, state, or local regulatory or management programs. The SAMP process establishes a cooperative approach to resolving complicated issues and challenges with the adopted SAMP becoming a formal part of a state's coastal zone management program. In Washington, local jurisdictions in the "special area" must adopt the SAMP provisions into their shoreline master programs before the area can be designated as a SAMP. Currently, there is one SAMP under the CZMA, the Grays Harbor Estuary Management Plan (GHEMP).

The combination of very high resource values and the importance of

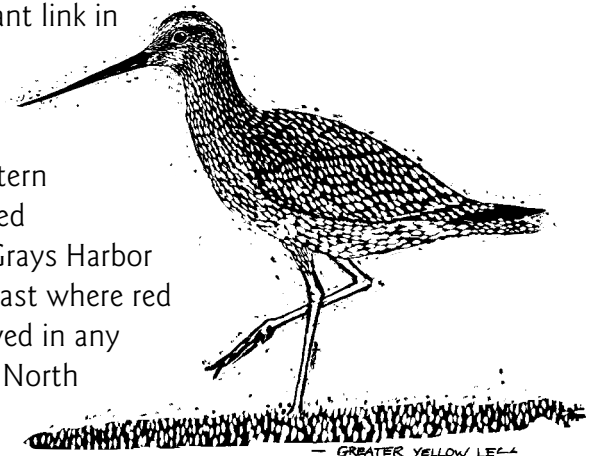
industrial and port uses to the local economy led to numerous conflicts over development proposals in the early 1970s. To resolve these disputes, a task force of federal, state, and local agencies with management responsibility for Grays Harbor prepared a special area management plan. The plan was funded in part with Coastal Zone Management Act grants. In 1992 OCRM approved the GHEMP as an amendment to the Washington Coastal Zone Management Program.

Beginning in 1996, the Grays Harbor Estuary Management Plan Task Force was reconvened to review the GHEMP's performance in the years since its adoption. The Task Force paid special attention to effectiveness, consistency with new or amended state and federal laws, and emerging issues and needs.

species nest in the refuge area, including Common Merganser, Cooper's Hawk, Northern Pygmy-Owl, Vaux's Swift, Rufous hummingbird, and Willow Flycatcher. Eelgrass beds provide food and shelter for young salmon and steelhead and provide a significant food source for migrating Black Brant.

## 7. Grays Harbor

Grays Harbor is one of three major estuaries on Washington's outer coast. The estuary is a nursery ground and passageway for a vast array of living resources and an important link in the migratory patterns of many fish and wildlife species. Grays Harbor is of critical importance to migrating shorebirds; the five most abundant species include the western sandpiper, dunlin, short-billed and long-billed dowitcher, and semi-palmated sandpiper. Grays Harbor is also one of the few areas on the West Coast where red knots (resembles a sandpiper) can be observed in any number. It is one of four major estuaries in North America that is a critical stopover area, supporting up to one million



shorebirds during spring migration. Stopover areas allow shorebirds to rest, feed and replenish resources on their migration or in preparation for the coming breeding season. When shorebirds leave Grays Harbor during spring migration many fly northward 1,500 miles to the Copper River delta. Some birds make intermittent stops along the coast to rest for prolonged periods during the fall and winter months.

Grays Harbor is approximately twelve miles wide at its widest point and covers an area of ninety-seven square miles at high tide. The bay is connected to the ocean by a channel approximately two miles long and one and one half miles wide. It is the only coastal estuary in the state with an authorized deep-water navigation channel and major port, and it provides an important transportation link to local, national, and international markets.

The shallow estuary of approximately 100 square miles of surface water at high tide presents complex management problems in terms of maintaining water quality and wildlife habitat while providing for navigation, industry, aquaculture, and recreation. Aberdeen, Cosmopolis, and Hoquiam, situated at the mouth of the Chehalis River, are significant port and industrial cities. Ocean Shores and Westport, on the western edge of the estuary, are primarily retirement and recreation areas and are the fastest growing in the county. They also are commercial fishing centers. The water quality problems resulting from these uses prompted some of the earliest water quality efforts and studies in the state. The economy of the area has tended to be extremely cyclic, leading to strong community interest in diversifying and developing the local economy. In 1988, President Reagan signed a law authorizing the US Fish and Wildlife Service (FWS) to acquire up to 1,800 acres in the Grays Harbor area. Approximately 1,500 acres of this land was designated as the Grays Harbor National Wildlife Refuge, which is managed by the FWS. In 1996, the Grays Harbor estuary was recognized as a Western Hemisphere Shorebird Reserve Network site of hemispheric importance. Protection of such key areas is critical to shorebird conservation, as well as for the many fish, bird and other wildlife species that depend on such sites.

## **8. Willapa Bay**

In the far southwest corner of Washington, the Columbia River reaches the Pacific Ocean. Just north of the Columbia River Estuary, runs a long, wide sandspit known as the Long Beach Peninsula. The Peninsula terminates at the mouth of Willapa Bay, a large, relatively shallow and ecologically complex estuarine embayment. Large rivers such as the Niawiakum and the Willapa drain over 600,000



*Willapa Bay*

acres of watershed into the Bay. The Long Beach Peninsula shelters the Bay from the Pacific Ocean's crashing waves. Sloughs and small river deltas surround open water, and these in turn are flanked by low, rounded ridges called the Willapa Hills.

The North River flows into the Bay's north end, near tiny, historic Tokeland. The Shoalwater Indian Reservation is nearby and other small communities dot the Bay's shorelines (including Nahcotta, Oysterville, Bay Center, and Nemah). The larger Willapa River meets the Bay north of South Bend, a small town with prominent shellfish packing plants on the curving river edge.

The Willapa Wildlife Refuge was created in 1937 primarily to protect the black brant, a stocky goose with a thin white collar. The site still provides prime winter habitat for the brant as well as the trumpeter and tundra swans. Up to 150,000 shorebirds use the Bay at the peak of spring migration and approximately 100,000 waterfowl visit at the peak of fall.

The estuary covers approximately 100 square miles with 129 shoreline miles. The three dominant physical features are emergent salt marsh (6,000 acres), intertidal sand and mud flats (36,000 acres), and the subtidal channels and basins (22,000 acres). Extreme low tides drain half the estuary, leaving it exposed. In the southern part of the Bay, near the refuge headquarters, Long Island features a dense stand of old growth red cedar and hemlock trees. At Leadbetter Point State Park, which is located within the Wildlife Refuge, black bears are frequently spotted.

Pacific County depends upon Willapa Bay's resources. A center of the aquaculture industry, Willapa Bay produces more oysters than any other area on the West Coast of the United States. The resources of Willapa Bay and the adjacent ocean beaches contribute to an important tourism industry. In the words of former County Commissioner, Dan'l Markham, "Willapa Bay is a national treasure and the local treasury."

Working from a base of earlier studies, the County appointed the Willapa Bay Water Quality Organizing Committee, which completed a Willapa Bay Water Resource Management Plan in 1990. To oversee Plan implementation, the permanent Willapa Bay Water Resources Council was formed. CZMA grants assisted this effort with additional support from the state's Centennial Clean Water Fund and the U.S. Environmental Protection Agency. The Plan calls for water quality research and monitoring, public education, regulatory coordination, and the development of best management practices (BMP's) for specific industries.

Introduction of non-native beachgrass has resulted in large-scale problems. The spread of beachgrass threatens the shellfish industry, and a major effort to rid the bay of these european grasses is underway.

## ***9. Pacific Ocean Dune Areas***

The Pacific Coast dune area of Grays Harbor and Pacific Counties is one of the most attractive features in the state, drawing many visitors to its beaches and sport fishing areas. Situated immediately north of the Columbia River, it includes



three shoreline segments interrupted by the mouths of Willapa Bay and Grays Harbor. The beach areas are approximately fifty-four miles long and vary in width from 500 feet to over 7,000 feet. The State Parks and Recreation Commission maintains several developed parks and provides access points to the popular beaches.

Management of the area's beaches has a long history of conflicts over access to and development of the dune area. Most notably, the conflicts arose between state agencies and local governments or private upland owners. Pacific County has a Dune Management Plan for the Long Beach Peninsula, and Grays Harbor County has an Ocean Beach Environment designation with a beach protection setback. However, dune management issues remain contentious.

The long-standing debate over beach driving came to a head in the mid-1980's when the state legislature passed a law requiring local governments to adopt Beach Recreation Management Plans. These plans must be approved by the Washington State Parks and Recreation Commission. A minimum of forty percent of each beach (North Beach, Grayland Plains, and Long Beach) must be designated for pedestrian use from April 15 through the day following Labor Day.

## ***10. Continental Shelf***

The outer coast of Washington is oriented in a roughly north-south direction for about 150 miles from Cape Disappointment at the mouth of the Columbia River to Cape Flattery at the mouth of the Strait of Juan de Fuca. The coast is flanked by a relatively shallow, flat, submerged area of land under the Pacific Ocean called the continental shelf. This shelf extends offshore to a depth of roughly 600 feet or 100 fathoms. At this point (the shelf break) the bottom drops off more steeply to form the continental slope, which is indented by several major submarine canyons. Beyond the shelf and slope lie the deep, Pacific ocean waters. State ownership extends seaward for three geographic miles from the coastline. The boundaries of the counties on the ocean coast are the same as the boundaries of the state.

Beyond the state's ownership lies the Outer Continental Shelf (OCS). Federal law defines the OCS as all submerged lands under the ocean that are more than three geographical miles from the coastline where the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control. The seaward limit of jurisdiction for the OCS is generally 200 miles.



*Photo - Brian Walsh*

The entire shelf area came under debate in the mid-1980's to early 1990's. The controversy arose when the Department of Interior scheduled part of the shelf off the Washington and Oregon coast for a lease-sale that would allow exploration and development of oil and natural gas. Washington and Oregon opposed the sale for two primary reasons:

not enough was known about the shelf's resources and the potential impacts development would have on them; and some of the targeted area was simply too vulnerable to ever be developed (this area is now the Olympic Coast National Marine Sanctuary).

In 1990, President George H. W. Bush declared the area off Washington and Oregon's coast to be off limits until further studies were conducted. Since then, the Olympic Sanctuary's regulations prohibited oil and gas development, and, in 1998, President William Clinton declared the area off limits to oil and gas leasing consideration until June, 2012.

## **E. Other Specially Designated Areas**

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### ***1. Olympic Coast National Marine Sanctuary***

Congress conceived Marine Sanctuaries as areas with special conservation, recreational, ecological, historical, scientific, educational, or aesthetic values relative to the national significance of their resource or human use values. In some ways, they represent the water-based equivalent of our National Park system. Marine Sanctuaries are intended to protect marine resources by educating, researching, and encouraging compatible uses.

The Olympic Coast National Marine Sanctuary, consisting of 3,310 square miles of marine waters off the coast of Washington's Olympic Peninsula, contains rocky and sandy shores, kelp forests, sea stacks and islands, and open ocean. Puffins, eagles, otters, whales, salmon and dolphin species, among others, make their home in the Sanctuary. Twenty-nine species of marine mammals use the Sanctuary to breed, or rest while migrating. More kinds of kelp grow in, and more whale, dolphin, and porpoises cruise through the Sanctuary than anywhere else in the world. Birds also use the Sanctuary area, located along the Pacific Flyway migratory route. The largest bald eagle populations in the continental United States make their home here.

Cultural resources include Native American petroglyphs and villages, historic lighthouses and shipwrecks, notably the



*Octopus*

*Photo - Steve Fisher*

“Graveyard of the Giants.” Four Native American tribes, the Hoh, Makah, Quinault, and the Quileute live in the coastal areas of the Olympic Coast NMS.

## 2. Columbia River Estuary

The Columbia River is an interstate and international river. From its origin in the Canadian Rockies, the Columbia travels over 1,200 miles through forests, fields, and mountains before reaching the estuary on the Pacific coast. It is the largest watershed in the United States, draining 259,000 square miles and receiving waters from seven state and two provinces. It has the second largest water flow of any river in the United States.

The River’s significance to this country is far-reaching. Native Americans have fished its waters and lived near its shores for millennia. The Lewis and Clark expedition of 1805 opened the vast territory of the Columbia River Basin to a migration that continues even today. Millions of people depend on the River for employment, electricity, commerce, transportation, recreation, and renewal. Hundreds of species swim in its waters, dwell along its banks, and fly and nest in the surrounding heights. The River’s natural beauty and powerful presence define much of the basic Pacific Northwest.

In 1989, in recognition of the problems and issues facing the Columbia, state and local agencies and private interests banded together to establish the Bi-State Water Quality Program. In 1995, the Lower Columbia River Estuary Program (LCREP) was accepted into the National Estuary Program (NEP). The NEP was established in 1987 to protect estuaries of national significance that are threatened by degradation caused by human activity. The Estuary Program uses a coordinated watershed approach to promote cooperative problem solving among the diverse communities of people who care about the River’s future. The Estuary Program focuses on the unique and critical Lower Columbia River Estuary (the tidally influenced Columbia River system, reaching up to Bonneville Dam at River Mile 146). In 1996, the governors of Oregon and Washington, and the U.S. Environmental Protection Agency signed an agreement to develop a management plan to protect the lower Columbia River.

The 1999 *Comprehensive Conservation and Management Plan* identified ways to preserve and enhance the Columbia’s resources. *The Management Plan* focuses on the lower Columbia River estuary and identifies seven priority issues. The following summarizes the goal and issues of concern to the lower Columbia River Estuary: “The estuary program seeks to achieve a high level of biological integrity for the lower river and estuary. That integrity has been degraded by human activity and growth over the last hundred years. The manifestation of the degradation is evidenced by habitat loss and modification, toxic contaminants in fish tissue and sediments, and conventional pollutants (such as elevated temperature, increased dissolved gases, bacteria, and sediment). Institutional constraints from multiple jurisdictions and lack of public awareness and

Standin’ on a mountain  
lookin’ out across the sea,  
Columbia River is a mighty  
pretty sight to see.

– Woody Guthrie

stewardship make protection of the river challenging.” (*Lower Columbia Estuary - Priorities for Action*) The Management Plan provides the background, tools, and vision needed to address the priority issues.

### **3. The Northwest Straits Area**

The Northwest Straits includes the open waters, nearshore areas, and shorelines of the U.S. side of the Strait of Juan de Fuca and Strait of Georgia, as well as the waters of northern Puget Sound, from the Canadian border to the south end of Whidbey Island. This area is rich in natural resources and contains valuable fish and wildlife habitats. It also provides an important passage for fish and invertebrates, their larvae, ocean water, and marine vessels from the Pacific Ocean to Puget Sound and the Fraser River basin in Canada.

Thousands of years ago, massive retreating glaciers scoured the region’s bedrock, carving out deep marine channels and fjords between hundreds of islands, and creating diverse pristine habitats for thousands of marine species. In the Northwest Straits, the rise and fall of the Pacific Ocean’s twelve-foot tidal range, and the seaward flow of freshwater from rivers, mix to form a biologically productive estuarine system that nourishes a teeming diversity of life.

A variety of marine habitats are found throughout the area, including kelp forests, eelgrass beds, submerged marine banks, rocky shores and islands, and sand and mud flats. Over twenty species of visiting and resident marine mammals, including the only resident population of orca whales in the continental U.S., depend on these habitats and the resources they support. The area’s rich diversity of fish (over 200 species) include salmon, halibut, herring, rockfish, and lingcod. Important habitat is provided for over 100 species of marine birds, both resident and migratory, including auklets, loons, grebes, gulls, terns, shorebirds, and the single largest concentrations of breeding bald eagles in the continental U.S. Well over 2000 species of marine invertebrates live in these fertile waters and, along with hundreds of species of marine algae and plants, they play a fundamental role in supporting the entire marine ecosystem.

The rich abundance and diversity of life in the Northwest Straits, combined with its breathtaking beauty and relatively clean marine waters, play a vital role in supporting increasing numbers of people that reside, work, or play within and adjacent to the area. Indian tribes depend upon these waters and their resources for sustenance and cultural values; tankers and freighters ply the Straits carrying



*Spirit Cove, San Juan Island*

## ***Northwest Straits Marine Conservation Initiative***

Prompted by symptoms of ecosystem stress such as declining salmon and bottomfish stocks; loss of eelgrass beds; and dwindling populations of seabirds and marine mammals; Senator Patty Murray and Congressman Jack Metcalf convened a citizens' panel to look at possible strategies and solutions. Based on the panel's recommendations, Congress authorized the Northwest Straits Marine Conservation Initiative in 1998.

This innovative program takes a "bottom-up" approach to protecting and restoring the vital marine resources of the Northwest Straits. It blends well-founded science with grassroots consensus building through the actions of seven Marine Resources Committees (MRCs). Each of these groups is

citizen-based, with representatives from local government, the tribal government co-managers, and the scientific, economic, recreational, and conservation communities.

Over 100 MRC members in seven counties are now working to restore nearshore, intertidal, and estuarine habitats, improve shellfish harvest areas, support salmon and bottomfish recovery, and identify and urge establishment of marine protected areas. In so doing, they are complementing the efforts of existing local and state authorities to address the many serious threats to the Northwest Straits, its natural resources, and human residents.

A thirteen person Northwest Straits Commission helps guide and provide resources to the MRCs in each county. Consisting of seven MRC representatives, along with appointees by the Governor and Secretary of Interior, the Commission coordinates efforts between counties and achieves Initiative objectives at a regional level. It also helps set priorities for scientific research and ensures that activities address broader issues of ecosystem health.



*Whale pod, San Juans Photo - Tim Ransom*

cargoes to and from Washington and Canadian ports; and commercial fishing, shellfishing, and aquaculture are significant contributors to the region's economy. Recreational opportunities abound, including boating, fishing, clamming, diving, whale-watching, and more. The natural resources of the Northwest Straits are critical to the quality of life enjoyed by residents and visitors from around the world.

The deep channels and relatively sheltered harbors of the Straits have played key roles in the success of transportation and commerce within the region. The waterways provide major



*Photo - Tim Ransom*

traffic lanes for a variety of vessels. Domestic and foreign commercial vessels transiting the region, heading to and from U.S. and Canadian ports include tank vessels, roll-on/roll-off ships, car carriers, container ships, bulk carriers, log carriers, passenger ships, commercial fishing vessels, tugs with tow, Navy vessels, and ferries. Commercial vessel traffic enters the Northwest Straits region through the Strait of Juan de Fuca or from Canadian waters. The inbound lane along the Strait of Juan de Fuca is located on the United States/Washington side of the international border, while the outbound lane is located on the Canadian/British Columbia side. Large commercial vessels follow these international shipping lanes, which are jointly monitored by the U.S. and Canadian Coast Guards.

A substantial volume of seaborne commerce moves through the region, including all non-domestic marine traffic serving Washington ports east of Cape Flattery and most of the marine traffic serving British Columbia ports. The large marine terminals in the Northwest Straits are located at the Port of Anacortes, the Port of Bellingham, and the Port of Port Angeles. In addition to commercial ports, Navy ship facilities are located in Everett and near Port Townsend (Indian Island).

In this region, commercial fishing is the second most important marine economic activity behind seaborne commerce. Commercial fishing from the Northwest Straits constitutes a large industry, including tribal and non-tribal commercial fishers. Fishers either own their own boats and equipment, or earn their living working aboard others' fishing boats. Commercial fishers use purse-seine nets, gillnets, hook and lines, longlines, crab pots and net trawls. The primary species fished are salmon and halibut.

The protected, productive, temperate, and relatively clean waters of the region offer an ideal environment for shellfish aquaculture. Shellfish are cultivated in the Northwest Straits, and commonly involve such species as oysters, clams, mussels, and scallops. Sea vegetables, such as the marine algae, Nori, are also cultivated at a few locations in the region.

### ***The Shared Waters of the Inland Sea***

British Columbia and Washington share the vast inland sea of the Puget Sound. The governments of British Columbia and Washington recognized that there are large and growing threats to the economic, recreational and cultural values of the shared inland marine waters. Over the next two decades, the population within the watershed of the shared waters is expected to increase by almost fifty percent, thereby placing increased burdens on the environment. The state and provincial governments committed themselves to addressing, planning for and resolving the environmental problems associated with population growth in Puget Sound and the Georgia Basin.

Premier Harcourt and Governor Gardner signed the Environmental Cooperation Agreement in May 1992, signaling the beginning of the British Columbia/Washington Environmental Initiative. This Agreement commits the state and the province to work together on transboundary environmental problems.

The Agreement established an Environmental Cooperation Council (ECC), composed of the Washington Department of Ecology Director, and two members, one from the Deputy Minister of the British Columbia Ministry of Environment, Lands and Parks, as well as formal observers from the regional offices of the U.S. EPA, Environment Canada, and the Department of Fisheries and Oceans in Canada. The Council created five task forces to coordinate cross-border efforts in five priority areas; the Puget Sound/Georgia Basin International Task Force is one such task force.

The Task Force includes representatives of the U.S. Environmental Protection Agency, Northwest Fisheries Science Center, Department of Fisheries and Oceans Canada, Department of Environment Canada, Washington Department of Ecology, Washington Department of Natural Resources, Washington Department of Fish and Wildlife, Puget Sound Water Quality Action Team, BC Ministry of Environment, Lands and Parks, and the Northwest Indian Fisheries Commission.

A Marine Science Panel comprised of scientists from both British Columbia and Washington was created in 1993 by the ECC to assess the state of the marine environment in the Shared Waters and to provide recommendations for action. A symposium of scientists from both sides of the border was convened in Vancouver, B.C. in January 1994 to present a status report on the marine environment and biota in Puget Sound, the Strait of Georgia, and the Strait of Juan de Fuca. The Marine Science Panel presented its final report on recommendations for action in the Shared Waters to the Governor and Premier in September 1994. (Contact the Puget Sound Water Quality Action Team for more information)

#### **4. State Parks**

The Washington State Park and Recreation Commission owns and manages 232,000 acres of land scattered around the state - a relatively small fraction of total state lands. They are most heavily concentrated around Puget Sound population centers and the vacation centers of the coast and San Juan Islands. Park properties are classified into the following categories: recreation areas, natural areas, heritage sites, launch sites, conservation areas, ocean beach access, environmental learning centers, natural forest areas, and natural area preserves. Of



*Westhaven State Park, Halfmoon Bay, Westport  
Photo - Brian Voigt*

the eleven western states, Washington has the second-smallest state park system, yet is second in annual visitation. According to the Office of Financial Management, there were approximately 48.7 million visits to state parks in 1996. State park lands are managed for several uses, but most of the acreage supports outdoor recreation either through direct access, visual access or by

providing important buffers that increase the recreational utility of core lands.

Topographically, state parks lands are diverse and often include geographically and historically significant areas. Many state parks include access to lakes, rivers, and saltwater making them very popular and highly used facilities. Recreation is unlimited. In addition to the usual camping and picnicking, state parks provide a exhaustive list of summer and winter activities that includes bird watching, windsurfing, kite flying, kayaking, horseback riding, fishing, mushrooming, hang gliding, cross country skiing, rock climbing, and more.

## **5. National Parks**

Washington contains three of the nation's thirty-eight major national parks: Mount Rainier, Olympic, and North Cascades National Parks. These parks are managed with a dual mandate: protection of the resources around which the site was created (e.g. natural processes or features, historic or cultural structures or sites, scenery, wildlife) and to allow public enjoyment of the resources in question. A policy of the National Park Service is premised upon the concept that uses within a park must be compatible with the natural setting. In other words, the activity must be inspired by the natural character and features of the park. For example, Mount Rainier was created to protect the natural processes and features associated with the mountain and its surroundings and is managed to allow for a spectrum of recreational uses from pleasure driving to mountaineering.

Washington's three national parks represent large blocks of largely undeveloped land. The landscape tends to be rugged and relatively difficult to access. The remote peaks and valleys of North Cascades National Park, for example, are often accessible only by foot on primitive trails. A multi-day trip into the remote areas of the North Cascades requires visitors to be self-contained - carrying food, shelter, and clothing into to wilderness.

### **Mount Rainier National Park**

Captain George Vancouver, a British explorer, named Mount Rainier after his friend Peter Rainier. The Indians called the mountain "Takhoma" and had many legends about it. Established on March 2, 1899, Mount Rainier National Park contains vast expanses of pristine old growth forests, subalpine flower meadows, spectacular alpine scenery, and myriad opportunities for pursuing outdoor activities. The Park is the fifth oldest national park in the U.S. and has the greatest single-peak glacial system in the U.S. Glaciers radiate from the summit and slopes of the 14,411 foot volcano.

Mount Rainier is an episodically active volcano. It began to grow between 500,000 and 1 million years ago. The slopes of lava flows on



*Marmot*

*Photo - Mark R. Lembersky*



opposite sides of the mountain probably projected more than 1,000 feet above the present summit, Columbia Crest, which lies at 14,411 feet above sea level. The volcano towers over a population of more than 2.5 million in the Seattle-Tacoma metropolitan area. Its drainage system, via the Columbia River, potentially impacts 500,000 residents of southwestern Washington and northwestern Oregon. Mount Rainier is the most hazardous volcano in the Cascades in terms of its potential for magma water interaction and sector collapse, major eruptions, or debris flows even without eruption. It poses significant dangers and economic threats to the region, but despite such hazards and risk, Mount Rainier has received little study.

In the summer months, chipmunks, ground squirrels, marmots, pika, Gray jays, Steller's jays, and ravens are commonly seen. Other animals include the big brown bat, black bear, bobcat, cougar, ermine, fisher, hairy-winged myotis, heather vole, hoary bat, lump-nosed bat, mink, mountain beaver, and northern flying squirrel.

## **Olympic National Park**

After a visit to the Olympic Peninsula in 1937, President Franklin D. Roosevelt added his enthusiastic support to the movement for a national park and signed the act establishing Olympic National Park on June 29, 1938. By 1988, nearly ninety-six percent of the park was designated as wilderness. Often referred to as "three parks in one," Olympic National Park encompasses three distinctly different ecosystems - rugged glacier-capped mountains, over sixty miles of wild Pacific coast, and magnificent stands of old growth and temperate rain forest. Olympic National Park is a wilderness park, with much of its interior accessible only by trail.

Settlers came to the north Olympic peninsula in the mid-1800's, but the mountainous interior remained unexplored. The first well-documented exploration



*Hurricane Ridge, Olympic Mountains  
Photo - Washington State Tourism*

of the Olympics occurred in 1885, but was cut short. A second attempt was made in the winter of 1889-1890. During the fall of 1889, the year Washington became a state, the Seattle Press newspaper called for "hardy citizens...to acquire fame by unveiling the mystery which wraps the land encircled by the snow-capped Olympic range." The Press financed an expedition of five men, whom

the Press described as having "an abundance of grit and manly vim," four dogs, two mules, and 1500 pounds of supplies. In May, the Press party reached the coast after nearly six months in the mountains. As a result of the Press

Expedition, many peaks bear the names of prominent newspaper publishers and editors of the late nineteenth century.

More than sixty miles of Pacific Ocean coastline form a vital component of Olympic National Park. This coastline has remained little changed except for the impact of the pounding surf and storms. It looks much as it did when Indians built their first villages thousands of years before European explorers arrived.

There are four basic types of forests in the Park: temperate rain forest (see discussion in Chapter 2 ), lowland forest (further inland from the coast, above rain forest valleys where Western hemlock is abundant and western red cedar grows sporadically), montane forest (silver fir dominates), and subalpine forest (silver fir, subalpine fir, mountain hemlock, and Alaska red cedar grow in these higher elevated, cooler areas).

Several hot springs can be found in Olympic National Park, occurring on or near the Calawah fault zone. This currently inactive fault zone extends from the southeastern Olympics to the northwest and probably into the Pacific Ocean. Indian legend speaks of the origin of the Sol Duc and Olympic Hot Springs: two “dragon-like” creatures engaged in a mighty battle. Because they were evenly matched, there was no victor. Admitting defeat, the creatures crawled into separate caves where they weep mortifying tears. The Quileute name for the hot springs is si’bi’, meaning “stinky place.”

### **North Cascades National Park**

On October 2, 1968 President Lyndon B. Johnson signed the North Cascades Act, creating the North Cascades National Park which comprises 684,000 acres of wild land. The Cascade Mountain range runs 500 miles from Northern California to British Columbia, but it is not until it reaches northwest Washington that the mountains are at their most breathtaking. Jagged, rocky peaks of up to 10,000 feet give way to near sea-level valleys; glaciers cling to the sides of steep slopes; and waterfalls cascade down from the mountains, giving the mountain range its name.

The mountain building forces at work - accumulation of sediment from pre-historic seas, colliding tectonic plates, and volcanic activity - have combined to create one of the fastest growing mountain ranges in the world. In fact, the North Cascades would be taller if the counteracting forces of water and glaciers did not conspire to keep the mountains at more modest heights. Still, the elevational distance from valleys to summits throughout the North Cascades can exceed 5,000 feet - a relief as great as any other range in the U.S. The steep and imposing North Cascades presented a formidable barrier to early white explorers and the names they gave them betray their dread: Mount Terror, Mount

“To protect your rivers,  
protect your mountains.”

*Emperor Yu of China,  
1600 B.C.*

Challenger, Mount Fury, Mount Despair, Mount Torment, and Desolation Peak.

Water is the life force of the North Cascades. It falls from the sky, trickles off mountains, replenishes lakes, and flows to the sea. Within the Puget Sound watershed, the Skagit River is the largest river. For a more-detailed discussion on the Skagit River system, see Chapter 2, Section 3.



*Goat Lake*

Old growth forest, with snags, tree cavities, and loose bark, offers important roosting and nesting habitat for bats in the Cascades. Some large species native to the Cascades migrate south in the coldest months. Other animals found in the Park are black and grizzly bears, beaver, mountain goat, flying squirrel, marmots, weasel, snowshoe hare, and wolves. The wolves are gray wolves, and there are probably very few of them in the North Cascades.

No one knows whether the population is increasing, decreasing, or remaining the same. Wolves have been sighted throughout the Cascade Range and in Washington's northeast corner (the Selkirk Mountains). In Washington, both the federal and state governments list the wolf as an endangered species.

## Chapter 3 - Indian Tribes in Washington's Coastal Zone

Indians have lived in Washington's coastal zone for over 10,000 years. Early human movement across the Bering Land Bridge (Berengia) from Asia into North America is thought to have occurred from between 12,000 and 14,000 years ago, although some scientist project a much older date. Limited archaeological evidence suggests human habitation in the Northwest Coast at about 12,000 years ago. Following the last Ice Age (10,000 to 20,000 years ago), transient hunter-gatherers arrived in the Puget Sound Basin and the Northwest Straits area,

which provided a temperate and bountiful environment.

Theories diverge on the path of arrival of these earliest prehistoric populations; they may have moved over land into the region after the glaciers in the Cascade chain receded; or, they may have traveled south from Alaska along the Pacific Coast in skin boats.

Depending on their particular locations, the Northwest Coast Indians subsisted on a combination of marine and/or riverine resources. Some collected sea lettuce for sunburned lips, cured bull kelp strips for fishing lines, and used kelp bulbs as storage containers. The Makah hunted sea mammals including whales and seals; the Klallam harvested and used gray whales. These tribes and others also caught salmon and halibut and harvested shellfish. Some of these products were used in trade with other tribes and later white settlers. Most Northwest tribes were skilled woodworkers, building framed and planked houses and having highly developed handicraft tradition. They had a sophisticated material culture that emphasized woodcarving, weaving with reeds and grasses, stone carving, and manipulation of animal bones and skins. The Northwest Coast Indians were also skilled boat builders. They built large sharp-hulled dugout canoes for use in the deepwater environments of the Pacific Ocean, Strait of Juan de Fuca, and Puget Sound. Smaller, round-bottomed canoes were used on the shallower inland rivers and streams.

*"Every part of this country  
is sacred to my people.  
Every hillside, every valley,  
every plain and grove  
has been hallowed  
by some fond memory  
or some sad experience of my tribe.  
Even the rocks,  
which seem to lie dumb  
as they swelter in the sun  
along the silent shore  
in solemn grandeur  
thrill with memories of past events  
connected to the fate of my people,  
the very dust under your feet  
responds more lovingly  
to our footsteps than to yours,  
because it is the ashes of our  
ancestors,  
and our bare feet are conscious  
of the sympathetic touch,  
for the soil is rich with the life  
of our kindred."*

Chief Seattle, Suquamish

### A. Government-to-Government Relations

There are twenty-eight federally recognized Indian Tribes in Washington State, with three Tribes' federal recognition pending. "Federally recognized" means that

these tribes and groups have a special, legal relationship with the U.S. Government. Each of the tribes is a sovereign entity under federal law with certain governmental authorities and responsibilities carried out by tribal governing bodies. Each tribe protects and manages the health, safety, and general welfare of its citizens, lands, and treaty-reserved fish, water, and wildlife resources. Each tribe has its own goals and policies that relate to its people and its geographic region.

In 1989, Governor Booth Gardner and the Washington tribes signed the Centennial Accord, establishing state policy for executive branch agencies to work with the tribes on a government-to-government basis on issues of mutual concern. The Commissioner of Public Lands, Brian Boyle, independently adopted a similar policy for the Department of Natural Resources.

A decade later, Governor Gary Locke and Attorney General Christine Gregoire joined tribal chairs from throughout the state and signed an "Agreement to Institutionalize the Government-to-Government Relationship in Preparation for the New Millennium." This agreement affirms the 1989 Centennial Accord and emphasizes the importance of making the Accord a part of tribal and non-tribal people's every day lives. Both compacts will help make people aware of the economic, cultural, environmental, and leadership contributions made to Washington by her tribal citizens.

Early in the new Millennium, western Washington tribes and the State began discussions focused on cooperative working relationships in the area of water quality and environmental protection. The State committed to working with the tribes on a government-to-government basis.

## Coastal Zone Tribes

Chehalis  
Chinook (pending)  
Cowlitz (pending)  
Duwamish (pending)  
Hoh  
Jamestown S'Klallam  
Lower Elwah Klallam  
Lummi Nation  
Makah  
Muckleshoot  
Nisqually  
Nooksack  
Port Gamble S'Klallam  
Puyallup  
Quileute  
Quinault  
Samish  
Sauk-Suiattle  
Shoalwater Bay  
Skokomish  
Snoqualmie  
Squaxin Island  
Stillaguamish  
Suquamish  
Swinomish  
Tulalip  
Upper Skagit

## B. Treaties

There are twenty-one tribes in Washington with recognized treaty-reserved rights to fish (including hatchery fish), hunt, and gather natural resources. Under the U.S. Constitution, these treaties represent the supreme law of the land (Stevens Treaties). The State is bound by these treaties, and must hold them paramount against other relevant state law. The State may not infringe the tribes' rights by qualifying or subordinating them to other state objectives or policies.

In negotiating the Stevens Treaties, the tribes reserved the exclusive right to fish within the reservations' exterior boundaries and the right to fish off-reservation at all usual and accustomed fishing grounds. In addition to salmonids, the word "fish" also includes hatchery fish, herring, halibut and shellfish. This right is in contrast to the privilege that the State may grant to other

"In the old days, we gathered sacred roots and berries. We fished the Chehalis, Black, Cowlitz, Satsop, Wynoochee, Elk, Johns, Skookumchuck, and Newaukum rivers. Our people fished and hunted from the mountains, across the prairie, to Grays Harbor and in the lower Puget Sound.

In the old days, the baskets carried and stored our foods. We relied upon the baskets, the rivers, the land, the roots, the berries, the fish, and the animals. Our lives were tied together by the Creator.

Today, we live on a reservation between the Black and Chehalis Rivers near Oakville. We operate tribal programs, a convenience store, a health clinic, a housing authority, and the Chehalis Tribal Bingo. Our major focus, however, is maintaining a salmon fisheries program.

Today we continue to collect our first foods from the prairie, the mountains, the Black and Chehalis Rivers. Unlike the old days, however, we can only fish nine miles of the river during a season controlled by the State of Washington. Our neighbors to the south usually catch most of the fish before our nets hit the water.

Today we live contemporary lives, but our hearts still travel where our ancestors lived and died."

*Melvin Youckton, Chairman,  
Confederated Tribes of the Chehalis.*

citizens and residents of Washington and limit or withdraw to protect state interests or treaty fishing rights.

Over the last few decades, U.S. federal court decisions have settled state-tribal disputes over the rights to the steelhead and salmon harvested in Washington waters (e.g. major rivers, Puget Sound and ocean waters immediately off the coast). Consequently, the tribes have federally insured treaty rights, older than the state itself, to approximately half of the annual salmon harvest. The tribes won similar allotments for other species, including Pacific whiting, sablefish, rockfish, albacore, halibut, and sea urchin. A recent court ruling has resulted in a similar allocation of shellfish for Indian tribes in Washington.

Washington has an affirmative obligation to honor the Indian tribal rights secured by treaties with the United States. This duty extends beyond ensuring the viability or genetic diversity of salmonid species to providing an adequate harvest that meets tribal needs. Absent tribal consent, the State cannot impair or restrict treaty reserved rights, without explicit consent by Congress or a finding by a federal court that it is necessary to preserve the resource, i.e. to perpetuate the fisheries species.

Washington recognizes that fundamental to the right or privilege to take fish, is that there are enough healthy fish to be taken. Numerous federal courts have reaffirmed the basic principle that the tribes' right to harvest fish carries with it the right to have protected habitat. For example, such a principle has required that sufficient water be released from dams to protect salmon; certain forest practices halted that impair water quality and habitat; and dams be prevented that would destroy steelhead runs.

## C. Demographics

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In 1997, Washington ranked fifth among all states in American Indian population. The number of American Indians in Washington is growing at a faster rate than the national Indian population. Within the state, over half of the American Indians live in the urbanized Puget Sound region. King

County has the most American Indian residents in the state (18,000), representing 1.1 percent of the overall county population. In the rural areas of Washington's coastal zone, American Indians make up a larger percentage of the total county population.



*Map shows the locations and reservations of the 28 Federally Recognized Tribes of Washington State. Some off-reservation tribal trust land is also shown. The Samish and Snoqualmie Tribes have recently received federal recognition and do not have reservations at this time. Their map locations are the approximate locations of their tribal offices.*

## D. Economic Contributions of Indian Tribes

During the Nineteenth Century, all Washington tribes made enormous, though involuntary, capital contributions through land cessions to the United States government. Furthermore, over a century of failed (and now repudiated) federal Indian policies significantly altered the landscape of many treaty and executive order reservations. Thus, today's Indian reservations in Washington may be vastly different territories than the tracts originally "reserved" by the treaty-making tribes throughout the state.

Even after the treaties were signed, the federal government forcibly took tribal landowners' land throughout the late 19th and early 20th century, deeming those lands "surplus" to the tribes' needs. Through the Dawes Act of 1887, which opened up large portions of the tribes' reservations to homesteading and ownership by non-Indians without tribal consent, the federal government simply took the prime productive land of many reservations out of Indian ownership altogether.

This same policy fostered fractured land ownership, diluting the value of tribal lands as successive generations inherited Indian "allotments" of their own land. The details of ownership often became too complex to sort out.



*Petroglyphs found along the Olympic coast.*

Despite the Congressional repudiation of the allotment policy of the 1930's, government policy continued to inhibit the tribes' contribution to the state economy. Federal reclamation projects diverted precious water to neighboring, non-tribal lands. In other cases, the massive hydroelectric power facilities constructed during the Great Depression inundated hundreds of thousands of acres of reservations lands and off-reservation treaty fishing sites. Finally, during the post-war years, the federal policy of "relocation" transplanted many Indian families virtually by force from their reservation homelands to the state's inner cities. Meanwhile, three major industries - fishing, forestry, and agriculture - helped drive Washington's economy, significantly fueled by economic activity generated by the existing Indian reservations in Washington.

Although tribes are considered sovereign nations, they are intricately connected to Washington's economy. They engage in various commercial, industrial, and natural resource activities that create jobs and personal income for Indians and non-Indians throughout the state.

Historically, natural resources have been a mainstay of the state's economy. Among Washington Indian tribes, fishing and hunting and gathering of natural resources have been central activities for thousands of years. They remain important to tribes for subsistence, as well as economic and ceremonial purposes. The tribes have traded shellfish with the non-Indian population since the first white settlers arrived in the region 150 years ago.

Today, fish and shellfish harvested by Washington's Indian tribes are in great demand, in both domestic and foreign markets. Logs harvested from tribal lands have become an important economic cornerstone for a number of tribes. In 1997, timber harvest and tribal salmon fishing were valued at \$71.2 million and \$6.8 million. With all of the federally recognized Indian tribes living on either major rivers or coastal waters, fisheries remain critically important to tribal economies. Tribes are major players within Washington's fishing industry, where total commercial landings were valued at \$139.6 million in 1997. Also heavily involved in fisheries management, tribes, as sovereign governments, regulate and coordinate their own fisheries management programs surrounding six species of salmon, halibut, shellfish, and other marine species. Tribal fisheries management includes harvest management, enhancement, habitat protection, and enforcement. In 1997, tribal hatcheries released more than 39 million salmon, benefitting Indian and non-Indian, commercial, and sport fishers in the state.

Besides salmon, important Indian fisheries include halibut, sablefish, Dungeness crabs, sea cucumbers, urchins, shrimp, clams, geoduck, mussels, and oysters. Unfortunately, an alarming decline in many of Washington's fish stocks, particularly salmon, has hurt some tribal economies. To compensate for this loss, a number of tribes have turned to harvesting shellfish as a major economic resource. In recent years, the value of tribal shellfish harvest has outpaced that of salmon.



## E. Some Tribal Perspectives

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This section provides two examples of some coastal zone management issues faced by Tribes in the coastal zone. The issues are complex and involve a multitude of decision-makers and other interested parties. The Elwha dam issue involves questions of how the dam can be removed to accommodate the interests of the Tribe, the City of Port Angeles, and the salmon. The primary environmental issue is dealing with the vast amount of sediment that the dam has been holding behind it. There are cost issues as well. The whaling issue is less an economic issue and more one involving cultural and spiritual needs of the Tribe and personal beliefs and values held by those who oppose the hunt. A discussion from each Tribe's perspective is merely intended to provide another side in the multi-faceted issues that those living in the coastal zone face in the 21st century.

### The Elwha Dam Issue

The Elwha River had been one of Washington's best salmon streams. The river's Chinook run was famous for the size and vitality of the adults returning to spawn. Construction of two dams in the early part of the 20th Century blocked fish passage to all anadromous fish past river mile 1.5 and greatly diminished usable fish habitat on the upper portion of the river. This had a huge impact on the Elwha Klallam tribe whose reservation lies at the mouth of the Elwha River, eight miles west of Port Angeles. After the Elwha dam was built, tribal elders remember watching those big fish waiting below the dam, trying to get upstream. They remember pools below the dam full of dead salmon, which had not spawned, and they recall their parents protesting. But nothing was done to restore the wild runs above the dam. This issue struck at the heart of the Klallam people who are culturally and spiritually tied to the River and salmon.

"It's not just about taking the dams out, or even just putting the fish back. It's about the whole picture, the human population, marine predators, over fishing, the works. If the whole system is addressed, then maybe restoration will work."

*George Bolstrom, Elwha Klallam*

At the time the dam was constructed, state law prohibited obstruction of salmon and steelhead streams. After construction, the dam builders lobbied to change the law to allow stream obstruction if artificial enhancement facilities were provided to mitigate for lost wild runs. Such a hatchery was built on the Elwha, but it failed and was abandoned in 1922.

In the five miles between the dam and saltwater, the wild salmon run was further reduced as the result of flow fluctuations, gravel starvation, and other effects of the dam. Sudden releases from the reservoirs exacerbated seasonal floods. This, and the instability of the Elwha dam, caused Tribal families to abandon farms along the River. Uncertainty regarding the dam's safety during

earthquakes continues to cloud the Tribe's use and enjoyment of the reservation. Now the Tribe has learned that the dams cause tidal erosion of the reservation shorelands by capturing sediments that would otherwise replenish estuary beaches. This is reducing the Tribe's already limited land base while increasing saltwater flooding and the risk of well pollution.

(taken from <http://elwha.org/river.htm>)

## The Makah Whaling Issue

In 1993, scientists determined that the gray whale population had exceeded the numbers existing before commercial whaling of the species began. In 1994, the gray whale was removed from the endangered species list and the Makah Tribe began planning a whale hunt. Whaling has been a tradition of the Makah for more than 2000 years, but came to a halt in the 1920's when commercial whaling had all but decimated the population.

Whaling and whales have remained central to Makah culture. They are in tribal songs, dances, designs, and basketry. Their social structure is based on traditional whaling families. The conduct of the whale hunt requires rituals and ceremonies, which are deeply spiritual. Many natives believe that the problems besetting their young people stem from lack of discipline and pride. They believe that the restoration of whaling will help to restore that discipline and pride.

Under the treaty the United States made with the Makah in 1855, the U.S. promised to secure to the Makah the right to engage in whaling. Governor Stevens, addressing the Makah, stated, "The Great Father knows what whalers you are - how you go far to sea to take whale. Far from wanting to stop you, he will help you - sending implements and barrels to try the oil."



*Gray Whale*

*Photo - James Darling*

Stevens presented the written treaty to the Makah that contained an express guarantee by the U.S. of the right to continue to take whales. The Makah then accepted the treaty. This is the only treaty ever made by the U.S., which contains such a guarantee. The treaty, ratified by Congress, is the law of the

land under the Constitution, and has been upheld by the federal courts and the U.S. Supreme Court. To the Makah, the treaty is as powerful and meaningful a document as the U.S. Constitution is to other Americans; it is what their forefathers bequeathed to them.

Pursuant to the treaty, the Makah may take up to five whales per year, but the Makah gray whale management plan limits the number of landed whales over a five-year period to 20 - or an average of four per year. The plan permits whaling only if there is an unmet traditional subsistence or cultural need for the whale in the community. So, it is possible that as little as one whale per year would

suffice. Only adult, migrating whales could be taken - not mothers with calf or individual calves.

The Makah have agreed to abide by federal laws, which prohibit commerce in whale meat. Tribal law prohibits any sale of the meat or products, except for artifacts made by Makah carvers out of whalebone. The meat would only be distributed to tribal members, which number approximately 1,800 persons.

Much thought is given to planning the whale hunts. The Makah conduct them in traditional ways, taking steps to be as humane as possible in accordance with the International Whaling Commission. They use 36-foot long canoes, each carved from a single cedar log. A harpooner harpoons the whale with a stainless steel harpoon, and a rifleman fires a .50 caliber rifle simultaneously or immediately after the harpoon is thrown. They expect that the rifle achieves immediate unconsciousness and death of the whale when fired near the base of the skull. They feel that it is the most humane method that can be employed.

Many Makah have been upset by the protest and hostility that have arisen over past and proposed hunts. They would like the public to remember that throughout the history of the United States, there has been a sad record of intolerance of Indian culture. "We hope that thoughtful Americans will ask themselves whether they can and should respect the efforts of a small tribe which is trying to preserve its culture in ways that are consistent with conservation of natural resources." - (taken from <http://www.makah.com/whales.htm>)

## Chapter 4 -

# Human Activities and Impacts in Washington's Coastal Zone

This chapter begins with a discussion about development in the coastal zone and some of its impacts. Following, is a section about the major resource-based economic activities in Washington, focusing primarily on the coastal zone, or most of western Washington. In order to provide a clear picture of the health of Washington's coastal resources, the chapter concludes with a summary of how these activities affect the coastal areas and their resources.

## A. Activities

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### 1. Development

Development activities are not necessarily related to any particular resource based industry. Merely living and/or working in or visiting Washington's coastal areas affects the land, water, and wildlife. Building houses, planting and maintaining lawns, keeping pets, and owning cars may seem like innocuous pursuits, but they can harm the environment. Commuters require extensive highway systems; tourists rely on plentiful accommodations; and residents need stores, hospitals, libraries, police and fires stations, sewage treatment plants, and other types of infrastructure.

Nearly three million people live near the shores of Washington's marine waters. Their bulkheads, docks, and buildings result in dramatic modification of the shorelines. Industrial and marine transportation activities contribute to the degradation of many of our coastal estuaries, probably contributing to the decline of aquatic fish and wildlife species.

### *Shoreline Modification and Armoring*

Humans modify the shoreline and destroy natural habitat directly through construction of bulkheads and other structures; construction and repair of new and existing structures; operation of shoreline or on-water industrial facilities; and placement of railroad grades and roads along the shoreline, and shoreline recreation.

Shoreline slope and bluff erosion are major natural mechanisms supplying sediments to Puget Sound beaches. In an attempt to prevent these natural processes, shoreline property owners often armor (the use of bulkheads, rip-rap, or other hard structures) the shoreline to protect their property. In the short term, these efforts can protect the upland property; in the long term, armoring may increase erosion of the adjacent beach, exacerbating the original problem.

Armoring is linked to a number of physical changes in shore processes that eventually result in a reduction in beach height and width. The physical impacts

from armoring may not be seen for several years. When the effects finally become noticeable, it can be difficult or impossible to repair the damage to the beach. The Department of Natural Resources estimates that humans have modified one-third of Puget Sound's shorelines.

### ***Impervious Surfaces***

One of the most obvious results of development is the disappearance of the native soil and vegetation by covering them with impervious surfaces. Streets, freeways, driveways, sidewalks, parking lots, and building foundations present surfaces that are incompatible with the natural environment. A healthy limit of impervious surfaces is just ten percent of a watershed. When more than that amount is covered over, a watershed's streams degrade. Obviously, the more impervious surfaces there are, the more degraded a watershed becomes. Because surface water has no place to go, storm water runoff results in higher winter peak flows, often leading to winter and spring floods and reduced summer flows. These changes in water flow can be critical for the survival of fish and other species.

The sprawl of cities and suburbs into rural areas means there are more cars on the roads carrying people farther and farther to shop, work, and recreate. Since 1960, the State's population has nearly doubled and the number of cars tripled! In fact, cars have been multiplying faster than roads, inevitably resulting in congestion. While road expansion may seem an obvious solution, roads have impacts on resources.

Roads and highways can collect and concentrate water and toxins, degrading and polluting streams. As impervious surfaces, they prevent water from soaking into the ground, thereby lowering groundwater tables. Streams are constricted into culverts, making it difficult or impossible for fish to pass through. Perhaps the most direct impact is that roads and highways slice wildlife habitat into fragmented parcels leaving animals with no option but to attempt dangerous road crossings.

### ***Land Conversion***

Another stark image of how development changes a once-natural area is that of forest land that has been converted to residential or other uses. In 1970, Washington had 23.1 million acres of forest; in 1992, there were 20.9 million acres left - a decrease of at least 2.2 million acres. Nearly ten percent of the state's forests were converted to other uses such as roads, suburbs, cities, and farms. In 1970, 18.4 million of those forested acres were timber lands, managed for forest commodity production. In 1997, 16.1 million acres were timber lands - a loss of 2.3 million acres in less than thirty years.

Excluding the value of the timber, land zoned as residential can be much more valuable than timber land. Consequently, many timber lands have been converted to residential areas. Large, continuous tracts of forest have been lost in western Washington. Urban expansion is responsible for about forty-eight percent of the forest conversion.

These once contiguous forests become intermingled with farms, pastures, houses, and industrial developments, and may be used for recreation, timber, green space, wildlife habitat, or available for future development. Once development secures a foothold in these forests, it is not unusual for more development to follow, resulting in the loss of forests in and around communities. The timber lands and the jobs and products they provide are lost, along with wildlife corridors and habitat.

Other types of forest conversion include forest practices, like clear cuts. Intensive management of the highly productive Coast Range and Cascade Range foothills has resulted in extensive areas of well-stocked forests of young, nursery-grown Douglas-fir trees. Widespread harvest and replanting have reduced the diversity of species and forest structure in many areas, resulting in loss of biological diversity.

Agricultural lands are another casualty of development. Urban sprawl tends to favor the prime, highly-productive agricultural lands that occupy valley floors where land is flat and easy to develop. The American Farmland Trust has identified the Puget Sound Valley and the Willamette Valley in Oregon as the nation's fifth most threatened farming regions. Not only does development consume prime agricultural lands, but development-related land speculation pushes up prices and makes farming less profitable.

## **2. Agriculture**

Washington agriculture is a multi-billion dollar sector of the state's economy and Washington's leading employer. It is one of the central elements of economic development for rural counties and in urban counties' rural areas. Washington continues to be a leader in many areas of agricultural production. Agriculture represents \$29 billion of Washington's \$145 billion economy. Washington farmers produce \$5.8 billion worth of agricultural products annually. In addition to primary production, supporting industries include food processing, transportation, farm implements, fertilizers, and computerized irrigation systems.

Agriculture in Washington is a diverse industry that encompasses everything from very large commercial livestock operations to very small part-time crop or livestock producers. Large commercial livestock operations include dairy herds, poultry raised for eggs and meat, and beef operations. Smaller operations include horse breeding, and the raising of pigs, sheep, dairy goats geese/ducks, rabbits, llamas, emus, and ostriches. Rural farms bring fresh produce to farmers' markets in nearby cities and towns, operate u-pick farms and roadside stands, and grow specialty crops.

Productive farms vary in size throughout the state. With the temperate weather in Western Washington, farms average less than 100 acres, but produce most of the state's berries, Christmas trees, green peas, milk (valued at \$848 million in 1998), eggs, and seafood. Berry farms, nurseries, tree farms, and specialty lettuce have done well in coastal zone counties with large urban centers such as King and Snohomish.

Over 250 crops are grown in the state, representing about twenty percent of the gross state product at the retail level. These crops include vegetables, fruits, orchards, vineyards, pasture grass and other crops for silage, hay, and grains. Plant-based agriculture includes nursery and greenhouse products. The rich, moist soil west of the Cascades produces some of the world's finest bulbs and flowering plants, and Washington is the nation's largest producer of tulips, daffodils and bulbous irises. Cranberries have grown wild in Washington coast peat bogs since the end of the last Ice Age. Miles of bogs line the Long Beach Peninsula and stretch northward from Tokeland to Grayland.

Washington is nationally known for its many apple varieties. In 1998, apples ranked second after milk products as Washington's top commodity. Red raspberries, hops, spearmint oil, sweet cherries, lentils, and pears from Washington ranked number one in the nation's agriculture production. Washington ranks second in the nation for asparagus, peppermint oil, apricots, grapes, and fall potatoes. Potatoes are one of the state's most valuable commodities. Washington's 395 growers produce more potatoes per acre than do growers anywhere else in the world. In 1999, Washington produced more than 4.7 million tons of potatoes on 170,000 acres.

Washington is the nation's fastest-growing wine region. Ranked second in the U.S. in premium wine production, Washington boasts nearly 100 wineries and has received worldwide acclaim and recognition. The premium grapes produced may be due to geography - at 46 degrees latitude, it is very similar to the French districts of Bordeaux and Burgundy. The Puget Sound is one of the state's four officially recognized wine-producing regions (appellations). There are a host of wineries along the Interstate 5 corridor from Bellingham to Olympia.

### **3. Forestry**

Washingtonians have traditionally counted on the forests for jobs and products, and forestry remains a leading industry in the state, employing 54,536 people. Washington's soils and climate make it one of the few areas in the nation capable of rapidly growing high-quality timber. More than sixteen million acres of forest lands support timber harvesting or other commodity production. Forest products in Washington are the second largest manufacturing industry after transportation (primarily aircraft). In 1995, forest products' direct gross income for lumber and wood products, paper and allied products, and private forestry was \$12.5 billion. The Department of Natural Resource's timber sales revenues for school construction in 1996 was \$91.2 million.

Although the public tends to view forest lands and the forest industry in rural counties as most important and in the most need of conservation, the three fastest growing counties in the decade from 1987 to 1997 were also high in timber production. In that decade, King County was number six in timber production in private lands, Pierce County was number eight, and Snohomish County was number ten. Forestry is an important part of the economy for both rural and urban counties.

## 4. Trade and Port Activities

Washington's unique attributes link it to the world. Equidistant by air from Asia and Europe, closer to Asia by water than the other West Coast states, blessed by deep-water harbors and highly productive agricultural lands, Washington is in an advantageous position to participate in international trade. Washington is home to the nation's leading firms in aerospace, software, forest products, financial and legal services, agriculture, and food products. In 1997, Washington-originated exports totaled \$36 billion. That same year, \$63 billion worth of imports, ranging from cars and Christmas lights to tennis shoes and tangerines, moved through Washington ports.

### *Ports*

Ports in Washington evolved in much the same way as in other parts of the nation. Wherever people settled near the water, boats, ships, rafts, and barges were needed to move people and goods. Docks, floats, piers, gangways and other conveniences were built to accommodate watercraft traffic. Most of Washington's early port facilities were privately owned. Those who owned waterfront amenities controlled movements and the associated costs. However, in 1889, Washington's new state constitution dismantled those waterfront monopolies by declaring that the beds of navigable waters belonged to the people of the state.

Washington's constitution also empowered the Legislature to designate harbor areas and provided a system for leasing waterfront tidelands and uplands. In 1911, the Legislature enacted laws allowing the establishment of port districts and election of port commissioners. That same year, the Port of Seattle became the first autonomous municipal corporation in the nation to engage in port terminal operation and commerce development; the Port of Grays Harbor soon followed.

Washington has the largest locally controlled public port system in the

world with seventy-six public port districts of all sizes and in every corner of the state. While Washington comprises just two percent of the U.S. population; it handles seven percent of U.S. exports and six percent of all imports. The Ports of Seattle and Tacoma combined make up the second largest container complex in North America, second only to Los Angeles/Long Beach and ahead of New York/New Jersey.

Washington's ports can own and operate shipping terminals, marinas and docks, airports, industrial sites, railroads, parks and recreational facilities, and even promote tourism. The size of the port district is determined when it is formed. The Port of South Whidbey Island operates a recreational pier, boat launch ramps and recreational parks with two employees, while the Port of Seattle generates almost 90,000 direct jobs through marine, aviation, and related activities.

The Washington Public Port Association (WPPA) is a nonprofit corporation established in 1961 to promote the interests of the port community through intergovernmental relationships between its member ports and other federal, state, and local agencies, including the State Legislature.



The WPPA provides leadership for its member ports on many issues, including environmental concerns.

The WPPA works with Ecology to balance the region's strong environmental protection goals with the reality of global competition. Because ports operate at the interface of land and water, tend to be located in sensitive estuarine areas, and frequently develop property in traditionally industrial areas, port districts must work within the mandates of federal, state and local environmental laws.

Many ports operate at the bottom of river basins, in the estuaries (e.g. Seattle, Tacoma, and Grays Harbor) and along the shorelines of major rivers. Some issues faced by these ports are:

**Urban harbor sediment cleanup**

When ports dredge up sediments for shoreline development or to improve harbor navigation, they must follow strict cleanup requirements. Ports have had successful cleanups in Elliot Bay in Seattle, Port Gardner Bay in Everett, and Commencement Bay in Tacoma.

**Dredging** - All ports with deep-draft navigation need to dredge sediments in order to maintain navigation. The dredging of sediments and the disposal of dredged materials is one of the most closely regulated activities in the Nation. Contaminated sediments are disposed of in confined facilities; clean sediment can be dumped in open water at approved sites or be used for beach nourishment or habitat creation.

**Habitat Protection** - Port shoreline development and dredging can affect marine or freshwater habitats. The port must work with the U.S. Army Corps of Engineers, the EPA, the National Marine Fisheries Service,

Ecology, and WDFW to replace habitat and the lost functions provided by that habitat.

**Ballast Water** - An emerging area of concern for Washington's citizens is the accidental introduction of invasive species that thrive in a new environment and crowd out the natural plants and animals that live there. When an ocean-going vessel arrives in port, it sometimes discharges ballast water that it picked up in a faraway place like Asia. This water is pumped into the ship as "ballast" to counterbalance the weight of cargo, and keep the vessel from rolling or breaking in half. This foreign water can contain invasive species such as Asian clams or mitten clams, which gain a foothold in Washington waters and, in some cases, rapidly spread. To combat this, vessels entering our ports are "advised" to perform open ocean ballast exchange by pumping out ballast water in the open ocean and replacing it with ocean water. Effective when employed, bad weather and old technology limit when a vessel will actually use it. Ports, vessel operator associations and resource agencies are working to find solutions.

**Transportation** - Washington maintains its competitive edge in the global marketplace by ensuring that the transportation system capacity expands to meet increased trade demands. A looming concern for ports in Washington's coastal zone area is traffic. In order to get goods into and out of ports, particularly those in the Puget Sound, traffic congestion must be resolved. Eighteen-wheelers and trains are critical to the economy, and freight mobility is a chief concern of the ports.

Washington is more dependent upon trade, and the jobs it provides, than any other state in the U.S. By the year 2005, it is estimated that one in three jobs will be trade-related. Exports and imports are both critical to the state's economy. International trade supports almost one third of Washington's workforce - twenty-five percent in exports and seven percent in imports. Nearly 740,000 workers and proprietors depend on exports; 161,000 depend upon imports. Forecasters predict that international trade through Washington's ports will continue to increase about four to five percent each year until 2020.

In 1996, sea borne commerce in Washington moved over \$54 billion worth of imported and exported goods with much of the traffic transiting the Northwest Straits region. In 1996, an estimated 34 million metric tons of cargo moved through the region to and from Washington ports. Major import and export commodities include high technology consumer products, automobiles, forest and agricultural products, crude oil and clothing. Estimates are that by 2010 over 50 million metric tons of cargo will be shipped through the state.

## 5. Fishing

Fishing activities are at the core of the Pacific Northwest culture and lifestyle. The Washington fishing industry is diverse in both user groups and range of species.

User groups include both commercial fishers and sport/recreational anglers. Commercial groups are further divided into tribal and non-treaty groups. Each of these groups is allocated allowable catch limits for each species by fishery management councils (e.g. Pacific Fishery Management Council, Northwest Indian Fisheries Commission, Washington Department of Fish & Wildlife).



*Fishing on the Nisqually River*

Sport and commercial fishing play a vital and historic role in Washington's economy. Fishing provides jobs, supports businesses and creates major tax revenues. It provides quality recreational experiences for tens of thousands of Washington families while attracting anglers from around the country and the world to fish for trout, steelhead, salmon, and other species. Fishing helps to support a 202,500-boat recreational fleet, eighty percent of which are used in fishing. The industry also supports more than 1,300 non-Indian commercial vessels ranging from small gillnetters to trawlers that ply waters from California to the Bering Sea. Fishing supports the economic, spiritual, and cultural needs of Indians.

Washington's salmon, steelhead, and anadromous trout/char populations are essential components of the Pacific Northwest quality of life. This importance is reflected by the value of recreational and commercial fishing in the state. More than 500,000 anglers in Washington spend over 2.5 million angler-days each year

fishing for these species, generating trip expenditures exceeding \$125 million. Furthermore, fishing generates a large portion of a recreational boating industry that contributes \$2.5 billion annually to the economy. Washington's commercial fisheries for salmon and steelhead have an average landed value that exceeded \$12 million in the last few years of the Twentieth century. While recreational and commercial value is well below its peak level when Washington's CZMP was initially adopted, these fisheries continue to represent the lifeblood of many small communities throughout the state.

Important recreational fisheries include nine native and six introduced coldwater fish species. These include native crawfish, Dolly Varden, burbot, coastal cutthroat trout, pygmy whitefish, and Olympic mudminnows. Interest in warm water fishing has increased since the Washington Coastal Zone



*Shuckin' an oyster*

Management Program was first approved. These species include bass, perch, sunfish, walleye, crappie, and catfish. Bass fishing is popular in many of Western Washington's lakes.

Washington's marine finfish and shellfish populations form a complex and highly productive ecosystem that supports major commercial, recreational, and tribal fisheries.

Non-Indian fisheries are estimated to yield about \$80 million annually to commercial fishers and aquaculturists. While over 100 species are harvested, the geoduck, Dungeness crab, and sablefish fisheries, and Pacific oyster culture combined contribute nearly eighty percent of the total value.

Washington's commercial and recreational anadromous fish harvest is heavily supplemented with fish from state and tribal hatcheries. At a hatchery, fish fry are spawned, released, and later harvested after growing in open marine waters. Another common finfish aquaculture technique involves the use of net pens. Net pen aquaculture operations grow fish to market size in contained areas and then directly harvest the fish from these areas. The Atlantic salmon is commonly raised in net pen aquaculture operations throughout the Puget Sound.

In addition to net pens, other commonly employed aquaculture techniques include tideland cultivation, off-bottom culture for oysters, open water suspension, and pond or tank culture. In Puget Sound, the majority of clam and oyster aquaculture sites are in privately owned intertidal areas. Subtidal and floating cultures are established in areas leased from the state through the Department of Natural Resources.

Recreational anglers and divers total over 800,000 user-trips per year. Indirect contributions to Washington's economy, especially to small communities on the Pacific Coast and Puget Sound, greatly exceed the value directly accruing

from the fisheries. These fish and shellfish are also critical forage items for many birds and marine mammals. Washington's shellfish resources are generally healthy, except for abalone, which is currently depressed. Shrimp and crab stocks in the ocean and Puget Sound have been providing substantial harvests to the various fisheries. The commercial dive fisheries for sea urchins and sea cucumbers have experienced declines. Geoduck and some intertidal clam and oyster populations are intensively managed on heavily used recreational beaches. Scallops, octopus, and squid have limited participation.



*A catch of Humpback Salmon Photo - Doug Milward*

In 1999, the Department of Fish and Wildlife developed some innovative techniques supplemented with some restrictions to protect wild chinook and coho salmon while harvesting fish from strong runs, principally sockeye, pink, and chum:

- Barring commercial fishing when and where significant numbers of protected wild stocks congregate and migrate
- Requiring purse seine fishers to release all chinook
- Requiring reef net fishers to release all chinook in sockeye, pink, and coho fisheries

## 6. Tourism and Recreation

Washington's coastal zone offers a magnificent array of attractions. From the picturesque Pacific Ocean and the lush rain forests of the Olympic Peninsula to the vibrant cities and snowcapped mountains in the Puget Sound Basin, the western side of the "Evergreen State" offers



*Ferry (Mt. Baker in background) Photo - Mark Gardner*

outstanding recreation and entertainment in one of the Northwest's most beautiful natural settings. In the words of Governor Gary Locke, "The Olympic and Cascade mountains, Mount Rainier and the sparkling waters of Puget Sound are just a few of the spectacular sites to explore!"

The travel industry is one of the largest and most rapidly growing segments of the Washington economy, providing business opportunities, employment, and

revenue throughout the state. Natural resources and outdoor recreation are particularly important attractions. State and National parks are very popular draws, while Washington's part public, part private, ferry system makes traveling the state's network of waterways easy and enjoyable at the same time.

Outdoor recreational activities include camping, wildlife viewing, nature walks, bicycling, bird watching, boating, fishing and hunting, hiking, horseback riding, kayaking, llama trekking, and mountaineering. Even skiing and



*Mt. Rainier*

*Photo - Tom Mark*

snowboarding are popular in Washington's coastal zone! Ski slopes are as little as two hours away from the major metropolitan areas, which may explain why Washington's night skiing programs are some of the best in the nation.

Marine recreation includes recreational activities of fresh and saltwater; on ocean beaches; along the shores of rivers, streams, and lakes; and the waterfront of Puget Sound. Approximately seventy two percent of all Washington households engage in recreational water activities. These activities encompass a variety of pursuits: fishing, swimming, Scuba diving, water skiing, sailing, and boating. Whale watching, whitewater rafting, windsurfing, and other water sports are increasingly popular.

Visitors to Western Washington can pursue their interests in the arts, history, technology, or the natural sciences in the region's many museums and interpretive centers. Many visitors tour Boeing, the State Capitol, the Columbia Gorge, and Pike Place Market. There are National Historic Parks in Seattle (Klondike Gold Rush) and Friday Harbor (San Juan Island); a National Historic Site in Vancouver (Fort Vancouver); and a National Historical Reserve in Coupeville (Ebey's Landing).

Some of the museums in the area are the Burke Museum at the University of Washington, the Center for Wooden Boats in Seattle, the new Experience Music Project, the Odyssey - Maritime Discovery Center, the Pacific Science Center, the State Capitol museum, and the Washington State history museum in Tacoma. Native Indian tribes offer museums too: Daybreak Star Arts and Cultural Center, Makah Cultural and Research Center, Puyallup Tribal Museum, Quinault Indian Nation Museum, Seeds of Our Ancestors Exhibition at the Skokomish Tribal Center, the Steilacoom Tribal and Cultural Center and Museum, the Suquamish Museum, the Tulalip Hebolb Museum.

Over the last years of the 20th century, whale watching became a very popular outdoor experience. Boat and kayak-based whale watching activities occur in May through September near the San Juan Islands in Haro Strait, an area where orcas are common. Surveys conducted by the Whale Museum in Friday Harbor on San Juan Island reveal a trend of consistent increase in whale watching activities. Boat-based whale watch tour operators first arrived in 1977, and by

1996, represented over fifty vessels carrying in excess of 80,000 passengers. In 1997, growth increased by more than fifty percent, with eighty-three commercial boats operated by fifty-three companies.

## **7. Recreational boating**

Thousands of residents and tourists enjoy the coastal zone waters through various boating activities. In 1990, Washington residents owned nearly 656,000 boats, kayaks, canoes, rowboats, sailboards and other watercraft, the vast majority of which were located in the Puget Sound. Within Washington's coastal areas, there are approximately 450 marinas providing roughly 37,400 wet moorage slips. Most marinas are small, providing less than 200 slips. Port authorities own four of five marinas that have over 1,000 slips. Over half the total numbers of marinas are located in the central Puget Sound counties of King, Pierce, Kitsap, and Snohomish. The twenty-nine marinas in San Juan County reflect the popularity of that part of the state as a boater destination.

## **B. Impacts**

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As discussed in the preceding section, Washington's robust, healthy economy depends on trade, fishing, agriculture, and tourism. All of these activities can result in impacts to the coast and its resources. The following is a summary of those impacts and the effect that they have on the coastal resources.

### **1. Loss of Habitat**

Habitat loss is a major threat to biodiversity and ecosystem health; it is the single most common factor associated with the listing of endangered or threatened species nationwide. Human alteration of the natural environment during the 19th and 20th centuries drastically changed many natural habitats in Washington. Human activities and development have altered wetlands, estuaries, forests, and other ecosystems at a rate of between 30,000 to 80,000 acres a year. These acres are destroyed or degraded by urban development, agricultural practices, timber harvesting, highway construction, and other activities. Chronic chemical inputs and larger spills of oil and other chemicals also degrade habitat quality and affect many organisms directly. Invasions of non-indigenous species (e.g. *Spartina*) also change the function of many coastal habitats.

Degradation of habitat occurs both along saltwater shorelines and upstream in watersheds. Logging, dam-building, land clearing for development, and other land uses can significantly harm riverine habitats for anadromous fishes. Moreover, these activities can harm the downstream estuary.

Logging can scour river channels and increase sedimentation. Land clearing for agriculture and other kinds of development can increase erosion and sedimentation in similar ways. When forest fires, logging, road-building, or any residential, industrial, or agricultural development activities destroy the trees that anchor the soil along the water's edge, silt washes into the stream. The silt alters

the streambed habitat as it settles out, depriving fish and aquatic insects of oxygen, often smothering them.

In addition, agriculture and residential development may increase loadings of chemical contaminants, such as fertilizers, pesticides, and household hazardous wastes that reach coastal habitats. Commercial and industrial developments, as well as roads and streets, create impervious surfaces from which storm water rapidly runs, adding more toxic chemicals to coastal habitats.

When dams, canals, or channelization alter the natural variation in stream flow or water table level, many natural characteristics of the varied wetland and riverine habitats and their diverse flora and fauna disappear. Additional problems arise from the use of rivers as waste streams. Historically, many Washington streams and rivers have served as dumping sites for the refuse, wastewater, and runoff from towns and cities. The Puget Sound and/or the Pacific Ocean end up as the ultimate receptacle for these wastes. Estuaries are especially vulnerable, as they serve as nursery and feeding grounds for commercially important fish and shellfish species such as flounder, shrimp, oysters, and clams which depend on these shallow, protective coastal waters for part or all of their lives.

Estuarine habitat is generally considered to be the habitat type in the Puget Sound region that is most severely affected by humans. More than fifty percent of tidal flats and intertidal areas in major embayments has been lost since 1850. Losses have been significantly higher in urbanized areas. For example, Commencement Bay in Tacoma has lost more than ninety-nine percent of its intertidal mudflats.

## 2. Impacts to Fish and Wildlife

Habitat loss and alteration pose serious threats to fish and wildlife. Clearly, animals cannot survive without habitat that provides essential food, shelter, and cover. With insufficient habitat, the number of animals will decline to fit the carrying capacity of the available habitat. When habitat becomes severely limited, animals disappear. When habitat is converted to industrial, commercial, or residential use, the animals lose their homes. These homeless animals are unlikely to find new places to live because other habitats are likely to be fully occupied.

### **The Endangered Species Act**

Under the Endangered Species Act (ESA) an endangered species is one in danger of extinction; a threatened species is one likely to become endangered in the future. Since the passage of the ESA in 1973, 1,090 animals have been listed as either endangered or threatened. Listing provides the species with certain protections and focuses attention and management actions needed to help the species recover to a healthy status. For ninety-nine percent of the species listed under the Act, extinction has been prevented.

In Washington, thirty fish and wildlife species are federally listed as threatened or endangered. In addition, the Washington State Fish and Wildlife Commission has listed twelve more species as endangered or threatened. These species are native to the state and are seriously threatened with extinction or are likely to become extinct throughout all or a significant portion of their range within the state.

### ***Federally Listed Threatened and Endangered Animals in Washington***

Grizzly Bear, mountain caribou, Columbian whitetailed deer, sea otter, sei whale, fin whale, blue whale, humpbacked whale, black right whale, sperm whale, steller sea lion, gray wolf, bald eagle, American peregrine falcon, Aleutian Canada goose, marbled murrelet, northern spotted owl, brown pelican, western snowy plover, leatherback sea turtle, green sea turtle, loggerhead sea turtle, Oregon silverspot butterfly, specific runs of sockeye, chinook, chum and coho salmon, steelhead, sea run cutthroat, bull trout.

At a species level, the cumulative effects of numerous habitat conversions can put the entire species at risk. Weakened by loss of habitat, species are more susceptible to disease, predation, pollution, and/or the introduction of non-native species. The intentional elimination of animals has been the biggest threat for other wildlife species, such as gray wolves, cougars, and grizzly bears. The lynx is an example of a species suffering declines because of habitat loss and trapping.

Wild salmon, Pacific herring, scoters, and harbor seals are good indicators of the Puget Sound region's fish and wildlife population, primarily because each occupies a very different ecological niche.

As major predators in Puget Sound's food web, harbor seals accumulate pollutants found in the foods they eat. Contaminants found in seals' blubber from south Puget Sound are about three times higher than those in seals from the Strait of Georgia. Toxic chemicals in the blubber may be increasing.

The most abundant of Puget Sound's marine birds, scoters make up nearly half the mid-winter diving duck population. Scoters eat shellfish, unlike other diving ducks with similar habitat requirements. Since 1979, the number of scoters spending winters in the Sound has declined by at least fifty percent. Contaminated shellfish may be the cause.

Pacific herring are an important food source for many fish, birds, and marine mammals. Of the eighteen stocks of herring in Puget Sound, twenty-two percent are classified as depressed or critical, and thirty-nine percent are healthy to moderately healthy. The status of the remaining thirty-nine percent is unknown.

Wild salmon are among the few fish requiring both marine and fresh water to survive. Populations such as Puget Sound chinook, Hood Canal and Strait of Juan de Fuca chum salmon, and several other species have drastically declined and are being driven to or near extinction.

The following two sections feature salmon and the orca whale. These species are seriously threatened by human activities. They are given special attention because they are symbols of the Pacific Northwest and their declining numbers may serve as warnings to the human population that these animals may be lost forever.

"Our Creator gave us this fish to live on and we cherished it, and we respected it we didn't waste it, we used every bit of it I may not see the abundance of fish come back in my lifetime, but I would like to see it come back for my grandchildren, my great-grandchildren, and the rest of my people, the following generations to come. It was a gift from our Creator, it was our culture and heritage."

*eatrice Charles, Elwha lallam*



## ***Salmon***

Washington's salmon and trout populations are disappearing due to a wide variety of causes. Once abundant in the state's rivers and along the Pacific Coast, declines of wild salmon closely parallel the



Euro-American settlement of the Pacific Northwest. For more than a century, people have degraded and destroyed streams, rivers and estuaries by farming, logging, and developing land and water; over-fished; introduced non-native species; and substituted hatchery-produced fish for wild fish.

Currently, there are seven fish populations federally listed as threatened or endangered in different regions around the state, including Snake River sockeye salmon and steelhead; fall, spring, and summer chinook salmon; upper and lower Columbia steelhead; and Klamath River and Columbia River bull trout. Of the 435 wild steelhead and salmon stocks in Washington, less than half are considered healthy. Of the Puget Sound's 209 salmon and steelhead stocks, ninety-three are healthy and fifty-five are critical or depressed.

Natural phenomena can affect salmon. Natural disturbances such as seasonal high flows and floods, droughts, wildfires, volcanic eruptions, seasonally extreme temperatures, landslides, and debris flows are out of people's direct control. They can, however, be significant factors that influence survival rates of wild salmonids and can be exacerbated by human influences.

While ocean conditions have an important influence on salmon and steelhead abundance, they are not thought to be the primary factors limiting recovery of Washington's salmonids. Salmon have long remained viable under wide-ranging oceanic environmental variability. Marine conditions can affect survival of wild salmon, but are probably not solely responsible for declines spanning the last three decades.

Many wildlife species depend on salmon, either directly or indirectly for their well-being. Some species, like mink and turkey vultures, rely on salmon carcasses as an important food source. Larger runs of salmon returning to their watersheds spawn, leaving behind carcasses that contribute levels of predominantly



*Sea Lions*

*photo - Patrick J. Gearin*

ocean-derived nutrients. More nutrient-rich stream systems support a broader and healthier array of invertebrate life, and support healthier and more diverse aquatic systems and associated wildlife populations. As the health of salmonid populations improves, it's likely the health of various other wildlife species will improve as well.

Seals and sea lions eat salmon, and, while salmonids do not form the majority of their diets, they can create a localized problem. They prey on salmon near human-made structures such as dams or fish passage facilities (e.g. Ballard Locks in Seattle) where salmon congregate. The presence of large numbers of seals and sea lions in estuaries during migration raises concerns for predation on already depressed salmon populations. In most other areas, seals and sea lions feed on non-salmonid fishes.

Caspian terns, double-crested cormorants, and perhaps common mergansers are bird species most likely to impact juvenile salmon and steelhead. Under certain conditions, bird predation can cause significant juvenile mortality. In the Columbia River basin, from the mouth to the Tri-Cities, Caspian Terns may have eaten between six and twenty-five million smolts, or three to twelve percent of the combined hatchery plus wild smolts in the basin. While bird predation can be a factor in salmon decline, it should be considered within the context of the impacts from all species.

Many of the human impacts and factors are summarized in Governor Locke's Statewide Strategy to Recover Salmon as the "four H's" - Habitat, Hydropower, Harvest, and Hatcheries. Besides habitat loss discussed above, the three other human factors contribute to declining salmon populations are:

**Hydropower:** Diversions and impoundments of rivers by hydropower dams have dramatically altered flows and riparian habitat for a large number of rivers and streams. Dams can modify the level, timing, frequency and duration of stream flows. They block the movement of fish both upstream and downstream, dewater stream segments below dams, cause loss of upstream habitat, and increase predation in reservoirs.

**Harvest:** Many consider fishing to be a major cause of salmon decline since the late 19th century. In recent years, seasons for commercial and sport fishing have been shortened and harvest quotas reduced in an effort to return adequate numbers of wild salmon to their native streams. The most dramatic reductions in harvest have occurred off Washington's coast and the Strait of Juan de Fuca - areas where native stocks mix with hatchery stocks. The restrictions are put in place to minimize the incidental harvest of wild stocks, allowing more wild salmon to return to spawn.

**Hatcheries:** The first salmon hatchery in Washington was built along the Kalama River in 1895 to compensate for declining salmon runs. Today, there are more than 125 large-scale federal, state, and tribal hatcheries and many small-scale incubator sites on many rivers and streams. In 1995, state facilities produced approximately 210 million salmon and steelhead; twelve federal and seventeen tribal hatcheries added another fifty million salmonids. Hatcheries can contribute to the decline of wild salmon because the presence of hatchery salmon leads to overfishing. Hatchery fish can spread disease and compete with wild fish for food and habitat in streams and in the ocean. They also interbreed with wild fish, resulting in a loss of genetic diversity.

## *Orcas*

The fate of the local orcas, and all other killer whales around the globe, is inextricably linked to the health of marine ecosystems. These intelligent and

resourceful creatures will thrive as long as their basic food supply is available. Killer whales are at the top of the food chain, relying on all the other sea creatures from krill to sea lions to prosper if the orca are to survive.



*Cavorting orcas*

*Photo - Susan Kleinberg*

For generations, myths and legends have told stories of the species *Orcinus orca*, a.k.a. “killer whale,” or simply “orca.” Native traditions generally revered the orca as a spiritual being, often as the transformed embodiment of departed ancestors.

European immigrants viewed the orca with fear and considered it a vicious predator needing eradication. Since the 1960s and 70s, marine parks have promoted a lovable image of the orca, but have understood little of its physical or intellectual capabilities, its expressiveness or social sophistication, beyond its tricks performed in circus-like settings.

The orca is a wondrous and impressive creature by any measure. For tens of millions of years, there has not been a predator in the sea that can compare with *Orcinus orca*, the largest member of the dolphin family. As a society, we are now only beginning to comprehend the species’ natural history, its long evolutionary development, its deeply embedded social and family bonding, its highly diverse cultural traditions, and the essential role it plays in the watershed ecosystem.

The inland waters of Washington and British Columbia, known as the Salish Sea, are blessed each year with the presence of an extended family of orca whales, actually a clan of approximately eighty-two members, known as the Southern Resident community. The clan is comprised of three pods: the J, K, and L Pods. Within each pod, families form into subpods centered around older females, usually the grandmothers or great grandmothers of the family. Matriarchs in the J and K Pods are at least eighty years old.

During the summer months, the Southern Residents can be seen in the protected inshore waters of the Salish Sea, in the Strait of Juan de Fuca, and in Georgia Strait near the Fraser River. From October thru June, K and L Pods often disappear completely to parts unknown. The J Pod is most likely to appear year-round near the San Juan Islands, in the Sound near Seattle, and in Georgia Strait at the Fraser River’s mouth. “J2”, the oldest member of J Pod, is estimated to be at least eighty years old.



*Orca*

*Photo - Tony Newlin*

Another orca community, the Northern Resident community, is found primarily in the Johnstone Strait area and northern British Columbia. This community has 209 whales in sixteen pods. The Transients community can be found in small groups from Mexico to the Bering Sea. They appear only occasionally in the Salish Sea, usually near Vancouver Island. Their diets consist of marine mammals, especially seals, sea lions, and porpoises. There are about 170 transients, but they travel in small groups of one to five individuals, staying close to shorelines.

In 1991, another orca community, called Offshores, was discovered. These whales may be the ancestral population of the Northern and/or Southern Residents. They are most often seen in the Pacific Ocean, fifteen to twenty-five miles out at sea, off Vancouver Island, and the Queen Charlottes, though members of this community have been seen from southern California to the Bering Sea.

According to the Friday Harbor Whale Museum, the orcas that frequent the San Juan Islands are dying at an alarming rate. Over the last five years, the resident population has dropped from ninety-five to eighty-two members. Whale researchers believe that toxins, such as PCBs released more than twenty years ago, are the primary culprits.

Researchers in Canada asked the federal government to list the southern resident orcas as threatened. The main reasons were that: 1) the population has not shown sustained growth in the last twenty-five years; 2) the whales harbor some of the highest amounts of toxic pollution in the world; 3) some salmon stocks, the orcas' primary food source, have recently been threatened in the U.S.; and 4) these orcas are exposed to the highest levels of vessel-based water pollution in the world.

Concerns over the effects of whale-watching vessels in the San Juans grew in the later years of the 20th century. Whale-watching is a popular activity, and one that exposes many people to the wonder of the orcas. Most boaters and commercial whale-watch operators give the whales a wide corridor and keep at least 100 yards from the whales. However, scientists are uncertain about the activity's adverse impacts to the orcas' health.

### **3. Hazards**

Natural disasters can result in significant, even devastating, loss of property, livestock, and human life. In addition to human suffering and environmental devastation, natural disasters can generate serious financial impacts that can cost private property owners and local, state, tribal, and federal governments millions of dollars every year.

Recent disasters in Washington have included landslides, severe erosion of the southwest coast, coastal and riverine flooding, wildfires, wind damage, ice storms, and the 6.8 earthquake near Olympia in 2001. In only three years, between November 1995 and May 1998, Washington experienced six federally-declared disasters, plus two fires. Riverine flooding and/or groundwater

flooding, often accompanied by landslides, caused five of the disasters.

### ***Shoreline and Bluff Erosion***

Washington's coastal areas experience both shoreline erosion and landslides. These are natural processes that are the response to changing conditions in the environment. Heavy storm waves can eat at beaches, and normal wave current action can carry sand away. Beach erosion can also be the result of a decrease in sediment supply that feeds the beaches.

### **Puget Sound Bluff Erosion**

Bluff erosion occurs naturally on Puget Sound. Many bluffs are naturally unstable because of soil, slope, and water conditions. Bluff erosion is affected by geology, waves, and weather. All three factors vary widely within the Puget Sound region, so bluff erosion rates can range from a fraction of an inch to more than two feet per year. The erosion rate for a bluff can be regular over the years, or it can change from near zero for decades to tens of feet in a matter of seconds. Once steepened to an unstable angle, bluffs can continue to erode without wave action.

High glacial bluffs are subject to continuing erosion. Usually this process is not considered significant until people move onto the bluff or the shorelines nearby. To keep land, people often build bulkheads and other structures. Such structures, however, may remove a major source of beach building materials. Erosion can increase downdrift of the structures. Downdrift beaches often steepen and/or lower. Most slope failures are directly related to the buildup of water in the soil. Development activities, such as clearing vegetation and modifying site drainage, and on-site septic systems can make erosion worse.

Increases in landslide frequency and magnitude within a watershed as a result of poor land use management, such as road building on steep, unstable slopes, result in harmful downstream impacts on the riparian vegetation, on fish populations, and on an array of other organisms using the riverine corridor.

### **Erosion on Washington's Southwest Pacific Coast**

Some say that the area at the mouth of the Columbia River north to Point Grenville on Washington's southern Pacific coast is one of the nation's most beautiful and least developed open barrier beaches. This is the home of the Long Beach Peninsula and other sand spits - areas characterized by long, sandy beaches

Landslides are an increasingly serious threat to life and property in WA. The human devastation caused by large landslides such as those occurring at Hunter's Point in Thurston County (1999-2000), or by smaller, more deadly slides, such as the Rolling Bay slide on Bainbridge Island in 1997, is enormous. Repeated closures of Highway 101 or of the railroad north of Seattle cost the state and businesses millions of dollars. The public costs of addressing landslides in developed areas are great in terms of emergency response, damage to infrastructure, and litigation as witnessed by the City of Seattle in 1996-1997.

The landslides on Hunter's Point and Rolling Bay are not unique. Hundreds of similar sites exist throughout the coastal zone but have not been identified and may not have slid in recent decades. The risks will increase as population expands into landslide-prone areas, such as our steep slopes and coastal bluffs. The possibility of increasingly wetter winters underlines concerns.

## Southwest Washington Coastal Erosion Study

Millions of Federal and State dollars are spent each year for protection from coastal erosion. Solid technical data and analysis of the littoral system evolution are critical components to developing cost-effective solutions, managing resources, protecting life and property, and preventing costly damage. Without information, communities and agencies cannot engage in scientifically based land use planning and decision-making, and are forced to respond on a crisis-by-crisis basis to individual erosion events. Critical erosion problems include: channel migration and deterioration of navigation facilities at the Ports of Grays Harbor and Willapa Bay; threats to the cranberry industry; undercutting of coastal highways; and impacts to public infrastructure; and erosion-threatened homes at Cape Shoalwater. Other problems include the December 1993 breach at the south jetty of Grays Harbor that threatened navigation and resulted in losses to the City of



*Public restrooms after 1999 storm at Ocean Shores. Photo - Brian Voigt*

Westport facilities, and State Park land and facilities. Erosion in the Westport area has cost \$8 million in repairs since 1993. In addition, erosion has an impact on public health and safety and affects the biological resources that sustain the regional economy.

The Southwest Washington Coastal Erosion Study is a five-year (1997-2001) Federal-State-Local cooperative research program that addresses the coastal geology, processes, and natural hazards of the Southwest Washington coast. The study is jointly directed by the USGS Marine and Coastal Geology Program and the Department of Ecology, Shorelands and Environmental Assistance Program (the Coastal Monitoring and Analysis program) with participation of local communities in Pacific and Grays Harbor Counties. The project involves fundamental and applied studies to develop a regional understanding of coastal processes, sediment transport, and associated shoreline changes. The study is examining the effects of human influences (enhanced runoff, dredging, jetties and dams) and natural processes (waves, tide, currents, El Nino, earthquakes) on coastal evolution in an effort to predict coastal change on the order of decades and tens of kilometers. The study area includes the regional littoral zone between Tillamook Head, Oregon and Point Grenville, Washington.

and dunes that separate the open ocean from the bays.

In the 20th century, the deposition and movement of sand in this area became severely altered. When the mighty Columbia was an undammed, free-flowing river, it deposited sand in an underwater delta of the river's mouth. However, the multitude of Columbia and Snake River dams significantly restrict new sand from reaching the ocean. The sediment load in the Columbia has been reduced by an estimated twenty-four to fifty percent from pre-development



Map - Brian Voigt

conditions. The ocean currents have continuously mined the formerly deposited sand, and the delta's sand supply is now essentially gone.

In the recent past, Washington's Pacific shoreline has been accreting - sand has been building up on the beaches, pushing the shoreline seaward. For example, since 1916, new land 7,000 feet wide has been added behind the north jetty entrance to Grays Harbor. Coastal geologists believe that the shoreline accretion was caused in part by the breakup of the former tidal delta near the Columbia River jetties. This sand supply historically was moved up and down the coast by the ocean currents and deposited behind the Grays Harbor jetty. Now, without sand from the Columbia delta, the coastal

shorelines are beginning a long-term erosion phase. Failure of jetties also contributes to erosion (e.g. Westport). Storm damage opens gaps in the jetties, allowing ocean water to penetrate the barriers.

The area where the Pacific Ocean meets the land is dynamic and ever changing. Beach erosion and lateral sand drift are natural processes in response to changing conditions. Changes in sand deposits are not a problem until parking lots, streets, utilities, and buildings are constructed next to beaches. For example, in Ocean Shores during the 1960s, the newly accreted land was quickly developed for residential and resort purposes. Ever since, this area has been laced with roads and houses, essentially denuding the sand dunes of their protective cover, making them more susceptible to erosion and reducing the area of usable habitat for other species.



Beach erosion at Ocean Shores, February 1998  
Photo - Brian Voigt

## Flooding

Several types of floods occur in Washington. In most parts of western Washington, floods generally occur in late fall and winter as a result of prolonged rainstorms. These floods may be augmented by water from snowmelt if rain falls on snow. The rain-on-snow floods are usually of short duration. In basins at

higher elevations, floods may occur in the spring as a result of rapid snowmelt. These floods are usually of longer duration than the winter floods.

The impacts of urbanization can lead to severe flooding. Deforestation, degraded wetlands, altered stream channels, and severe winter storms are some of the factors leading to dangerous flood levels. Flooding becomes a threat to human health and safety when homes, roads, and other infrastructure are built in a river or stream's floodplain. Severe floods can sweep away buildings, damage utilities, tear out roads and wreak havoc in many other ways. Water supply can become tainted, and flood waters can carry diseases and toxins.

Washington is one of the most floodprone states in the nation. Since 1971, the state has received twenty-five Presidential Disaster Declarations for flooding. It is estimated that total public and private losses from the 1995-96 flooding exceeded \$500 million.

### ***Tsunamis***

A tsunami is a series of waves most commonly caused by an earthquake beneath the sea floor. If a large earthquake displaces the sea floor near the Washington Coast, or even occurs as far away as Japan, the first waves may reach the shore minutes after the ground stops shaking. There would be no time for authorities to issue a warning. The waves can kill and injure people and cause great property damage when they come ashore. The first wave is often not the largest; successive waves may be spaced many minutes apart and continue to arrive for several hours.

Tsunami evacuation routes were developed to assist coastal residents and visitors find safer locations in case of an earthquake and tsunami. Washington's coastal areas have signs pointing out the evacuation routes.

## **4. Water Quality**

Maintaining water quality is critical to the health of marine and freshwater habitats and the organisms that live in them. Water quality means that the water column, which extends from the bottom to the surface, is chemically and biologically balanced. Many factors contribute to water quality, including the quality and volume of water flowing into an area and the local intensity of tidal mixing and flushing.



*Photo - Brian Walsh*

Human and animal wastes can affect water quality. They carry pathogenic organisms, such as bacteria and viruses, and are also rich in nutrients. Although pathogens and nutrients are natural components of the coastal zone ecosystem, human development, industrialization, and population of watersheds and shorelines contribute increased loadings of these materials to the coastal waters.



Rivers and streams contaminated by human and animal wastes can pose a serious health risk to people. People swimming, fishing, or drinking from contaminated rivers and streams risk becoming ill. Rivers and streams can carry fecal coliform bacteria into marine waters where shellfish can become contaminated. In turn, people eating contaminated shellfish can become ill.

Human and animal fecal waste enters surface waters from failing septic systems and poorly managed animal operations, such as dairies and rural farms. Allowing farm animals to graze in or next to a stream is another source of contamination. Pet waste also is an issue of growing concern. Fecal coliform linked to cats and dogs is making its way to urban streams.

Fecal contamination is a widespread problem in the Puget Sound Basin, and the most common water quality problem. Nearly one-half of all Puget Sound Basin waters that have been assessed are affected. Thirty-two marine areas are among the more than 260 bodies of water in the basin that Ecology has identified as impaired by such contamination.

### ***NonPoint Pollution***

Nonpoint pollution is complicated and elusive. Sometimes it can be traced to several sources; sometimes it cannot be traced at all. Nonpoint water pollution is a growing threat to the environment and public health. Nonpoint water pollution is the accumulation of sediment, chemicals, toxics, nutrients, debris, and pathogens that get washed into the nearest waterbody by runoff from rainstorms, snow melt, or human practices. It comes from water-based and land-use activities; surface water runoff from agriculture lands, urban areas, and forest lands; subsurface or underground sources; and discharges from marine vessels. Even off-road vehicle use can disturb stream banks, causing erosion and sedimentation.

Below, are some of the major causes of nonpoint pollution (roads and stormwater runoff are discussed elsewhere in the document).

**Agriculture** - While farming is a productive use of land, it can be a threat to water quality. Direct discharges and runoff from farms carry nonpoint pollution. Soil erosion, pesticide use, animal waste, and loss of riparian zones next to waterbodies are common concerns. Ground water is at risk of contamination from some farming practices.

**Forest Practices** - Sedimentation and increased water temperature are the worst problems associated with logging. Improper road construction and maintenance and careless timber harvesting next to streams lead to siltation and pesticide runoff.

**Marinas and Boats** - Sewage from boats affects water quality, especially in smaller bays with poor water circulation and at marinas. Boaters can also pollute recreational waters by discharging contaminated bilge water, petroleum products, garbage and trash, paint scrapings, and toxic solvents.

**On-site Sewage Systems** - Approximately 1.4 million Washingtonians use these systems. Common problems include poor soils, obsolete design, improper siting, poor construction, and poor operation and maintenance. Raw sewage from failing septic systems seeps through the ground or is carried by rainwater to nearby surface waters. They

pose a health hazard because domestic wastewater can contain bacteria, viruses, protozoa, and helminths (worms) harmful to people. Typhoid fever, gastrointestinal infections, and infectious hepatitis have been linked to failing systems around the country.

### **Toxics**

Toxic chemicals released to the air, water, and land can threaten human health and the environment. Ground water that is contaminated by toxics is a serious health problem when that water is used for drinking water. Toxics entering rivers and streams can harm fish, wildlife, and plants. Those released to the air can pose a threat to human health and also end up in soil or water. Human activities introduce toxic contaminants, including organic compounds and metals to the environment. Some toxic substances, notably metals and hydrocarbons, occur naturally but become concentrated in the environment through human activities. Some toxics are specifically designed to be just that - e.g. pesticides and anti-fouling agents like tributyltin. Others are designed for other purposes, but happen to be toxic because of their chemical structure (e.g. PCBs) and escape into the environment through incidental or accidental releases.

Some sources of toxic pollutants include: stormwater runoff from urban areas; discharges of municipal and industrial wastewater; spills from vessels and shoreline and upland properties; pesticide runoff from agricultural, residential and park lands; aquacultural applications of pesticides; leaching of contaminants from shoreline structures (e.g. preservatives from pilings) and vessels; channel dredging and dredged material disposal; and atmospheric deposition of air pollutants.

### **Sediment Contamination**

Sediments are widely considered to be the major repository for toxic contaminations of concern in Puget Sound. Sediments are the "floor" of a river, a stream, a lake, or the Puget Sound. Once marine or freshwater sediments are contaminated, cleanup is very expensive and difficult.

In the Puget Sound, PCB contamination remains in the sediments of urban bays and other areas. Decades of urban run-off has contaminated these areas and the copepods living there, which are fed on by salmonid juveniles, which are fed on by the Puget Sound southern resident orcas. The bioaccumulation in the fatty tissue of the orcas supports this theory.

Dr. Richard Osborne and other marine mammalogists list the following reasons for a potential listing under the US Endangered Species Act: 1) the US and Canadian governments would conduct an inventory of historical underwater toxic dump sites; 2) salmon recovery programs would be the center of focus; and 3) work would continue with local commercial whale-watching operators to reduce the potential impacts of whale-watching.

The ESA process includes a one-year review of a petition to the National Marine Fisheries Service and, if the agency agrees to the listing, another year or more for the development of a management plan for the whales.

"This is what we have to do if we want to save the orcas," Osborne says. "We're still very hopeful that this population is going to make it, but it will be ten to twenty years before we know." *Tracie Hornung - The Whale Museum*  
[www.whale-museum.org](http://www.whale-museum.org)

Historical and current industrial activities and pressures of population growth have caused much of the current sediment contamination.

The quality of remaining estuarine habitat in the Puget Sound region is commonly degraded by sediment contamination. Approximately 5,700 acres in the Sound's urban bays have been identified as having sediment contaminant concentrations that do not meet the state's sediment quality standards. The highest concentrations of contaminants occur in the sediments of urbanized bays, such as Elliot Bay in Seattle, Commencement Bay in Tacoma, and Budd Inlet in Olympia.

## **5. Water Quantity**

While it would appear that Washington has an abundance of water to meet all the needs of its people, plants, and animals, especially in the coastal areas, that appearance is misleading. In fact, about half the state's area now has insufficient water to support the needs of its residents and the resources that depend upon plentiful water supplies. Unfortunately, problems arise from some land use activities and the ways water gets used. For example, filling wetlands means less natural retention of floodwaters in the winter; less retention lowers stream flows in the summer. Water withdrawn for irrigation, drinking, and other household uses further reduces stream flows. Impervious surfaces associated with development allow less water to percolate back into the ground to recharge underground water supplies and lead to more surface runoff.

The water in 250 streams is already over-allocated. That means there are so many people holding rights to withdraw water from those streams that, by the time all the water is legally withdrawn, there is not enough left for fish and wildlife. Approximately 350 lakes and streams are closed to further withdrawals; another 100 are closed part of the year.

About 8,000 small wells were drilled in 1996, most of them in urbanized counties. These wells, which make up about ninety percent of the wells drilled each year, are exempt from the requirement to get a water right permit. While some of these wells are the only source of water for a home, in some cases wells are drilled to bypass the permit process, to avoid drinking water regulations, or as a cheaper alternative to water supplied by a utility. These wells can undermine efforts to concentrate growth in or near urbanized areas, can leave groundwater vulnerable to pollution, affect public health, and threaten the availability of nearby water sources.

## **6. Oil Spills**

A major oil spill along Washington's pristine outer coast or in the Sound would have the potential to cause extensive damage to the economy, natural resources, and the quality of life. An oil slick computer model that includes information on weather, season, currents, wind, and the natural characteristics of the region was run to determine the probable motion and potential hot spots if a spill were to occur. Results of this model indicate that a major oil spill in the Basin could not

avoid dramatic impact to miles of sensitive habitats and resources. Research suggests that the effect on the fisheries and shellfish beds would be devastating. Marine birds would be hit most immediately and a spill along the Northern Coast could wipe out the entire endangered sea otter population of Washington State.

Habitat vulnerability is greatly affected by the conditions created by waves and surf in the immediate area. The greater the wave and tidal energy, the better toxic compounds disburse or weather. Exposed tidal flats and marshes are dominated by porous muds and clays that absorb oil and are difficult, if not impossible, to clean. Sheltered tidal areas are most at risk while exposed, rocky coastlines cleanse themselves more readily.



*Sea Otter*

Vulnerability is thus partly based on the composition of the substrates that compose the shoreline and how exposed the area is to open tides.

Different species of plants and animals are affected by oil spills in different ways. Whether an individual is an adult or juvenile, whether the spill occurs during mating or nesting periods, and the weather at the time of the spill are all critical factors that influence total impact.

## **7. Air Pollution**

The primary cause of poor air quality in Washington is motor vehicle exhaust. Exhaust from motor vehicles contains many toxic pollutants. Even with today's pollution control equipment, the average passenger car annually pumps 557 pounds of carbon monoxide, 75 pounds of volatile organic compounds and 39 pounds of nitrogen oxide into the atmosphere. Ozone and other pollutants can damage forests near and far from pollutant sources.

Transportation is the largest and fastest growing source of carbon monoxide emissions in the state. Cars and trucks produce the highest levels of these emissions, followed by ships and planes.

High levels of particulate matter are caused by tiny particles of soot, dust, and unburned fuel from woodstoves, fireplaces, backyard burning, agricultural burning, and industry. While Washington air is cleaner than it was in 1990, the growing population and miles traveled by car continue to threaten air quality.



## Chapter 5 -

# Washington Coastal Program Administration

## Overview

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The Department of Ecology (Ecology) prepared the Washington State Coastal Zone Management Program document (CZMP) to qualify for federal funding under the Coastal Zone Management Act (CZMA). The Office of Ocean and Coastal Resource Management (OCRM), a division within the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce, approved the CZMP in 1976. As the first state in the nation to receive federal approval, Ecology became eligible for an annual coastal zone management grant.

Ecology uses its grant moneys to administer Washington's CZMP. Over the years, in addition to supporting the state program, grant money has also gone to other state agencies, local, regional and, to some extent, tribal governments to benefit the state's coastal zone and its inhabitants. Some of the hallmarks of Washington's Coastal Zone Management Program, include the following:

- Approval of Shoreline Master Programs pursuant to the SMA for all coastal zone counties.
- Adoption of state regulations to improve and streamline administration of the SMA.
- Development of improved technical assistance materials to aid local government and state agency administration of the SMA.
- Application of CZMA grant funds to local government initiatives, such as improved shoreline master programs, urban and small town waterfront revitalization plans, public access plans and improvements, wetland management and acquisition programs, water quality studies, basin planning projects, and studies to address special issues within shoreline master programs.

“Leaving a sound environmental legacy depends upon the individual citizen’s ability to understand how everyday choices, made by individuals, by families, and by businesses, affect the health of our current and future environment. Some of our most persistent environmental challenges are due to nothing more complex than the fact that over five million people live and work in Washington. As tradeoffs between environmental, social, and economic values become in sharper conflict and more substantial, each of us will be called upon to change the effects our activities have on the air, water, and land.”

*Ecology Director,  
Tom Fitzsimmons.*

- Adoption of Pacific Ocean management policies by the Washington State Legislature. These policies were based on an extensive public involvement process including representatives of ocean user groups, local governments, Indian tribes, environmental organizations, private citizens, and state and federal agencies.
- Refinement of the State Environmental Policy Act and adoption of implementing regulations.
- Establishment of the Padilla Bay (pronounced “Pa-dilla” or “Pa-dee-yah”) National Estuarine Research Reserve (NERR) in Skagit County. Ecology obtained private donations, federal grants, and state funds to buy large areas of Padilla Bay, develop an interpretive center, and undertake a research and public education program.

## A. Washington’s Coastal Zone Management Program

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Washington’s Coastal Zone Management Program basically consists of two parts: the enforceable policies that must be complied through the federal consistency process; and the activities that Ecology staff and others undertake pursuant to the enforceable policies in accordance with the federal CZM grant. This chapter is



*Pt. Grenville*

*Photo - Brian Voigt*

organized first to describe some of the requirements states must meet in order to have an “approved” management program. The enforceable policies are described next, followed by a summary of the activities that Ecology carries out under the CZM grant.

The Coastal Zone Management Act requires states to describe: the organizational structure implementing their coastal zone management programs; how the states exerts control over the land and water uses; the broad guidelines on priorities of uses in particular areas; and the permissible land and water uses within the coastal zone which have a direct and significant impact on the coastal waters. What follows is a description of how Washington meets those three requirements - primarily through implementation of the Shoreline Management Act and other important state laws. (Please refer to Appendix C for a listing of the all the national requirements)

### 1. Organizational Structure

In 1971, Washington had adopted a number of important environmental laws predating the CZMA and aimed at coastal resource management and protection. One of these laws, the Shoreline Management Act (SMA), provided the foundation for protection of the state’s valuable coastal resources. As primary administrators

of the SMA, Ecology was tasked to develop the State's coastal zone management program. Along with the SMA, Ecology selected the State Environmental Policy Act (SEPA), the state versions of the federal Clean Air and Clean Water Acts, and the Energy Facility Site Evaluation Council law (EFSEC), to form Washington's CZM program. In the early 1990's, Washington added the Ocean Resources Management Act. Each of these laws is implemented by Ecology on the state level (excluding EFSEC).

Because Washington chose to rely on existing state environmental laws to address coastal zone issues, rather than draft a new, all encompassing piece of legislation aimed at coastal protection, Washington's program is considered a "networked program" according to federal regulations. Implementing regulations of the six state laws and local shoreline master programs developed pursuant to the SMA are also incorporated into the CZMP and thus are part of the network of laws comprising Washington's program.

Some of these laws are administered through a partnership with local governments. For example, local governments issue shoreline permits according to the provisions in their local shoreline master programs. Please refer to the following section for a discussion of how each law is implemented.

*(The original program document included the Environmental Procedures Coordination Act, but that Act has since been repealed. In 1990, Ecology added Oil Transport - Vessel Responsibility Act, but removed it in 2000 because it was preempted by federal law).*

## **2. Authorities and Enforceable Policies**

Authorities are "those constitutional provisions, laws, and other legally enforceable documents that contain or authorize the development of the enforceable policies." The CZMA requires states to identify "Enforceable Policies:" state policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a state exerts control over private and public land and water uses and natural resources in the coastal zone. Generally, the enforceable policies outline the permissible land uses and water uses with the coastal zone, which have a direct and significant impact on the coastal waters. That is, each "policy" describes allowable uses. Washington's authorities and implementing regulations include the enforceable policies. Those authorities (the laws or RCW's) and their implementing regulations (Washington Administrative Code) contain the CZMP's enforceable policies.

- the Shoreline Management Act (SMA),
- the Clean Water Act (CWA),
- the Clean Air Act (CAA),
- the State Environmental Policy Act (SEPA),
- the Energy Facility Site Evaluation Council law (EFSEC)
- the Ocean Resources Management Act (ORMA),



The following is a summary of Washington's authorities. This summary will provide a context for understanding how Ecology administers the CZMP. The federal consistency procedures are in Section B. of this chapter.

### ***The Shoreline Management Act***

The Shoreline Management Act and implementing regulations establish the foundation of Washington's CZMP. As the core authority of Washington's program, the SMA is both a land use and an environmental protection statute. Washington's coastal program uses the SMA as the principal means of regulating land and water uses throughout the coastal zone.

Although amended since enactment, the SMA's structure remains largely unchanged. It establishes a planning program and regulatory permit system initiated at the local level under state guidance. While Ecology is designated as the lead state agency, local governments exercise primary authority for implementing the SMA.

### **Application**

The Shoreline Management Act applies to all "shorelines of the state," including both "shorelines" and "shorelines of statewide significance." In all, there are 791 lakes, 965 rivers and streams, some 2,761 miles of marine shoreline and over 3,000 square miles of marine waters subject to the Act.

The SMA expresses special legislative concern for those shorelines identified as "shorelines of statewide significance" and lists special use priorities to be addressed in local shoreline programs. Shorelines of statewide significance include:

- The Pacific Coast, including the Columbia River Estuary, Willapa Bay, and Grays Harbor;
- Certain shorelines of the Puget Sound including Nisqually Delta, Hood Canal and Birch, Skagit, and Padilla Bays;
- All waters of the Puget Sound;
- Rivers over 1,000 cfs west of the crest of the Cascade Range (those fall within the coastal zone), and those over 200 cfs east of the crest of the Cascade Range;
- The Strait of Juan de Fuca and;
- Lakes over 1,000 acres.

### **Master Programs**

Each local government's planning program consists of a shoreline inventory and a "shoreline master program" (SMP) to regulate shoreline uses. The inventory covers land and water uses, generalized ownership patterns, and natural shoreline characteristics. The shoreline master program is essentially a land use plan for shoreline areas with distinct environmental characteristics. SMPs include basic goals and objectives, shoreline environmental designations, and regulations. Local

governments develop their shoreline plans in accordance with SMA guidelines but tailored to the specific needs of the community. More than 200 cities and all thirty-nine counties have shoreline master programs. Local shoreline master programs combine both plans and regulations. The plans are a comprehensive vision of how shoreline areas will be used and developed over time, and regulations are the standards that shoreline projects and uses must meet. Local governments may modify master programs to reflect changing local circumstances, new information, or improved shoreline management approaches. All changes to master programs require public involvement. At a minimum, local governments must hold public hearings. Substantial revisions are usually written with the help from citizen advisory committees. Most master programs were originally written between 1974 and 1978. Since then, approximately 25% of these programs have been significantly updated; 50% have only had minor amendments; and 25% have not been amended (this includes both coastal and non-coastal programs). Master program amendments are effective after Ecology's approval. In reviewing master programs, Ecology is limited to a decision on whether or not the proposed changes are consistent with the policy and provisions of the Act and the state "master program guidelines," which are included in SMA regulations.

## **Permitting**

Each local government has established a system of permitting for shoreline development. Substantial Development Permits (SDPs) are needed for projects costing over \$2,500 or those that materially interfere with the public's use of the waters. Some projects and activities are simply prohibited by local master programs or under the policy of the Act. However, it is far more common that the issue centers on how a development should be done - not whether or not it should be done. Local governments may also issue Conditional Use or Variance permits to allow flexibility and give consideration to special circumstances. After local government issues its permits, Ecology has twenty-one days to review substantial development permits and 30 days to review conditional use and variance permits. Ecology's role is to determine if the local action is consistent with the local master program and the SMA policies. If Ecology disagrees with a local decision on a SDP, Ecology must appeal the decision to the Shorelines Hearings Board. Ecology must approve all Conditional Use and Variance permits, but its decisions may be appealed to the Shorelines Hearings Board. Statewide, local governments issue approximately 1,000 permits every year.

## **Preferred Uses**

The SMA establishes the concept of preferred uses of shoreline areas. According to RCW 90.58.020, "uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or a unique to or dependent upon use of the state's shorelines." If alteration of the natural condition of the shorelines is allowed, priority is given to the following uses: 1) single family residences; 2) ports; 3) shoreline recreational uses; 4) industrial and commercial developments that are particularly dependent upon their location

on, or use of, the shorelines; and 5) other developments which will provide an opportunity for substantial numbers of people to enjoy the shorelines.

Preferred uses for shorelines of statewide significance are those that:

1) recognize and protect the statewide interest over local interests; 2) preserve the natural character of the shoreline; 3) favor long-term over short-term benefits; 4) protect the resources and ecology of the shoreline; 5) increase public access to publicly-owned shorelines; and 6) increase shoreline recreational opportunities.

The Shoreline Management Act emphasizes a balance between shoreline conservation and shoreline use. The legislature declared that *“unrestricted construction on the privately-owned or publicly-owned shorelines of the state is not in the best public interest,”* while at the same time recognizing and protecting private property rights consistent with the public interest. Furthermore, it is the policy of the state to provide for the management of the state’s shorelines *“by planning for and fostering all reasonable and appropriate uses.”* This policy is designed to *“insure the development of these shorelines in a manner that, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest.”* The policy aims at *“protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state”* while protecting public rights of navigation.

While the SMA does not categorically prohibit all non-water dependent uses, water-dependent uses are preferred. The concept of use preferences is particularly applicable to shorelines under intense development pressure for port and harbor-related industrial activity where shorelines are limited and extremely valuable.

Preferred uses for shorelines of statewide significance are those that: 1) recognize and protect the statewide interest over local interests; 2) preserve the natural character of the shoreline; 3) favor long-term over short-term benefits; 4) protect the resources and ecology of the shoreline; 5) increase public access to publicly-owned shorelines; and 6) increase shoreline recreational opportunities.

The Shoreline Hearings Board has defined the concept of water dependency as “one that cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations. A water-related industry or commerce is one which is not intrinsically dependent on a waterfront location but whose operation cannot occur economically without a shoreline location.”

### ***The Washington State Environmental Policy Act (SEPA)***

Ecology’s Shorelands and Environmental Assistance Program administers the State Environmental Policy Act (SEPA). It manages the preparation of environmental impact statements for major projects; provides training and guidance for local agencies and the public; prepares rule amendments and interpretation guidance; and manages a statewide information clearinghouse. The section works closely with federal, state, and local agencies to implement SEPA, and with federal agencies in preparing documents under the National Environmental Policy Act (NEPA).

SEPA supplements the authority of the SMA. SEPA requires government agencies to analyze the environmental impacts (for example, coastal hazards, water quality and sensitive resources) of activities they are asked to approve. They can condition or deny approval of activities to protect the environment. Again, local governments have the primary role; Ecology plays a supporting role. In addition, SEPA requires consulting federal agencies with environmental expertise regarding activities with a substantial adverse effect on the coastal environment.

### ***The Ocean Resources Management Act***

The Ocean Resources Management Act (ORMA) was passed to “articulate policies and establish guidelines for the exercise of state and local management authority over Washington’s coastal waters, seabed, and shorelines.” Like SEPA, the Ocean Resources Management Act (ORMA) also supplements the Shoreline Management Act. Unlike SEPA, which applies statewide, ORMA applies only to the Pacific Ocean, extending from Cape Flattery south to Cape Disappointment, beginning at the mean high tide line and running seaward for 200 miles. ORMA expresses the state interests in the management of the Exclusive Economic Zone (EEZ) - the area that begins twelve miles seaward of the coastline and extends seaward to a line 200 miles from the coastline.

ORMA includes policies to guide activities in the Pacific Ocean. The policies in RCW 43.143.010 provide that if there are conflicts between uses, those uses that will not adversely impact renewable resources have preference over those that will adversely impact renewable resources. ORMA declares it is state policy to conserve liquid fossil fuels and directs the state to participate in federal ocean and marine resource decisions to the fullest extent possible. These policies are to guide state and local decisions on plans for coastal waters. Shoreline master programs are the primary means for complying with this requirement. In 1991, Ecology adopted regulations to guide updates to shoreline master programs

relating to ocean uses. In 1997, the state legislature passed a law prohibiting oil and gas development off Washington’s coast.

### ***The Clean Water Act***

*“It is declared to be the public policy of the State of Washington to maintain the highest possible standards to insure the purity of all waters of the state...”(RCW 90.48.010)*

The Federal Clean Water Act addresses the issue of managing coastal development to improve, safeguard, and restore the quality of the nation’s waters, including coastal waters, and to protect the natural resources and existing uses of those waters. The state Water Pollution Control Act authorizes



*Photo - Tom Mark*

Ecology to participate fully in and meet the requirements of the Federal Clean Water Act. The state law allows Ecology to pursue a broad range of actions, including rule-making, routine inspections, enforcement, and the provision of grants and loans to maintain and improve the quality of the state's water. Ecology's jurisdiction is also broad, covering all the waters of the state and all sources of water pollution which, in itself, is broadly defined.

Implementation of the laws and accompanying regulations rests with Ecology's Water Quality and SEA Programs. The three primary objectives of the Water Quality program are to: 1) protect, preserve, and enhance the quality of the state surface water and underlying sediments, ensuring the wise, environmentally-sound use of the water; 2) prevent generation of pollutants; and 3) achieve a water-quality stewardship ethic and educated public. In July 1993, the program adopted a watershed approach to implement these objectives. Ecology has been delegated authority from the EPA to administer the National Pollution Discharge Elimination System Permits.

### ***The Clean Air Act***

The Clean Air Act combined with its state law counterpart (Clean Air Washington Act) is a comprehensive system that protects and enhances air quality. These laws are administered primarily by Ecology. The Clean Air Washington Act provides the framework for controlling air pollution in the state. The Act:

- Authorizes Ecology to seek delegation for implementing the federal Clean Air Act;
- Provides for the promulgation of rules to limit emissions;
- Authorizes the establishment of local clean air authorities, which may issue rules more stringent than Ecology's;
- Prohibits the open burning of certain materials, including petroleum products, rubber products, plastics, paper, cardboard, dead animals, and construction debris;
- Prohibits open burning in urban areas, limits open burning in other areas according to season and/or weather conditions;
- Requires permits for combustion facilities such as solid waste incinerators and industrial plants;

### ***Energy Facility Site Evaluation Council***

The Washington State Energy Facility Site Evaluation Council is a one-stop, state-local permitting system for large thermal energy facilities, oil refineries which process petroleum transported over marine waters, and petroleum and natural gas pipelines. EFSEC's function is to consider and balance all costs and benefits of a proposed energy facility. For these facilities, the council administers the authorities listed above. The Council's consolidated process eliminates the need for a proposed project to receive multiple permits, and duplicative review from several state and federal agencies. During the EFSEC process, direct public

participation is available at all stages, and the State Attorney General appoints an independent counsel to act as counsel for the environment. Ecology and other affected state agencies and local governments make up the Council.

### **3. Complementary State Policies and Programs**

Complementary policies and programs are those state laws and their accompanying programs that, while not “enforceable policies” under the CZMA, play a role in managing Washington’s coastal resources. While compliance with complementary policies is not required for purposes of federal consistency, these authorities help complete the “coastal zone protection” picture, thereby enhancing the coastal zone management program.

#### ***Growth Management Act***

A good example of how a complementary policy complements the CZMP’s enforceable policies is the Growth Management Act (GMA). GMA requires local governments to develop new growth plans where revising shoreline master programs is an established funding priority. With the adoption of the Growth Management Act (GMA), land use planning in Washington underwent significant changes and local governments began amending their shoreline master programs to comply with the GMA mandate for comprehensive plans.

In 1990, the Legislature found that *“uncoordinated and unplanned growth, together with a lack of common goals...pose a threat to the environment, sustainable economic development, and the health, safety, and high quality of life enjoyed by the residents of this state. It is the public interest that citizens, communities, local governments, and the private sector cooperate and coordinate with one another in comprehensive land use planning.”* The GMA requires all cities and counties in the state to: 1) designate and protect wetlands, frequently flooded areas, and other critical areas; 2) designate farm lands, forest lands, and other natural resource areas; 3) require evidence of potable water before issuing building permits; and 4) determine that new residential subdivisions have appropriate provisions for public services and facilities.

In addition, twenty-nine counties and the 213 cities within them, are to plan for growth based on certain requirements. Each county meeting those threshold requirements must develop and implement comprehensive plans and development regulations. Counties’ plans identify the location of agriculture, minerals, forests, and critical areas, among others. Once identified, the counties then establish regulations and policies for the efficient and environmentally sound placement of residential structures, utilities, capital facilities, and transportation routes, for example.

For governments within the coastal zone, shoreline master programs are an excellent vehicle to meet this statutory requirement as well as manage the unique riparian resources of the area. The policies and regulations contained in local shoreline master programs are considered elements of local comprehensive plans and development regulations required by the GMA.

## ***Hydraulic Code***

The Washington State Legislature gave the Department of Fish and Wildlife (WDFW) the responsibility of preserving, protecting, and perpetuating all fish and shellfish resources of the state. An integral component in protecting such resources is protecting and preserving their habitat. All fish and shellfish have special habitat requirements related to water quality and quantity and to the physical features of the stream or body of water in which they live. For example, salmon and steelhead require clean, cool, well-oxygenated water to spawn and live in before going to the ocean. Adults need clean gravel for spawning and juveniles require in-stream cover such as trees, boulders, or over-hanging banks to hide from predators. When the juvenile salmon or steelhead reach saltwater they need shallow, near-shore waters where they can migrate, school, feed, and hide from bigger fish. When these vital elements are degraded through construction activity, fish and shellfish die, and their habitat can be permanently altered.

To address these concerns, the 1949 Washington legislature passed the “Hydraulic Code” (RCW 75.20.100-160), requiring anyone wishing to conduct construction activities in or near state waters to operate under the terms of a “Hydraulic Project Approval” (HPA) issued by WDFW. The major types of activities in freshwater requiring an HPA include streambank protection, bridge and dock construction, dredging, gravel removal, debris removal, and mineral prospecting. Major saltwater activities include construction of bulkheads, fills, boat launches piers, pile driving, and dredging.

The HPA is designed to consider some of the same water quality considerations that exist in the state’s clean water program. To facilitate the application process, Ecology might allow the HPA to address these water quality issues rather than re-issue duplicative conditions in each permit.



*Alden Point Lighthouse*      *Photo - Mark Gardner*

## ***Puget Sound Water Quality Work Plan***

The Puget Sound Water Quality Authority was created in 1985 to address the full range of human activities whose cumulative impacts adversely affect water quality in Puget Sound. The Authority was required to prepare a comprehensive plan for protecting and improving Puget Sound’s water quality and update it every four years. In 1991

the EPA adopted this plan, the Puget Sound Water Quality Management Plan, as the Comprehensive Conservation and Management Plan for Puget Sound under the National Estuary program, set out in Section 320 of the Clean Water Act.

In 1996, the Puget Sound Water Quality Action Team replaced the Authority. In addition to maintaining the management plan, the Action Team adopts a Puget

Sound Work Plan for each biennial budget cycle. The recommendations in the plan are incorporated, as feasible, into the governor's budget and implemented by local governments subject to available funds. Some of the recommendations proposed have included repair and prevention of stormwater problems, repair and prevention of sewage system problems, reopening closed shellfish areas, improve fish passage, and coordinate with British Columbia.

Under the Puget Sound Water Quality Management Plan, Ecology prepared the Stormwater Management Manual for the Puget Sound Basin. The manual contains best management practices (BMPs) to control runoff, erosion, sedimentation, and pollution from development sites. Additionally, the manual contains guidance for implementing these measures at a specific site. The plan applies within the Puget Sound Basin and charges cities and counties within the Basin with adoption of a storm water program to implement the manual. Two important components of the manual are the Permanent Stormwater Quality Control and the Erosion Sediment Control sections. Additionally, sediment standards recommended by the Authority have been developed and adopted by Ecology.

### ***Watershed Planning Act***

As this document points out, Washington faces diminishing water availability and quality and the loss of critical habitat for fish and wildlife. The State depends on reliable sources of clean water to support expanding communities, restore fisheries resources, and support agricultural practices. The 1998 Legislature passed the Watershed Planning Act to provide a framework for local citizens, interest groups, and government organizations to collaboratively identify and solve water-related issues in each of the sixty-two Water Resource Inventory Areas (WRIA) of the State.

The Watershed Planning Act enables, but does not require, local groups called "planning units" to form for the purpose of conducting planning. If certain designated local governments and special districts agree to initiate planning, a planning unit may be formed. The State may then offer grants of up to \$500,000 per WRIA to fund watershed planning.

Under the law, citizens, local governments, tribes, and other members of a planning unit have considerable flexibility to determine the planning process, focus on areas or elements of particular importance to local citizens, assess water resources and needs, and recommend management strategies. The law also includes constraints on the activities of planning units. For example, the planning unit cannot change existing laws, alter water rights or treaty rights, change treaties, or require any party to take an action unless that party agrees.

During Fiscal Year 99 (July 1998 - June 1999), the legislature appropriated \$3.9 million for watershed planning. That money went to twenty-seven water resource inventory areas (WRIAs) to create nineteen planning units. Seven tribes served as initiating governments, and twelve on planning units. Ecology and other entities produced the "Guide to Watershed Planning and Management" and held



four workshops across the state to introduce the manual and address issues and concerns people had regarding the Act. The 1999 legislature appropriated \$9 million for local grants. The first \$4.5 million went to continued support of existing planning efforts and to fund organization of ten new planning units.

All the state's natural resource agencies signed a Memorandum of Understanding (MOU) on how to coordinate their salmon recovery and watershed planning activities. Each agency identified a statewide lead for implementing watershed planning and salmon recovery. The group meets regularly to discuss coordination issues.

## *Washington's Floodplain Management Program*

Floodplain management in Washington is governed by the federal National Flood Insurance Program and by three state laws:

- 1. Flood Control by Counties:** The legislature provided discretionary authority in county governments to develop comprehensive flood control management plans. The plans include several elements: designation of areas susceptible to periodic flooding; establishing a scheme of improvements and protection measures; creating regulations which prohibit or discourage land uses incompatible with flooding; and other restrictions on development such as land clearing that may exacerbate flooding and flood damage. These plans, when adopted by the local government, are submitted to Ecology for approval in conjunction with the Department of Fish and Wildlife.
- 2. Floodplain Management.** The Legislature designated the Department of Ecology as the State Coordinating Agency for the National Flood Insurance Program (NFIP); adopted the NFIP minimum standards for regulating development within special flood hazard areas (100-year floodplains) as the state minimum standards; gave Ecology broad authority over all works and structures in the floodplain; and established the primary local role in implementing, through local ordinances, the state's law and regulation of floodplain development. Ecology's role in providing technical assistance to local governments is established as well as other duties designed to support and assist local governments in regulating floodplain development.
- 3. State Participation in Flood Control Maintenance (Flood Control Assistance Account Program).** The Legislature established a \$4 million per biennium funding source for Ecology to provide grants to eligible local governments to develop local comprehensive, watershed-based plans that are designed to implement the goals of the Flood Control by Counties. FCAAP funds also are used for a variety of projects designed to implement individual plan goals and objectives. Typical projects include: the repair and maintenance of traditional structural projects such as levees or dikes; non-structural activities such

as property acquisitions; and early warning systems designed to complement the National Weather Service warning system by tailored local activities.

“Every one of the salmon recovery regions is different and unique, but they hold one thing in common: each is required to recover salmon within its boundaries and to make decisions about what needs to be done in the area. All across the state, new partnerships to recover salmon are emerging. Federal, state and local governments, tribes, businesses, and citizen groups are crafting plans, implementing restoration projects, collecting data and monitoring habitat conditions.”

### ***The Statewide Strategy to Recover Salmon***

In 1998, the Washington Legislature passed the Salmon Recovery Planning Act, providing a framework for developing salmon restoration projects. It also established the Governor’s Salmon Recovery Office. The Office’s primary purpose is to coordinate and assist in the development of salmon recovery plans and submit those plans to the National Marine Fisheries Service, the US Fish and Wildlife Service, and appropriate tribal governments.

The Salmon Office developed the “Statewide Strategy to Recover Salmon” in 1999. The goal of the Strategy is to “Restore salmon, steelhead, and trout populations to healthy and harvestable levels and improve the habitats on which fish rely.” The Strategy is the state vision or guide for salmon recovery in the state.

The Salmon Strategy will be implemented through regional and local salmon recovery plans. There are seven salmon recovery regions in the state; the Puget Sound region is further

divided into three sub-regions. Each salmon recovery region is based on the salmon recovery needs within a specific geographic region and includes existing Endangered Species Act listings, proposed listings and where there is a strong likelihood for future listings.

The Salmon Strategy focuses on key human activities and actions (e.g. Forest practices, agricultural practice, fish harvest, etc) to focus attention on the effects of those activities and the changes needed to protect and restore salmon and watershed health. The human factors are called the “four H’s”: Habitat; Hatcheries; Hydropower; and Harvest. (See chapter 4, section B for a discussion salmon issue)

Ecology is carrying out a number of actions in the salmon strategy, including updating the Shoreline Master Program guidelines, revising guidelines for local management plans, adopting and implementing new SEPA guidance, restoring salmon habitat with Washington Conservation Corps crews, and more. In addition, Ecology will continue to work through the Joint Natural Resources Cabinet to ensure that agency activities support salmon recovery.

## **B. Administering the Coastal Zone Management Program**

Washington’s Coastal Zone Management Program is housed within Ecology’s Shorelands and Environmental Assistance Program (SEA). The SEA Program’s

mission is to “work in partnership with communities to support healthy watersheds and promote statewide environmental interests.” The SEA Program goals are to:

- Ensure healthy watersheds through careful management of our shorelines, wetlands, marine waters, and waterways;
- Reduce hazards to people, property, and the environment;
- Ensure efficient and environmentally sound land-use decisions;
- Provide a high level of public service by being effective, efficient, and responsive;

Roughly forty-four percent of SEA Program staff work in Ecology’s Headquarters in Lacey, Washington. Those staff can be found in the Coastal-Shorelands section, the Wetlands-Floods-Watersheds section, the Environmental Coordination section, or within the Washington Conservation Corps. The remaining fifty-six percent of staff work in Padilla Bay; or in the Southwest Regional Office, which covers Clallam, Grays Harbor, Jefferson, Mason, Pacific, Pierce, Thurston, and Wahkiakum Counties; or the Northwest Office, which covers Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom Counties. The Central and Eastern regional offices are located outside the coastal zone - east of the Cascade Mountains.

Some broad areas of involvement by Ecology’s SEA program staff are: administering and enforcing the enforceable policies; administering CZMA grant and local grants; implementing the shoreline permit program; conducting SEPA review and Section 401 Water Quality Certifications; and coordinating coastal zone consistency review. Ecology’s Water Quality Program implements the state’s water quality program. Similar to shoreline programs, the air provisions are implemented jointly by Ecology’s Air Program and local air authorities.

## **1. Ecology’s Activities under Section 306 Grants**

The following is a summary of the myriad tasks performed by Ecology’s SEA Program to further the mission of the Coastal Zone Management Act. Not all the activities mentioned are directly funded with funds, but many SEA activities are so interrelated that a separation based on funding source would be artificial and distracting. The SEA Program breaks its activities into the following categories:

### ***Shoreline Management Activities***

**Permit Review** - Most permitting decisions are made in the regions, while Headquarters provides some policy and technical support.

**Enforcement** - Compliance assurance takes place in the regional offices with coordination and training at Headquarters. Enforcement focuses on developments that have occurred without permits, or that violate permit conditions. Priority attention is given to violations that have damaged and/or threatened shoreline resources. Staff can issue stop work orders to property owners who are violating permit conditions or operating without a permit. They also cooperate with federal,

state, and local officials to investigate suspected illegal shoreline development and use activities; respond to citizen complaints and observations of government inspectors; monitor local actions; and provide technical assistance to local government officials. Ecology employees conduct field investigations to determine compliance, which includes reviewing aerial photography and permit files for adjacent or nearby developments, and making site-visits. A SEA Program Enforcement workgroup addresses compliance and enforcement issues and has developed a strategy to ensure that Washington's CZMP is implementing the policies of the CZMA.

**Shoreline Master Programs** - Master Program development is an important part of Washington's coastal program. While it is local governments' responsibility to develop and update their local programs, Ecology staff provides technical assistance to ensure compliance with state law and incorporate local master program changes into the CZMP.

**Assistance to local governments** - Ecology helps local governments that request support for their growth planning activities. It also focuses on the integration of GMA/SMA program improvement priorities into local comprehensive plans and implementing regulations required by the GMA. Ecology directly assists local planners, elected officials, and citizens through:

- development of model ordinances and comprehensive plans;
- attendance at local advisory committee work sessions;
- one-on-one contacts;
- providing testimony at public hearings;
- participating in and sponsoring workshops and conferences.

### ***Wetlands Management***

The SMA and CWA Section 401 drive Ecology's wetland management activities because those laws' authority extends to wetlands. SEA Program staff provide wetland technical assistance to local governments, other agencies, tribes, and public groups. Such assistance includes: a) confirming wetland boundaries; b) reviewing wetland reports; c) evaluating mitigation proposals; and d) testifying at local hearings on wetland projects.

Some highlighted activities are:

- Wetlands Function Assessment Project
- Wetlands Mitigation Banking
- Wetlands Mitigation Evaluation Project
- Wetlands Stewardship Project
- Wetlands Restoration
- River Basin Characterization

## ***Floodplain Management***

Ecology's Floodplain Management unit has two principal functions. Ecology is designated by the Governor as the state coordinating agency for the National Flood Insurance Program. Staff reviews local plans, inspects flood damage reduction projects, develops and implements flood policies, provides technical assistance and coordinates with local governments on the National Flood Insurance Program. Additionally, the unit administers the Flood Control Assistance Account Program through providing grants to communities for comprehensive flood hazard management planning and flood damage reduction projects. (See Complementary Policies above for a full discussion)

## ***Padilla Bay Reserve***

The Reserve is managed by approximately ten Ecology staff housed at Padilla Bay. For details on the Padilla Bay National Estuarine Research Reserve, see Chapter Two, Section D-3.

## ***Coastal Zone Management***

General coastal zone management activities include: reviewing and responding to state and federal policy initiatives that impact Washington's coastal resources; Endangered Species Act consultations and coordination; administrative requirements including preparing and administering the grant and updating the CZMP document; providing technical assistance on shoreline erosion and coastal hazards to state agency staff, local governments, tribes, and the public. Ecology staff, working with Washington Sea Grant, co-sponsors quarterly meetings to share information and provide focused technical assistance to local governments.

The SEA Program publishes, markets, and distributes coastal zone education materials including landowner guides, public access signs and publications, teacher resource materials, and technical assistance guidebooks. SEA also publishes and distributes the "Confluence" newsletter to over 10,000 subscribers, targeting CZM stakeholders and keeping them informed of the latest state and national news. The SEA Program has a website to share information about coastal management in Washington State. This effort includes creating a web framework for presenting information on a variety of coastal issues and incorporating a number of existing education and information resources into the site. The information is used for local governments, citizens, business, and others.

The SEA Program uses CZM funds to monitor shorelines through a series of aerial photographs. Used by shoreline permit reviewers, staff, researchers, and educators, these photos cover all marine shoreline miles. In 2000, over 9,000 photos were made accessible to the public over the Internet.

Ecology Water Quality staff receive CZM funds and are responsible for shellfish protection and restoration activities. These activities include:

- Explaining CWA requirements to agencies, local governments, and landowners;

- Determining water quality “health” of watersheds in cooperation with other stakeholders;
- Identifying pollution sources and corrective actions for animal-keeping operations, large on-site sewage treatment systems, boating and marina related issues, and storm water;
- Coordinating agency internal and external shellfish program coordination;
- Representing the agency representation on the Department of Health Shellfish Advisory Committee;
- Leading watershed efforts to address shellfish water quality issues;
- Participating in shellfish bed closure response plans;
- Performing inspections of agricultural water pollution sources activities adversely affecting shellfish sanitation;
- Administering grants to address shellfish water quality issues.

### ***Policy, Planning, and Federal Permitting***

The SEA Program HQ staff along with their regional counterparts have responsibility for federal permitting activities. The primary duties under this task are to issue 401 Water Quality Certifications pursuant to the Clean Water Act and make federal consistency decisions in accordance with the CZMA. The goals are to minimize environmental impacts by ensuring that those projects comply with state requirements and to provide a coordinated state response on federal permitting actions by working closely with several federal, state, and local agencies, and tribal governments.

### **Reviewing Proposed Projects for 401 Certifications**

Section 401 of the federal Clean Water Act authorizes states to approve, condition, or deny projects that need a federal permit to fill wetlands or other waterbodies. The applicable federal permits include Section 404 permits from the Army Corps of Engineers, Section 9 permits from the Coast Guard, and hydropower licenses from the Federal Energy Regulatory Commission. The State’s decision is known as a “401” or a “water quality” certification.

State certification ensures that proposed projects comply with state and federal water quality requirements and other requirements of state law. If the state adds conditions to its certification, those conditions must be included in the federal permit, if one is issued. If the state denies certification, the federal agency cannot issue its permit. Essentially, Section 401 affords the state the ability to directly influence a federal decision.

A 401 certification can cover both the construction and operation of a proposed project. In Washington, the state review generally ensures compliance with the state water quality standards, SEPA, the SMA, the Hydraulic Code, and other aquatic resource related regulations. A certification can be conditioned to require: Best Management Practices for project construction and operation;

mitigation; performance standards; and contingencies for impacts to state waterbodies. Additionally, it may require the applicant to monitor and report project and mitigation performance to provide Ecology with the necessary assurance that the project and its mitigation are being done in a manner that meets aquatic protection regulations.

The state's 401 review is usually done concurrently with the Coastal Zone Consistency Decision and with a coordinated state response under the U.S. Fish and Wildlife Coordination Act. As a result, Ecology gives the project applicant and the federal agency a comprehensive document that includes a final state decision on the proposed project along with any necessary 401 conditions.

## **Making Federal Consistency Decisions**

The following is a summarized description of the federal consistency process as it is applied in Washington's coastal zone. There are extensive federal regulations governing the process, and, where allowed flexibility, Ecology has tailored some of the regulations to fit the framework of authorities and enforceable policies in the Washington CZMP. Please refer to 15 CFR Part 930 for the text of the federal consistency regulations. For any questions about Washington's process, please contact the federal consistency coordinator at the number listed in Appendix A.

Activities and development affecting Washington's coastal resources which involve the federal government are evaluated for compliance with the CZMP through a process called "federal consistency." This process allows the public, local governments, tribes, and state agencies an opportunity to influence federal actions likely to affect Washington's coastal resources or uses.

As previously noted, the CZMA was enacted to develop a national coastal management program that comprehensively manages and balances competing uses of and impacts to any coastal use or resource. The national coastal management program is implemented by individual state management programs in partnership with the federal government. The CZMA federal consistency requirement (Section 307) requires that federal agency activities be consistent to the maximum extent practicable with the enforceable policies of a management program. The federal consistency requirement also requires non-federal activities requiring federal permits or permits, or that receive federal financial assistance to be fully consistent with a state's federally approved management program. The consistency requirement is an important mechanism to address coastal effects, to ensure federal consideration of state management programs, and to avoid conflicts between states and federal agencies by fostering early consultation and coordination.

The CZMA's plain language reads as follows:

*"Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs."*

The “effects” language was added to the CZMA in the 1990 Coastal Zone Act Reauthorization Amendments (CZARA). That language clarifies that the federal consistency requirement applies when any federal activity, regardless of location, affects any land or water use or natural resource of the coastal zone. Hence, the focus of the federal agency’s evaluation should be on coastal effects, not on the nature of the activity.

The federal agency or applicant for a federal license, permit, or financial assistance is responsible for determining whether or not the proposed activity may affect any natural resource, land use, or water use in Washington’s coastal zone. The term “affect” should be construed broadly, including direct effects caused by the activity and occurring at the same time and place, as well as those which may be caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

This clarification means that all federal agency activities meeting the “effects test” are subject to the CZMA consistency requirement. Thus, under Washington’s Coastal Program, activities that affect any land use, water use or natural resource of the coastal zone must comply with the six state laws and their



*Grand Coulee Dam*

implementing regulations that contain the enforceable policies discussed above.

The federal agency activities that Washington believes will have reasonably foreseeable coastal effects, thus potentially requiring a consistency determination, are listed in Appendix E. If a federal agency activity is not listed in Appendix E, and the federal agency has not

subjected the activity to a consistency review, Ecology may notify the federal agency that the activity may have coastal effects and therefore, may require a federal agency consistency determination. (930.34[c]) Appendix E also lists the federal licenses or permit activities which affect any coastal use or resource, which Ecology wishes to review for consistency with the WCZMP. If Ecology wishes to review “unlisted” licenses or permits for consistency, it must notify the federal agency and applicants within thirty days from the notice of the license or permit application, otherwise Ecology waives its right to review the unlisted activity. (930.54 [a]{1})

Three categories of activities trigger a federal consistency review: 1) activities undertaken by a federal agency; 2) activities which require federal approval; 3) activities which use federal funding.

### ***1. Activities Undertaken by a Federal Agency***

A federal agency activity is any development project or function performed by or for a federal agency. For example, the Coast Guard wants to build a facility in Puget Sound. Even if the Coast Guard buys or leases the land, the project is



subject to federal consistency requirements if construction and operation of the new station will impact Washington's coastal zone. Other examples include constructing nearshore facilities for federal government use, such as a navy base, and dredging new federally managed navigation channels.

If the federal agency determines that the activity is likely to affect a land or water use or natural resource of the coastal zone, the agency then prepares a consistency determination, accompanied by supporting information. If there are coastal effects, then the federal agency decides whether the proposed federal activity is consistent to the maximum extent practicable with the Washington CZMP's enforceable policies. The phrase "consistent to the maximum extent practicable" means that federal activities that affect any land use, water use, or natural resource of the coastal zone must be fully consistent with the management program's enforceable policies unless compliance is prohibited due to the requirements of existing law applicable to the federal agency's operations.

The consistency determination should be submitted as early as possible but no later than ninety days prior to the start of the proposed activity. Ecology has up to sixty days to concur with, or object to, in writing, the federal agency's consistency determination.

### **Necessary Data and Information**

Federal agencies requesting consistency review for federal activities shall submit the following:

1. The determination, information, and analysis required by 15 CFR section 930.39 or its successor. This includes a statement indicating whether the activity will be undertaken in a manner consistent, to the maximum extent practicable, with Washington's CZMP; a detailed description of the activity including its associated facilities; the coastal zone effects; and comprehensive data and information sufficient to support these.

2. If required by federal law other than the CZMA, an approved SMA permit, variance, or exemption and evidence of compliance with the other applicable enforceable policies. (See Friends of the Earth v. United States Navy, 841 F.2d 927 (9th Cir. 1988). The United States Ninth Circuit Court of Appeals has upheld the SMA regulations that describe when federal agencies must obtain shoreline permits. These regulations can be found in WAC 173-27-060. See Save Lake Washington v. Frank, 641 F.2d 1330 (9th Cir. 1981)

3. If Ecology determines that it needs more information, beyond the necessary information, to ascertain whether the proposed activities are consistent with the management program, the federal consistency coordinator may request additional information from the agency. A request for such information that was not a part of the submission requirements will not extend the deadline for completing review of the activity.

### **State Decision and its Effects**

Ecology will concur with a determination if the federal activity is consistent to the maximum extent practicable with the Washington State Coastal Zone.

Management Program. If a federal activity requires a permit or approval under an enforceable policy, Ecology will not agree until the permit is approved or an exemption is granted. If a permit or approval cannot be obtained during the consistency review period, Ecology may ask the federal agency to withdraw the determination until the permitting decision has been made. Failure to withdraw may result in Ecology's objection. Ecology also takes into consideration any public comments received when making its decision. Once Ecology concurs, the project may proceed as planned.

If Ecology objects to the Federal agency's consistency determination, Ecology will accompany its response to the Federal agency with the reasons for its objection and supporting information. Ecology will describe (1) how the proposed activity is inconsistent with specific provisions of the management program, and (2) any existing alternative measures which, if adopted by the federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the management program. If the disagreement is based upon a finding that the federal agency failed to supply sufficient information, Ecology will describe the nature of the information and how it contributes to the decision-making process. Ecology will send the Director of the Office of Ocean and Coastal Resource Management (OCRM) a copy of its objection.

In the event of a disagreement between Ecology and a federal agency regarding the consistency of a proposed federal activity either party may request that the Secretary of Commerce mediate the dispute. After a judicial appeal of Ecology's decision, federal agencies can ask the President to exempt an activity from the CZMA consistency requirement.

## **2. *Activities which require Federal Approval***

Unlike activities undertaken by federal agencies, federal license or permit activities must be fully consistent with Washington's CZMP. A federal approval is any authorization, certification, approval, permit, license or other form of permission which any federal agency is empowered to issue to an applicant. Included in the definition are the following:

- A. Renewals and major amendments of federal license and permit activities not previously reviewed by Ecology.
- B. Renewals and major amendments of federal license and permit activities previously reviewed by Ecology that are subject to management program amendments not in existence at the time of original Ecology review.
- C. Renewals and major amendments of federal license and permit activities previously reviewed by Ecology that will cause coastal zone effects substantially different than those anticipated during the original review by Ecology.

For example, a gas pipeline company has applied to the Federal Energy Regulatory Commission (FERC) for a certification for the construction and operation of gas pipeline facilities through three coastal counties. Because construction is listed in

the State's program document, (see Appendix F, B.5.a) compliance with the state's coastal zone management program is necessary before FERC may issue the certification. Other examples include U.S. Army Corps of Engineers Section 404 and Section 10 permits. A federal agency cannot provide approval unless Ecology concurs that the project is consistent with the CZMP.

In these cases, the applicant for federal approval reviews the activity for compliance with the six laws and prepares a "*federal consistency certification*." The certification describes the activity and whether the activity impacts coastal uses or resources. If the activity impacts coastal uses or resources, a statement must be provided that the activity is compliant with the six laws. The applicant forwards its certification and necessary data and information directly to Ecology. Ecology then has six months from receipt to concur with or deny the certification.

### **Necessary Data and Information**

An applicant for a federal permit or license must submit the following along with their consistency certification:

1. A detailed description of the proposed activity and its associated facilities that is adequate for use in assessing the probable effects, employing maps, diagrams and data when appropriate. Additionally, a brief appraisal of the probable effects of the proposal and a short set of findings indicating that the project, its associated facilities and their effects are all consistent with the state management program's enforceable policies are required.

2. An approved shoreline permit, variance, or exemption and evidence of compliance with the Washington State Environmental Policy Act (SEPA). In those areas without shoreline management programs, no permit, variance, or exemption is necessary.

3. Evidence of compliance with the other applicable enforceable policies.

If Ecology needs more information to ascertain whether the proposed activities are consistent with the management program, the Federal Consistency Coordinator may request additional information from the applicant. A request for additional information that was not part of the submission requirements will not extend the deadline for completing review of the activity. When adequate protection against public disclosure exists, confidential and proprietary information necessary to make a decision on the consistency of the proposal should be provided at the agency's request.

Where an activity requires more than one federal license or permit, the applicant should, to the extent feasible, submit one consistency certification for all licenses or permits. The certification or accompanying information must list which permits it covers if it's intended to apply to more than one. To the extent possible, Ecology will concur or object to consistency certifications for multiple permits at one time. Until approved by Ecology, federal agencies may not approve federal permits to which Ecology has not concurred. If Ecology objects to the certification of some, but not all, those with which Ecology concurs may be federally approved.

### **State Decision and its Effect**

After Ecology reviews the certification, it concurs if the activity is consistent with the Program's enforceable policies. Concurrence is conclusively presumed in the absence of an objection within statutory time for review but Ecology will make every attempt to provide a concurrence at the earliest practical date.

Where the activity requires a permit or approval under an enforceable policy of this management program, Ecology will not concur with a certification until the permit or exemption is approved and the applicant complies with the Washington State Environmental Policy Act. If a permit or approval cannot be obtained during the consistency review period, Ecology may ask the applicant to withdraw the certification. If the certification is not withdrawn, Ecology may object to the certification.

Ecology will object to the applicant's certification if the proposed project is inconsistent with the program's enforceable policies. If Ecology objects to the applicant's consistency certification, Ecology will send the applicant, the federal agency, and the Director of the Office of Ocean and Coastal Resource Management (OCRM) a copy of its response objecting to the certification. Ecology's response will describe (1) how the proposed activity will be inconsistent with specific provisions of the management program, and (2) any alternative measures which, if adopted by the applicant, would allow the activity to proceed in a manner consistent with the management program. If the objection is based upon a finding that the applicant failed to supply information required, Ecology will describe the nature of the information requested and the necessity of having such information to determine whether the activity is consistent with the management program. The response shall also include a statement informing the applicant of his or her right to appeal the objection to the Secretary of Commerce.

Where changes to an activity will make it consistent with the management program, Ecology will negotiate with the applicant to develop modifications to the proposal that incorporate the necessary changes. Ecology will also consult with the federal licensing or permitting agency to determine if the modifications meet federal requirements. If the modifications cannot be negotiated, Ecology will object to the certification.

No license or permit shall be granted by a federal agency until Ecology has concurred with the applicant's certification. If Ecology fails to act within six months of receiving a complete consistency certification, including all necessary data and information, then Ecology's concurrence shall be presumed. If the Secretary of the U.S. Department of Commerce overrides Ecology's decision, the federal agency then can approve the license or permit. Federal agencies are not required to approve applications with which the state has concurred.

### **Public Notice**

The Coastal Zone Management Act, in 15 U.S.C. § 1456(c)(3)(A), and its implementing regulations, in 15 CFR § 930.61, require that public notice be given for consistency certifications for licensing or permitting activities. Notice will be given using the following methods:

1. For Section 404 permits, Section 10 permits and Section 404 Nationwide permits that require notice to the Corps, the Corps attaches a consistency certification notice to the Corps public notice. The Corps circulates this public notice.
2. For Section 404 Nationwide Permits that require individual CZMA concurrence where the application is made to Ecology, the regional CZM-401 contact circulates a public notice.
3. For Coast Guard permits, the Coast Guard attaches a CZMA certification notice to the Coast Guard public notice. The Coast Guard circulates this public notice.
4. For certifications for other permits, the applicant shall give notice. This notice may be included in a notice for a Shoreline Management Act permit, another permit or approval, or as a separate notice. This notice, whether combined or separate, must comply with the following requirements:
  - The public notice shall include a summary of the proposed activity.
  - The public notice shall include the location of the proposed activity sufficient so that a layperson may locate the activity. For example, the notice could include the street address and quarter section, section, township, and range in which the activity would be located.
  - The public notice shall say that the consistency certification and accompanying public information may be inspected at the appropriate Ecology office. The notice shall include the physical address of the Ecology office. The notice shall also give the name and address of a person or position that interested persons may contact for more information on the consistency certification. Ecology will supply this information at the applicant's request.
  - The public notice shall request that comments be submitted to Ecology and shall include a comment deadline. The deadline shall be no earlier than twenty-one days from the date of the publication. The notice shall include the address of the Ecology office that is to receive the public comments.
  - The public notice shall be published at least once in a newspaper of general circulation in the immediate area that is likely to be affected by the proposed activity.
  - A copy of the public notice shall be sent to any affected local governments, state agencies, Indian tribes, and federal agencies. Ecology may require the applicant to include certain agencies, organizations, or individuals.

- The public notice shall be published and mailed no later than 30 days after certification and all necessary data and information is submitted.
  - A copy of the affidavit of publication and an affidavit attesting to the fact the notice was mailed with a copy of the notice and the names and addresses of the persons and organizations to whom the notice was mailed shall be provided to Ecology no later than fifteen days after the notice was published.
5. Where an activity is likely to generate substantial public interest because the activity may affect a unique geographic area, commit or impact substantial coastal resources, may be complex or controversial, or because of other good cause; Ecology may require that notice be given to additional agencies, organizations, or individuals, be published in newspapers reaching a larger geographical areas, or give notice by other means likely to reach affected persons. 15 CFR § 930.61(b).

### **3. Activities which use Federal Funding**

State, local, or tribal government agencies seeking funding for all or part of an activity that affects the coastal zone must meet federal consistency requirements. Federal agencies cannot approve grants or loans for activities which are inconsistent with the Coastal Program. Federal assistance is provided under a federal program to an applicant agency through grants, contractual arrangements, loans, subsidies, guarantees, insurance, or other form of financial aid

The applicant agency for federal funding reviews the activity for compliance with the six enforceable policies and prepares a “*federal consistency certification*.” The certification describes the activity and whether the activity impacts coastal resources. If the activity impacts coastal uses or resources, a statement must be provided that the activity is compliant with the enforceable policies. For example, a federal agency has been approached to provide federal grant money for a housing project within one of the 15 coastal counties. Because the project may affect the coastal zone, consistency applies. The applicant submits her or his certification to Ecology. Ecology has six months from receipt to concur with or deny the certification. The applicant then informs the federal funding agency of Ecology’s decision.

### **Necessary Data and Information**

The request should include a summary of the purpose for which the federal assistance will be used. This summary shall include the federal funding agency, the location where any physical improvements will be constructed, and a vicinity map. A copy of the application or portions of the application containing this information may be used.

If during the review of the proposed project Ecology decides it needs more information to determine if the activities would be consistent with the management program, the Federal Consistency Coordinator may request

additional information from the applicant in writing. A request for additional information that was not part of the submission requirements will not extend the deadline for Ecology's review of the activity.

Where an applicant agency applies to more than one federal agency for assistance for the same activity, to the extent practicable, Ecology will review all applications at the same time. The applicant agency shall supply Ecology with a list of all financial assistance applications for the activity. If Ecology objects to the project proposal as to some applications and concurs to others, federal agencies may approve the federal assistance for activities with which Ecology concurs.

### **The State's Decision and its Effect**

If Ecology determines the grant application is consistent with the Washington State Coastal Zone Management Program, Ecology will concur with the proposed application. Ecology does not provide written concurrence unless specifically requested by federal funding agencies. Ecology can give verbal concurrence prior to the six months, if so requested. However, where the activity requires a permit or approval required by an enforceable policy of this management program, Ecology will not concur unless the permit or exemption is approved and the applicant complies with SEPA. If a permit or approval cannot be obtained during the consistency review period, Ecology may ask the applicant to withdraw the request and submit it at a later date. If the request is not approved, Ecology may object to the proposed activity.

Where changes to an activity will make it consistent with the management program, Ecology will negotiate with the applicant agency to see if the applicant is willing to modify the proposal and incorporate the necessary changes. Ecology will also consult with the federal agency to learn if the modifications meet federal requirements. If the modifications cannot be negotiated, Ecology may object to the proposed activity.

Ecology will object to a proposed activity if it is not consistent with the state's enforceable policies. See 15 CFR § 930.96. If Ecology objects to the proposed project, Ecology will send the applicant agency, the federal agency, and the Director of the Office of Ocean and Coastal Resource Management (OCRM) a copy of its response objecting to the proposed activity. Ecology's response will describe (1) how the proposed activity will be inconsistent with specific provisions of the management program, and (2) any alternative measures which, if adopted by the applicant, would allow the activity to proceed in a manner consistent with the management program. The response shall also include a statement informing the applicant agency of the agency's right to appeal the objection to the Secretary of Commerce. See 15 U.S.C. § 1456(d) and 15 CFR § 930.120 to 930.134.

If the objection is based upon a finding that the applicant failed to supply information requested in writing by Ecology, Ecology will describe the nature of the information requested and the necessity of having such information to determine the consistency of the federal activity with the management program.

The federal agency shall not approve the assistance application if Ecology objects. The federal agency should not delay processing the application while

waiting for Ecology's concurrence or objection. If Ecology does not respond within the time limit, including any extensions, Ecology's concurrence is presumed. If on appeal the Secretary of Commerce overrides Ecology's decision, the federal agency can approve the assistance. See 15 U.S.C. § 1456(d) and 15 CFR § 930.96(e). Federal agencies are not required to approve applications with which the state has concurred.

#### **4. Public Involvement for all Consistency Determinations**

Public involvement provisions for shoreline permits and some Corps permits are provided independently of the consistency process and are deemed adequate for the purposes of consistency. For projects not required to provide a public involvement process through shoreline or Corps permits, or for large, complex and controversial projects, Ecology has developed a separate public involvement process. This involves public notice, a twenty-one day public comment period, and potentially a public meeting or hearing. Notification is sent to interested parties based on the development of general and project-specific mailing lists.

#### **5. Dispute Resolution for Consistency Issues**

If Washington objects to a consistency determination, the federal agency can negotiate with the state or either party can seek mediation by the Office of Ocean and Coastal Resource Management or the Secretary of Commerce. The President of the United States might decide that the activity is in the paramount interest of the country, and thereby exempt a federal agency activity from consistency requirements.

If Washington objects to an applicant agency's consistency certification, the project proponent may appeal the State's objection to the Secretary of Commerce who may override the State's objection if the activity is consistent with the objectives of the CZMA or is otherwise necessary in the interest of national security. After the administrative appeal option is exercised, the decision may be reviewed in court.

Ecology may monitor activities after consistency review. If Ecology determines that an activity that was consistent as proposed is being carried out in a manner inconsistent with the management program, Ecology may request that the federal agency take corrective action. Similarly, if an activity that the federal agency or Ecology determined would not affect a land use, water use, or natural resource of the coastal zone is having an effect, Ecology can request corrective action.

#### **6. Regulatory Requirements in and out of the Coastal Zone**

Projects in counties outside of the coastal zone fall under CZMA consistency requirements only when they affect any land use, water use, or natural resource of the coastal zone, such as surface water quality or eel grass beds.

Even on federal lands which are excluded from the State's coastal zone, consistency review may be required for certain activities. A federal agency activity outside of the coastal zone must comply with the consistency requirements if the activity affects any land use, water use, or natural resource of the coastal zone.



Thus, federal activities on excluded federal lands that have coastal effects must comply with the consistency requirements and the enforceable policies of Washington's CZMP.

In addition, state and local permits may be required on excluded federal lands. Where state law provides that the permit applies and federal law other than the CZMA requires federal agencies to obtain such permits, activities on excluded federal land must obtain state or local government approval first. When in doubt about the application of coastal zone requirements, contact Ecology's federal Consistency Coordinator.

## **7. Consulting with Ecology**

The old saying, "an ounce of prevention is worth a pound of cure" is particularly applicable to the CZMA process and federal consistency. As such, Ecology encourages federal agencies and other parties requiring consistency review to consult with Ecology early in the process. This consultation can help parties identify the provisions of the Washington Coastal Zone Management Program applicable to the proposed activity. Early consultation helps structure activities so they are consistent with the management program and helps identify the steps needed to obtain a consistency agreement or concurrence, preventing delay. Early consultation can also identify opportunities for combining the CZMA consistency certification notice with other notices. At a party's request, Ecology will specify the enforceable policies it believes the applicant should address in its consistency certification and which Ecology will use in determining if the activity is consistency with the management program. Ecology's Federal Consistency Coordinator can arrange a consultation; use the number provided on the contact sheet in Appendix A. Ecology will also schedule meetings to discuss program requirements.

## ***Other SEA Program Activities***

While these activities are not directly funded through CZM funds, they constitute an integral part of the SEA Program's functioning. The activities could be compared to the Complementary Policies - that is, they play a supportive role in the administration of the WCZMP.

The SEA Program is lead for implementing the 1998 Watershed Planning Act (WPA), which addresses Washington's water resource, water quality, and habitat issues. (See the Complementary Policies section for more information) Ecology reviews local watershed plans and considers them the preferred path for managing water in that basin. The agency tracks and plans for the work that it has obligated itself to complete through the local plans. The Program helps carry out the Act by providing watershed leads for local planning efforts, providing technical and financial assistance to local planning units, and by characterizing watershed conditions. The SEA Program is actively involved in approximately thirty watersheds in the coastal zone.

As of 2000, the WPA funds fifteen Ecology employees to provide direct support and assistance to each of the planning units conducting watershed

planning (two additional staff are at WDFW and one at the Department of Health). Ecology's staff are serving as watershed leads for the planning units, providing guidance to planning units on a variety of issues such as water rights, development of water budgets, technical assistance on hydrology and water quality.

The Washington Conservation Corps (WCC) was established in 1983 to conserve, rehabilitate, and enhance the State's natural and environmental



resources while providing education opportunities and meaningful work experiences for Washington youth. The WCC creates partnerships and sponsorships with federal, state, and local agencies, private entities, and non-profit groups to perform watershed restoration projects throughout the state. Activities include wetland enhancement and maintenance, stream repair,

maintaining and constructing installing trails and fences, and stream enhancement. Crews also respond to emergencies such as wildfires, flooding, and oil spills.

Another SEA Program activity includes running the Permit Assistance Center which administers the Joint Aquatic Resource Permit Application (JARPA) program. Applicants for HPAs, SMA permits, exceedence of water quality standards, water quality certifications, and Corps Section 404 and Section 10 permits can use JARPA to expedite and streamline the permit process.

## 2. Grants to Local Governments and other Entities

Ecology provides two types of grants to local governments. First, Ecology administers a grant program that assists local jurisdictions with comprehensive planning for improving shoreline management within the state's coastal zone. Ecology passes approximately twenty percent of its federal 306 funds, or approximately \$425,000, to local governments. Local governments provide a match of fifty percent composed of in-kind services or non-federal funding. Coastal Zone Management Planning grants can be used for the following:

- Preparing **Shoreline Master Program amendments**, including public involvement and the review and approval processes necessary for local adoption. Planning efforts that integrate shoreline management with growth management comprehensive plans and regulations are given high priority.
- **Urban waterfront planning** that leads directly to more specificity in local master programs.
- **Special area management plans** directed towards resolving critical shoreline management concerns (i.e. dunes management, estuarine water quality, urban runoff control, etc.) or toward geographic areas presenting

difficult management problems or unique opportunities.

- **Innovative wetlands protection and education projects** that can be used as models by other local jurisdictions.
- **Public information and education programs** designed to enhance understanding of shoreline management policies and regulations, the permit and enforcement processes, or the natural systems of the coastal zone.
- **Site planning and design** for public access improvements, waterfront restoration, interpretative centers, and similar facilities.
- **Analyses of major coastal facility siting proposals**, which, because of their unusual size or location, have regional or statewide resource implications.

For example, Ecology funded an environmental training component for Realtors. Local education efforts also have trained volunteers to help shoreline landowners protect their property from erosion and to monitor county beaches. Grant funds have supported coastal inventories, such as a catalogue of Bainbridge Island's road end access points, which are used to update the shoreline plans.

306 Planning Grants often act as seed moneys to start work on acquisition and construction projects. Once designs are completed, local governments can get backing for construction from private money, local revenues, or other grant programs such as the companion Coastal Zone Management 306A grants.

The second type of local grants is the 306A Small Construction/Acquisition Project grants program, which helps local governments improve public access to shorelines. Approximately \$50,000 is available annually for distribution to local governments. These grants require documentation that must be approved by Office of Ocean and Coastal Resources Management. Projects funded with 306A money are generally small, simple facilities that provide public access to previously inaccessible shoreline areas. For example, access might currently be limited by a physical barrier, such as a steep bank where a ramp could be constructed to solve the access limitation. Grants are also used to protect threatened habitat and natural features and for the following projects:

- Development and acquisition projects that provide, preserve, or enhance public access to shorelines of the state which generally are not major parks, playgrounds, and the like;
- Acquiring wetlands which are identified as having value for preservation and which are designated by local governments as areas for preservation and restoration;
- Redeveloping degraded and/or under-used urban waterfronts, which will result in increased public use.

For example, a public access trail was developed in Port Townsend. The Jamestown S'Klallam tribe used grant funds to develop picnic and parking areas with an associated river trail. The tribe also used grant funds to acquire a

conservation easement for the trail. Kitsap County used grant funds to develop a recreational trail system connecting the shores of the upper Kitsap Peninsula. These are just a few examples of the types of projects funded.

Additionally, Ecology signed the first mitigation banking agreement for Payne Field in Everett. CZM grant funds will be used to develop interpretive, informational materials at the site for visitors.

### **3. Section 309 - Coastal Zone Enhancement Grants Program**

In 1990, Congress reauthorized the Coastal Zone Management Act adding the Section 309 Coastal Zone Enhancement Grants Program, and then expanded Section 309 in the 1995 CZMA reauthorization. Congress set aside special funding to encourage the states to improve their federally approved coastal zone management programs. A “program improvement” is defined as a new or amended law, regulation, or enforceable policy. Program improvements for the purposes of Section 309 are limited to one or more of the following nine specific improvement areas:

- Attaining increased opportunities for public access to coastal areas;
- Preventing or significantly reducing threats to life and destruction of property by eliminating development and redevelopment in coastal high hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise;
- Planning for the use of ocean resources;
- Protection, restoration, or enhancement of coastal wetlands, or creation of new coastal wetlands;
- Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources;
- Reducing marine debris entering the nation’s coastal and ocean environment by managing uses and activities that contribute to the entry of such debris;
- Preparing and implementing special area management plans for important coastal areas;
- Adoption of procedures and enforceable policies to help facilitate the siting of energy and government facilities which may be of greater than local significance;
- Enhance existing procedures and planning processes for siting marine aquaculture facilities while maintaining current levels of coastal resource protection (added in 1995).

In 1992, Ecology conducted the “Section 309 Assessment and Strategy” and identified five areas deserving improvements: 1) wetlands strategy; 2) coastal erosion management for Puget Sound; 3) public access strategy; 4) growth

management strategy to address cumulative and secondary impacts of growth; and 5) special area management planning. OCRM authorized section 309 improvement efforts for coastal erosion management and a growth management strategy.

The Puget Sound Coastal Erosion Management Study in a three-part effort addressing (1) the technically appropriate means of shoreline and bluff stabilization, (2) the adverse environmental effects of shoreline stabilization, and (3) the policy alternatives for shoreline stabilization management.

The growth management strategy to address cumulative and secondary effects of growth resulted in the consolidation, updating, and improvement of the procedural rules for implementation of the Shoreline Management Act into: 1) a single rule addressing general administration and procedures; 2) restructuring the permit application process and enforcement; and 3) creating and adopting a wetlands delineation manual.

In the 1997 second Assessment and Strategy, Ecology identified three areas suited for improvement:

### **1. Continued work on coastal erosion management for Puget Sound**

A follow-up study addressing “soft” approaches to Puget Sound beach erosion management (e.g. beach nourishment) was approved. As of 2000, these studies remained incomplete.

### **2. Continued work on growth management strategy to address cumulative and secondary effects of growth**

Since 1995 Ecology has been working to amend the Shoreline Master Program Guidelines Rule which regulates the preparation of local governments’ shoreline master programs.

### **3. Special area management planning for the Grays Harbor Estuary**

First adopted in 1986, the Grays Harbor Estuary Management Plan (GHEMP) was approved by OCRM as a part of Washington’s coastal zone management program in 1992. OCRM’s approval followed action by all Grays Harbor local governments (Grays Harbor County, plus the cities of Aberdeen, Cosmopolis, Hoquiam, Ocean Shores, and Westport) to incorporate pertinent elements of the GHEMP into their shoreline master programs. The 1997 - 1999 Grays Harbor Estuary Management Plan Task Force was disbanded without completing development of an amended GHEMP.

In September 2000, Ecology initiated the third Section 309 assessment and strategy development process established by OCRM.

#### 4. Section 6217 - Protecting Coastal Water Quality

In 1990, Congress passed the Coastal Zone Act Reauthorization Amendments amending and reauthorizing the CZMA. Section 6217 of that Act, entitled “Restoring Coastal Waters,” called for each coastal state to prepare a “Coastal Nonpoint Pollution Control Program” for approval by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). The coastal nonpoint programs were to develop and implement management measures for nonpoint source pollution in order to protect and restore coastal waters.

In seeking to build upon the technical expertise of water quality agencies and the land use management expertise of coastal management programs, Section 6217 called for close coordination of state and local water quality plans developed under the federal Clean Water Act and with state Coastal Zone Management Plans. The new programs are to serve as an update and expansion of the state resource management programs already operating under the Clean Water Act as they relate to land and water uses affecting coastal waters.

In addition, Congress listed several essential programmatic elements for the new coastal nonpoint programs:

1. Identifying land uses which may cause or contribute significantly to the degradation of coastal water quality;
2. Identifying critical coastal areas adjacent to coastal waters where the new management measures, in addition to those identified by EPA, will apply;
3. Describing management measures applicable to the above land uses and areas;
4. Providing technical assistance to local governments and the public for implementing the new additional management measures such as:
  - Developing ordinances and regulations
  - Technical guidance
  - Modeling to assess the measures’ effectiveness
  - Training
  - Financial incentives
  - Demonstration projects;



*Deschutes River*

*Photo - Tom Mark*

5. Public Participation; and
6. Administrative Coordination.

Under Section 6217, the Administrator of the Environmental Protection Agency, in consultation with other federal agencies, published guidance for specifying management measures for sources of nonpoint pollution in coastal waters.

Congress appropriated grant funds to the states to develop and implement their new Coastal Nonpoint Pollution Control Programs. The following is a description of Washington's Nonpoint plan:

The Coastal Zone Nonpoint Pollution Prevention Plan entitled "Washington's Nonpoint Strategy," revised in June 1996, and approved, with conditions, in June

One of the pivotal events of the 20<sup>th</sup> Century, World War II affected the way Americans viewed the environment, especially clean water. Millions of servicemen in Europe encountered, most for the first time, water that was too dirty to drink, fish and/or bathe in. A significant war effort was keeping the American troops supplied with clean water. Trucks hauled fresh water to troops from water purification plants in the rear.

Interestingly, it wasn't the war that destroyed Europe's water sources, but the centuries-old practices on farms and small shops that covered the continent's landscape. Returning soldiers soon lobbied both Congress and the states to prevent a recurrence here at home. Washington's Water Pollution Control Act was enacted in the last session of the war, followed by Congressional passage of the federal Water Pollution Control Act in 1948.

*Bill Green*

1998, is intended to meet the requirements of Section 6217 of the 1990 Coastal Zone Act Reauthorization Amendments. This strategy was superceded by the state's nonpoint plan entitled "Washington Water Quality Management Plan to Control Nonpoint Pollution, April 2000." EPA approved the plan as meeting the requirements of section 319 of the Federal Clean Water Act.

Washington's nonpoint strategy provides an overview of Ecology's new directions in managing nonpoint pollution, and how nonpoint pollution control fits into the agency's Watershed Approach to Water Quality Management. Discussion also covers the 56 Management Measures prescribed by the US Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) and how Washington is complying with them.

A mosaic of thirty-three different laws is presented, showing how each adds to the state's efforts to manage pollution. Current programs from various state and local agencies and groups are described. Elements from the Puget Sound Water Quality Management Plan, which are intended to assist in the management of nonpoint pollution, are also discussed.

Nonpoint source pollution is the largest remaining factor preventing the attainment of water quality standards in many locations across the state. In responding to this problem, Ecology evaluated its source programs and developed a strategy for improving their effectiveness. A key aspect to this strategy is Ecology's watershed approach to implementation, which builds on Washington's tradition of locally driven planning efforts and prioritization.

To address some key policy issues, Ecology created a Nonpoint Policy Advisory Committee (NPAC). Its members are representatives of tribes, industry groups (including shellfish, agricultural, and timber interests), local governments, environmental groups, and state and federal agencies. Members were asked to identify the themes they wanted to see reflected in the nonpoint strategy. They responded with five broad statements:

1. Have programs operate in a watershed context, with a structure that maximizes coordination and communication;
2. Focus funding so that it goes towards common goals and highest priorities instead of scattershot to different projects;
3. Have decisions based on good data, using reliable science;
4. Emphasize habitat for fish and shellfish; and
5. Implement programs by taking into account both the environmental and the economic impacts and benefits.

The nonpoint plan builds on previous successes and focuses on the following key characteristics: interagency cooperation; service orientation; enhanced assistance; targeted efforts; structured decision making in a watershed context; innovative tools; and enforcement backing. The strategy is the basis for a larger state planning process focused on resource protection, especially for salmon, shellfish, and groundwater.

In addition to previous analyses, Washington's nonpoint plan provides a more extensive look at nonpoint pollution by combining the knowledge and efforts of the twelve different state agencies responsible for nonpoint source control rather than just the efforts of Ecology. The plan identifies approximately 120 actions that the state will undertake to enhance nonpoint pollution control programs and improve water quality.

Ecology's vision is an integrated approach to that recognizes relative priorities on the federal, tribal, state, and local level and works to address the most important situations first. Various partnerships can be created to maximize the funding available to address and to optimize how it is allocated - partnerships that value and encourage educational programs, which can boost participation in voluntary nonpoint control programs. Building on this vision, enhancing the programs we have now, and periodically evaluating whether further changes need to be made, Washington can remain in the forefront of states with an aggressive approach to the nonpoint problem.





# Closing

We now have a fairly complete picture of Washington's coastal zone - its beauty, complexity, and vulnerability. We have imagined the stunning array of natural resources: from an active volcano to quiet stretches of sand dunes; from giant killer whales roaming the coastal waters to small brown bats living in the dense forests.

We have also considered the threats posed by human activities to our coastal resources. At times, these threats seem overwhelming. Exacerbating the existing situation is the projected population growth expected in Washington over the next few decades. More people living in the coastal zone will inevitably place increased pressure on our coastal resources.

By the middle of the 21st century, Washington's population is expected to double, adding the equivalent of twenty-nine cities the size of Tacoma to an already sizeable state. The Central Puget Sound is ground zero for that growth and its accompanying sprawl. In 1998, this region absorbed sixty-two percent of new residents and eighty-five percent of new jobs. Puget Sound numbers are expected to reach 4.1 million by 2020. It's a challenge now to provide space and natural resources for the current citizens of Washington. Providing the same natural resource availability to newcomers will be an extraordinary effort.

Increased population leads to increased development and places increasing strains on existing utilities, infrastructure, and natural resources. It will be a challenge just to provide an adequate supply of clean drinking water. Recreational



*View of the San Juans and Olympics from aboard a Washington State Ferry.  
Photo - Tim Ransom*

parks, beaches, and wilderness areas will suffer from overuse. The stores of natural resources will diminish, as will opportunities for quiet solitude in pristine environments.

People are attracted to Washington for its natural beauty and thriving economy. If we fail to take the necessary actions now to alleviate and eliminate some of the threats to our natural resources, Washington will no longer possess its undeniable allure.

The Coastal Zone Management Program plays a role in addressing some of these threats. It has the capacity to do more. It can engage people and foster alliances with interested citizens and others that play a role in maintaining Washington's environmental health and economic prosperity. The Program must reach out and coordinate with local governments - those on the front lines in the struggle to address competing interests and diminishing resources. However, only with the actions of interested citizens can the coastal program help attain sustainable solutions.

Ultimately, a sense of loss tugs at us, and we find ourselves seeking to fill a void that we struggle to identify. Perhaps we look to the salmon - a cultural icon and economic mainstay - for the answers. We wonder if we can afford what it will take to ensure that it not only survives, but also thrives. We are faced with choices - choices the implications of which extend beyond the impacts to our economy and to our personal enjoyment. Perhaps the most serious implication is what losing a species like the salmon means to the human species and to our future. Can we now move with the sense of urgency and commitment needed to “save the salmon,” thus, in turn, saving ourselves?

*How long have I been sleeping  
How long have I been drifting  
through the night  
How long have I been dreaming  
I could make it right  
If I closed my eyes and tried with  
all my might.*

Late for the Sky  
Jackson Browne, 1974



*Puyallup Children*

*Photo - Patrick Henry*

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## *Appendix A* - **Information Contacts**

Please contact the following persons for more information on specific aspects of Washington's Coastal Zone Management Program and the program's enforceable policies. Copies of the authorities and enforceable policies are also available from the Federal Consistency Coordinator.

At Headquarters Shorelands and Environmental Assistance Program:

Shorelands and Environmental Assistance Program Manager  
and Coastal States Organization Representative

**Gordon White**

Shorelands and Environmental Assistance Program  
Washington Department of Ecology  
PO Box 47600  
Olympia, WA 98504-7600  
(360) 407-6977 telephone  
(360) 407-6902 telefax  
gwhi46l@ecy.wa.gov

Coastal/Shorelands Section Manager

**Joe Witczak**

(360) 407-6628 telephone  
(360) 407-6902 telefax  
jwit46l@ecy.wa.gov

Watersheds, Wetlands, Floods Section Manager

**Neil Aaland**

(360) 407-7045  
(360) 407-6902 telefax  
naal46l@ecy.wa.gov

Environmental Coordination Section Manager

**Paula Ehlers**

(360) 407-6976  
(360) 407-6902 telefax  
pehl@ecy.wa.gov

Watersheds Coordinator

**Melissa Gildersleeve**

(360) 407-6548 telephone  
(360) 407-6902 telefax  
mgil46l@ecy.wa.gov

National Estuarine Research Reserve Program  
Padilla Bay National Estuarine Research Reserve

**Terence Stevens**, Reserve Director

(360) 428-1558 telephone

(360) 428-1491 telefax

tstevens@padillabay.gov

Coastal Zone Management Program  
Ocean Resources Management Act  
Outer Continental Shelf (OCS) Policy Coordinator and  
Coastal States Organization Alternate

**Therese Swanson**

(360) 407-6789 telephone

(360) 407-6902 telefax

tswa461@ecy.wa.gov

Federal Consistency Procedures Coordinator

**Linda Rankin**

(360) 407-6527 telephone

(360) 407-6902 telefax

lran461@ecy.wa.gov

Shoreline Management Act Policy

**Peter Skowlund**

(360) 407-6522

(360) 407-6902 telefax

psko61@ecy.wa.gov

Nationwide Permit Coordinator  
Clean Water Act Section 401 Certifications

**Loree Randall**

(360) 407-6068 telephone

(360) 407-6904 telefax

lora461@ecy.wa.gov

**Rick Vining** - Dredging Activities

(360) 407-6944 telephone

(360) 407-6902 telefax

rvin461@ecy.wa.gov

Washington State Environmental Policy Act

**Barbara Ritchie**

(360) 407-6922 telephone

(360) 407-6904 telefax

brit@ecy.wa.gov

Southwest Regional Office Section Manager:

**Gale Blomstrom**

(360) 407-0271 telephone

(360) 407-6305 telefax

gblo461@ecy.wa.gov

Northwest Regional Office Section Manager

**Jeannie Summerhays**

3190 160th Ave. SE

Bellevue, WA 98008-5452

(425) 649-7096 telephone

(425) 649-7098 telefax

jsum461@ecy.wa.gov

Northwest Straits Marine Conservation Initiative

**Tom Cowan**, Director

(360) 428-1558 telephone

(360) 428-1491

cowan@nwstraits.org

Section 404/Section 10 Permits and Section 404 Nationwide Permits

US Army Corps of Engineers

Seattle District

Regulatory Branch

PO Box 3755

Seattle, WA 98142-2255

(206) 764-3495 telephone

or

US Army Corps of Engineers

Portland District

Regulatory Branch

PO Box 2946

Portland, OR 97208-2946

Washington Clean Air Act

**Myron Saikewicz**

Air Quality Program

Washington Department of Ecology

PO Box 47600

Olympia, WA 98504-7600

(360) 407-6823



Washington State Energy Facility Site Evaluation Council  
Energy Facility Site Evaluation Council  
Washington State Energy Office  
PO Box 43165  
Olympia, WA 98504-3165  
(360) 956-2150

Puget Sound Water Quality Plan  
Puget Sound Water Quality Authority  
PO Box 40900  
Olympia, WA 98504-0900  
(360) 407-7300

Stormwater Management Manual for the Puget Sound Basin  
Water Quality Program  
Washington Department of Ecology  
PO Box 47600  
Olympia, WA 98504-7600  
(360) 407-6614

US Coast Guard Permits:  
(Bridges and Causeways over Navigable Waters; Deepwater Port Permits;  
Anchorage and Layup Nominations)  
Commander, 13th Coast Guard District  
Aides to Navigation and Waterways  
Management Branch  
Attention: **John Mikesell**  
915 Second Avenue  
Seattle, WA 98174-1067  
(206) 220-7270

U.S. Army Corps of Engineers  
(Rivers and Harbors Act, Clean Water Act)  
Regulatory  
Attn: County in which proposed project is located  
P.O. Box 3755  
Seattle, WA 98124  
(206) 764-3495

## *Appendix B* - **Glossary**

**Accretion:** The accumulation of (beach) sediment, deposited by natural fluid flow processes.

**Agree:** Ecology's decision that a "federal activity" is "consistent to the maximum extent practicable" with the federally approved Washington State Coastal Zone Management Program.

**Air Pollution Control Authority (APCA):** A multi-county special purpose local government which administers federal and state air pollution control laws and regulations within the jurisdictions it covers.

**Ambient Air Quality:** Ambient air means the surrounding outside air. WAC 173-403-030(7). Ambient air quality is the level of cleanliness in the surrounding outside air throughout a community.

**Applicant:** See the definition of "federal license or permit" below.

**Applicant Agency:** See the definition of "federal assistance" below.

**Authorities:** The constitutional provisions, laws, and other legally enforceable documents that contain or authorize the development of the enforceable policies Washington uses to manage the coastal zone. The Washington State Coastal Zone Management Program includes the following program specific authorities: the Shoreline Management Act, the Washington State Environmental Policy Act (SEPA), the Ocean Resources Management Act, the Clean Water Act, the Clean Air Act, and the Washington State Energy Facility Site Evaluation Council (EFSEC) law.

**Beach:** (1) A deposit of non-cohesive material (e.g. sand, gravel) situated on the interface between dry land and the SEA (or other large expanse of water) and actively "worked" by present-day hydrodynamics processes (i.e. waves, tides and currents) and sometimes by winds. (2) The zone of unconsolidated material that extends landward from the low water line to the place where there is marked change in material or physiographic form, or to the line of permanent vegetation. The seaward limit of a beach low water line. a beach includes foreshore and backshore. (3) (SMP) The zone of unconsolidated material that is moved by waves, wind and tidal currents, extending landward to the coastline.

**Certification (or Consistency Certification):** A statement submitted by an application for a federal license, permit, grant, loan or Outer Continental Shelf (OCS) plan stating that the proposal is consistent with the Washington State Coastal Zone Management Program. Certifications may need to be accompanied by supporting information. Please see Appendix E for details.

**Coast Line:** The line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters. Source: The Submerged Lands Act, 43 U.S.C. § 1301(c) (1982).

**Coastal zone:** The land-sea-air interface zone around continents and islands extending from the landward edge of a barrier beach or shoreline of coastal bay

to the outer extent of the continental shelf.

**Coastal Zone Counties:** Washington's 15 coastal zone counties are: Clallam, Grays Harbor, Island, Jefferson, King, Kitsap, Mason, Pacific, Pierce, San Juan, Skagit, Snohomish, Thurston, Wahkiakum, and Whatcom counties.

**Coastal Zone (CZ):** Washington's Coastal Zone is composed of (1) the 15 coastal and (2) all lands and waters from the coast line seaward for three geographical miles.

**Coastal Zone Management Act (CZMA):** The Coastal Zone Management Act of 1972, as amended. 16 U.S.C. § 1451 et seq.

**Coastal Zone Management Program (CZMP):** The federally approved Washington State Coastal Zone Management Program.

**Concurrence:** Ecology's decision that a proposed federal license, permit, grant, loan, or Outer Continental Shelf (OCS) plan and any activities that will be undertaken as a result of such approval are consistent with the federally Washington State Coastal Zone Management Program.

**Consistency Determination (or Determination):** A federal agency's written conclusion that a "federal activity" is consistent to the maximum extent practicable with the Washington State Coastal Zone Management Program.

**Consistent:** To be consistent, an applicant proposing an activity, use, development, or project must (i) comply with all applicable enforceable policies of the federally approved Washington State Coastal Zone Management Plan, (ii) obtain all required permits, licenses and approvals, (iii) pay any required fees and post any required bond, insurance, or evidence of financial responsibility, and (iv) give adequate consideration to any advisory policies.

**Consistent to the Maximum Extent Practicable:** The term "consistent to the maximum extent practicable" describes the requirement that "federal activities," including development projects, within or outside the coastal zone that affect any land use, water use, or natural resource of the Washington Coastal Zone be fully consistent with the federally approved Washington State Coastal Zone Management Program unless compliance is prohibited based upon the requirements of existing law applicable to the federal agencies' operations. Source: Coastal Zone Management Regulations, 15 CFR § 930.32(a).

**Disagree:** Ecology's decision that a "federal activity" is not "consistent to the maximum extent practicable" with the Washington State Coastal Zone Management Plan.

**Ecology:** The State of Washington Department of Ecology.

**Enforceable Policies:** State policies which are legally binding and enforceable through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a state exerts control over private and public land and water uses and natural resources of the coastal zone. Source: The Coastal Zone Management Act, 16 U.S.C. § 1453(6a).

**Erosion:** Wearing away of the land by natural forces. On a beach, the carrying away of beach material by wave action, tidal currents or by deflation. (2) (SMP) The wearing away of land by the action of natural forces.

**Estuary:** (1) A semi-enclosed coastal body of water which has a free connection with the open sea. The seawater is usually measurably diluted with freshwater. (2) The part of the river that is affected by tides. (3) (SMP) The zone or area of water in which freshwater and saltwater mingle and water is usually brackish due to daily mixing and layering of fresh and salt water.

**Excluded Federal Lands:** Land or water areas which are not a part of the coastal zone because the federal government owns, leases, holds in trust or otherwise has sole discretion to determine their use.

**Federal Activity:** Any functions performed by or on behalf of a federal agency in the exercise of its statutory responsibilities. The term “federal activity” excludes issuing a federal license or permit (see 15 CFR §§ 930.50-930.66 or their successors), granting federal assistance to an applicant agency (see 15 CFR §§ 930.90-930.100 or their successors) or leasing activities for Outer Continental Shelf oil and gas under 16 U.S.C. § 1456(c)(3)(b) (see 15 CFR §§ 930.70-930.86 or their successors). Source: 15 CFR §§ 930.31 and 930.33(b)(2).

**Federal Assistance:** Assistance provided under a federal program to an applicant agency through grant or contractual arrangements, loans, subsidies, guarantees, insurance, or other form of financial aid. An applicant agency is any unit of state or local government, including special districts. Source: 15 CFR §§ 930.91-930.92.

**Federal Development Project:** A “federal activity” involving the planning, construction, modification, or removal of public works, facilities, or other structures, and the acquisition, utilization, or disposal of land or water resources. Source: 15 CFR § 930.31(b).

**Federal License or Permit:** Any authorization, certification, approval, or other form of permission which any federal agency is empowered to issue to an applicant. The term also includes the following types of renewals and major amendments which affect any land use, water use, or natural resource of the coastal zone: (i) Renewals and major amendments of federal licenses and permits not previously reviewed by the state agency; (ii) Renewals and major amendments of federal licenses and permits previously reviewed by the state agency which are filed after and are subject to management program amendments not in existence at the time of the original state agency review; (iii) renewals and major amendments of federal licenses and permits previously reviewed by the state agency which will cause coastal zone effects substantially different than those originally reviewed by the state agency. **Source: 15 CFR § 930.51.** For purposes of federal licenses and permits, the term “applicant” means any individual, public or private corporation, partnership, association, or other entity organized or existing under the laws of any state, or any state,

regional, or local government, who files an application for a federal license or permit to conduct an activity affecting the coastal zone. 15 CFR § 930.52. As provided by 15 CFR § 930.52, the term applicant does not include a federal agency applying for a federal license or permit.

**Floodway:** Those portions of the area of a river valley lying streamward from the outer limits of a watercourse upon which flood waters are carried during periods of flooding that occur with reasonable regularity, although not necessarily annually, said floodway being identified, under normal condition, by changes in surface soil conditions or changes in types or quality of vegetative ground cover condition. The floodway shall not include those lands that can be reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state.

**Jetty:** (1) On open seacoasts, a structure extending into a body of water to direct and confine the STREAM or tidal flow to a selected channel, or to prevent shoaling. Jetties are built at the mouth of a river or entrance to a bay to help deepen and stabilize a channel and facilitate navigation. (2) (SMP) A structure usually projecting out into the sea at the mouth of a river for the purpose of protecting a navigational channel, a harbor or to influence water currents.

**Lead Agency:** Also known as the SEPA lead agency. The local government or state agency with the main responsibility for complying with the Washington State Environmental Policy Act's (SEPA) procedural requirements.

**Littoral:** (1) Of, or pertaining to, a shore, especially a seashore. (2) (SMP) Living on, or occurring on, the shore.

**Littoral drift:** (1) The sedimentary material moved in the littoral zone under the influence of waves and currents. (2) (SMP) The mud, sand, or gravel material moved parallel to the shoreline in the nearshore zone by waves and currents.

**Management Program:** The federally approved Washington State Coastal Zone Management Program.

**Minerals Management Service (MMS):** The U.S. Department of Interior's Minerals Management Service.

**Nonattainment Area:** A geographic area that does not comply with a federal Clean Air Act ambient air quality requirement for at least part of the year.

**Objection:** Ecology's decision that a proposed federal license, permit, grant, loan, or Outer Continental Shelf (OCS) plan and any activities that will be undertaken as a result of such approval are inconsistent with the federally Washington State Coastal Zone Management Program.

**Outer Continental Shelf (OCS):** Federal law defines the outer continental shelf (OCS) as all submerged lands under the ocean which are more than three geographical miles from the coast line where the subsoil and seabed appertain to the United States and are subject to its jurisdiction and control. The seaward limit of jurisdiction for the continental shelf is generally 200 miles. Source: 43 U.S.C. § 1331(a).

**Outer Continental Shelf (OCS) Plan:** Any plan for the exploration or development of, or production from, any area which has been leased under the Outer Continental Shelf Lands Act (43 U.S.C. § 1331 et seq.), and the regulations under the Act, which is submitted to the Secretary of the Interior or his or her designee. The Minerals Management Service is currently the Secretary's designee. Source: 15 CFR § 930.73(a).

**Section 401 Certification:** Section 401 of the Federal Water Pollution Control Act (Clean Water Act) requires that applicants for federal licenses or permits for any activity that may result in a discharge into navigable waters shall obtain a certification from the state in which the discharge will originate that the discharge will comply with sections 301, 302, 306, and 307 of the Federal Water Pollution Control Act. This certification is made by Ecology for discharges that will originate in the Washington State. Source: WAC 173-225-010.

**Shorelands or shoreland areas:** Those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred two hundred feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of the SMA; the same to be designated as to location by the department of ecology.

**Shorelines:** All of the water areas of the state, including reservoirs, and their associated shorelands, together with the lands underlying them; except (i) shorelines of statewide significance; (ii) shorelines on segments of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the shorelands associated with such upstream segments; (iii) shorelines on lakes less than twenty acres in size and shorelands associated with such small lakes. Source: RCW 90.58.030(2)(d).

**Shorelines of the State:** The total of all shorelines and shorelines of state-wide significance within Washington State. Source: RCW 90.58.030(2)(c).

**Shoreline of State-wide Significance:** The following shorelines of the state:

- (i) The area between the ordinary high water mark and the western boundary of the state from Cape Disappointment on the south to Cape Flattery on the north, including harbors, bays, estuaries, and inlets;
- (ii) Those areas of Puget Sound and adjacent salt waters and the Strait of Juan de Fuca between the ordinary high water mark and the line of extreme low tide as follows:

*(A) Nisqually Delta—from DeWolf Bight to Tatsolo Point,*

*(B) Birch Bay—from Point Whitehorn to Birch Point,*

*(C) Hood Canal—from Tala Point to Foulweather Bluff,*

*(D) Skagit Bay and adjacent area—from Point Brown to Yokeko Point,  
and*



*(E) Padilla Bay—from March Point to William Point;*

(iii) Those areas of Puget Sound and the Strait of Juan de Fuca and adjacent salt waters north to the Canadian line and lying seaward from the line of extreme low tide;

(iv) Those lakes, whether natural, artificial, or a combination thereof, with a surface acreage of one thousand acres or more measured at the ordinary high water mark;

(v) Those natural rivers or segments thereof as follows:

*(A) Any west of the crest of the Cascade range downstream of a point where the mean annual flow is measured at one thousand cubic feet per second or more,*

*(B) Any east of the crest of the Cascade range downstream of a point where the annual flow is measured at two hundred cubic feet per second or more, or those portions of rivers east of the crest of the Cascade range downstream from the first three hundred square miles of drainage area, whichever is longer;*

(vi) Those shorelands associated with (i), (ii), (iv), and (v) above. Source: RCW 90.58.030(2)(e).

**Shoreline management:** The development of strategic, long-term and sustainable and land-use policy within a sediment cell.

**Shoreline Management Act (SMA):** The Shoreline Management Act of 1971 as amended. RCW 90.58.

**Shoreline Master Program (SMP) or master program or master plan:** A comprehensive use plan for a described area, and the use regulations together with maps, diagrams, charts, or other descriptive material and text, a statement of desired goals, and standards developed in accordance with the policies enunciated in RCW 90.58.020. Source: RCW 90.58.030(3)(b).

**Shoreline Permit:** A substantial development permit, conditional use permit, or variance approved under the State of Washington Shoreline Management Act. RCW 90.58.

**Special Area Management Plan (SAMP):** A comprehensive plan providing for natural resource protection and reasonable coastal-dependant economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. Source: 16 U.S.C. § 1453(17).

**State Environmental Policy Act (SEPA):** The Environmental Policy Act of 1971, as amended. RCW 43.21C.

**Subsidence:** Sinking or downwarping of a part of the earth's surface.

**Tsunami:** A large, high-velocity wave generated by displacement of the sea floor (such as sudden faulting, landsliding, or volcanic activity); also called seismic

sea wave. Commonly misnamed tidal wave.

**Wetlands:** Areas that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland 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 nonwetland areas to mitigate the conversion of wetlands.





## *Appendix C. -*

# **The National Requirements of the Coastal Zone Management Act**

The following is a reference that demonstrates how Washington meets the requirements of the CZMA. Before NOAA can approve a state's program, a state's program must contain certain elements that illustrate how the state is complying with the CZMA.

1. Identify coastal zone boundaries subject to the management plan  
Please see Chapter 2, Section A for a legal description and a map of the coastal zone boundaries.
2. Inventory and designate areas of particular concern in the coastal zone  
Please see Chapter 2, Section D.
3. Describe the planning process for siting energy facilities  
Please refer to Chapter 5, Section A 2 for a description of the Energy Facilities and Site Evaluation Council
4. The organizational structure implementing the management program  
Please refer to Chapter 5, Section A 1 for a full description of how Ecology is organized and how it primarily implements Washington's Coastal Zone Management Program through the Shorelands and Environmental Assistance Program.
5. How the State exerts control over the land and water uses  
Please refer to Chapter 5 Section A 2 for a description of Washington's authorities and enforceable policies.
6. Broad guidelines on priority of uses in particular areas, including those uses of lowest priority.
7. Permissible land uses and water uses within the coastal zone, which have a direct and significant impact on the coastal waters.  
These two national requirements are addressed through the implementation of the Shoreline Management Act. See Chapter 5, Section A 2.
8. Describe a planning process for assessing the effects of, and studying and evaluating ways to control or lessen the impact of, shoreline erosion, and to restore areas adversely affected by such erosion.  
Ecology's approach has not been to "control" erosion, which is a natural process; rather, the efforts have been focused on assisting local governments to plan for the impacts of erosion. There must be a balance between competing interests: the desires of private property owners and

local government to protect property; and the need to mitigate the impacts from structures intended to “stop” erosion. In part, this is done through SMA policies and state guidelines require that the impact of natural hazards be considered during the preparation, review, and approval of shoreline master programs. The programs require consideration of erosion, flooding, geological hazards, and natural protective features including beaches, dunes, and wetlands.

Another effort was the Coastal Erosion Management Study (1992-1995), which addressed the adverse effects of widespread shoreline armoring for erosion control in Puget Sound. The results of the study indicated that shoreline retreat in Puget Sound is an interactive process of periodic bluff landsliding and subsequent shoreline erosion. The recommendations for integrated management measures, including greater reliance on land use practices such as building setbacks and “softer” approaches to erosion control are yet to be fully implemented. Chapter 4, Section B 3 includes a discussion of erosion and the Southwest Washington Coastal Erosion Study.

9. Define “beach” and describe the planning process for the protection of, and access to, public beaches and other public coastal areas of environmental, recreational, historical, aesthetic, ecological, or cultural value.

A beach can be technically defined as noncohesive material affected by wave action along a body of water. There are many types of beaches, composed of particles of different sizes and subject to varying degrees of exposure to the surf. A beach may consist of sand, mud, shingle, shells or shell fragments, or a mixture of these materials. Chapter 2, Section C includes a discussion of the types of beaches in Washington.

SMA policies and state guidelines requires protection of the public’s right to enjoy the shorelines and contains a preference for public access improvements as well as new developments that provide recreational opportunities. Shoreline master programs include provisions to preserve and enlarge recreational and public access opportunities to varying degrees depending on the local government. Ecology has recommended shoreline master program policies and regulations that may be used as examples in developing a local master plan. Once incorporated into a shoreline master plan, these recreational and public access policies become criteria for permit approvals. Please refer to Chapter 5, Section A 2 for a discussion of the SMA.

## *Appendix D* – **Authorities & Enforceable Policies**

The following discussion includes additional information on the six laws that constitute the authorities of Washington’s CZMP. Those provisions of the authorities that “exert control over private and public land and water uses and natural resources of the coastal zone” are also enforceable policies. Following each discussion is a list of regulations (Washington Administrative Code) pertaining to each law that OCRM as approved as enforceable policies:

### **1. Shoreline Management Act - Chapter 90.58 RCW**

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In 1969, the Washington State Supreme Court decided *Wilbour v. Gallagher* (462 P.2d 232), commonly known as the “Lake Chelan Case.” Suddenly, shoreline legislation looked like a very good idea. Some action was necessary to clarify the relationship of the public trust doctrine, riparian rights, and navigability in Washington State as well as to coordinate haphazard coastal development. Two proposals were submitted to the people in the 1972 general election. The Shoreline Management Act of 1971 succeeded and became the foundation for Washington’s Coastal Zone Management Program.

#### **Shoreline Master Programs**

SMA guidelines provide a uniform basis throughout the state for applying policies and use regulations to different shoreline locations. The guidelines suggest four categories into which particular shoreline areas will fit: natural, conservancy, rural, and urban. These “environmental designations” are based on the existing development pattern, the biophysical capabilities, and the goals of the local citizens. Some local programs have more than the basic four classifications while some have only three; it depends upon the character and diversity of the shorelines in that jurisdiction.

The categorization system encourages uses in a particular environment, which enhance the character of the shoreline and regulates activities according with local goals and objectives. The system results in the superimposition of an overall environment class over local planning and zoning along the shorelines.

The Natural Environment is intended to preserve and restore those natural resource systems existing relatively free from human influence. The outstanding characteristic of this environment is natural or cultural features valuable for their natural or original condition and relatively intolerant of intensive human use. Activities that degrade or change the natural characteristics in these areas are restricted. Because of its restrictive nature, the Natural Environment designation has been used sparingly in the state, especially on privately owned shorelines.

The Conservancy Environment is intended to protect, conserve, and manage existing natural resources and valuable historic and cultural areas in order to

ensure a continuous flow of recreational benefits to the public and to achieve sustained natural resource use. The Conservancy designation is suitable for those areas intended to maintain their existing character with the preferred uses non-exploitative of the physical and biological resources of the area. Examples of appropriate uses include outdoor recreational activities, sustained-yield timber harvesting, passive agricultural uses such as pasture and range lands and other related uses and activities. Areas with steep slopes, those prone to flooding, and those which cannot provide adequate water supply or sewage disposal are best designated as Conservancy environments.

The Rural Environment is intended for those areas characterized by intensive agricultural and recreational uses and those especially capable of supporting such uses. Those areas having high potential for such uses can be set aside for future needs and can be used to alleviate pressures from urban expansion. New developments in the Rural environment should reflect the area's character by limiting residential density, and providing permanent open space. Adequate building setbacks from the shoreline should be maintained to prevent resource destruction. Public recreation facilities that minimize conflicts with agricultural activities are recommended for the Rural environment.

The Urban Environment is intended for areas of high-intensity land use including residential, commercial, and industrial development. Shorelines planned for future urban expansion should have few biophysical limitations for urban activities and contain few characteristics that would point to a different environmental designation. Because shorelines suitable for urban use are limited, development within already developed areas and water-dependent industrial and commercial uses are preferred. Many local shoreline master programs give priority to public visual and physical access to the water. Industrial and commercial facilities are designed to permit pedestrian waterfront activities.

## **SMA and public participation**

Under the CZMA, management programs must establish methods of timely and effective notice and opportunities for public and local government participation in coastal management decision making. In Washington, public notice and comment periods are required of Ecology for permit consistency certifications, shoreline permits, and both Clean Air Act and Clean Water Act permits. Local governments also incorporate public notices, public hearings, and public comment periods into shoreline master programs and program amendments they develop. Ecology houses a permit assistance center established by RCW 90.60, which educates the public on the permitting process and can coordinate when multiple permits are required for a project.

The CZMA obliges states to continue consultation, coordination, and consideration of the views of federal agencies affected by state programs. To this end, the SMA and implementing regulations require consultation with federal agencies in the preparation of shoreline master programs and amendments. Federal agency plans and studies must also be considered during periodic review of

the program. Informally, local government and Ecology regularly consult with federal agencies, often with respect to particular projects and federal permitting decisions.

### The Shorelines Hearings Board

To aid the courts in the anticipated increase in shoreline litigation resulting from the Act, the legislature created the quasi-judicial Shorelines Hearings Board. The Board provides an avenue of review for those aggrieved by a local government permit decision and for local governments opposing regulations and guidelines adopted by Ecology. The SHB has played a significant role in formulating policy and in resolving conflicts relating to the SMA.

The six-member SHB consists of three members of the Pollution Control Hearings Board, the Commissioner of Public Lands and one representative from the Association of Washington Cities and from the Association of Washington Counties. The SHB is recognized as one of the nation’s most successful administrative appeal bodies. The Board presides over a judicial process providing an impartial body with natural resource expertise. Persons aggrieved over an SHB decision may appeal to the state Superior court.

WAC 173-15	Permits for Oil or Natural Gas Exploration Activities Conducted from State Marine Waters
WAC 173-16	Shoreline Management Act Guidelines for Development of Master Programs
WAC 173-18	Streams and Rivers Constituting Shorelines of the State
WAC 172-20	Lakes Constituting Shorelines of the State
WAC 172-22	Designations of Wetlands Associated with Shorelines
WAC 173-26	State Master Program Approval/Amendment Procedure
WAC 172-27	Shoreline Management Permit and Enforcement Procedures

## 2. THE STATE ENVIRONMENTAL POLICY ACT - Chapter 43.21C RCW

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The Washington State Environmental Policy Act (SEPA) also forms part of Washington’s Coastal Zone Program. SEPA requires environmental review for projects that need local government or state agency approval. This includes applications for shoreline permits or variances. SEPA exempts certain smaller projects, such as a residential building with fewer than four housing units constructed on uplands. The exemptions can be found in WAC 197—11-305 and WAC 197-11-800 through 197-11-880. Ecology reviews and comments on documents prepared in accord with SEPA. These comments are one method Ecology uses to address coastal zone issues. SEPA covers the entire coastal zone, allowing Ecology to manage areas that are not within the jurisdiction of the SMA but that still fall within the coastal zone. For example, Ecology can recommend storm water management measures in comments on a SEPA document for an

activity outside shoreline jurisdiction to protect the water quality within the coastal zone.

SEPA contains both objectives and procedural requirements. In RCW 43.21C.020, the legislature called for state agencies to do the following: fulfill their responsibilities as trustees for succeeding generations; ensure all Washingtonians safe, healthful, productive and aesthetically and culturally pleasing surroundings; attain the range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; preserve historic, cultural and natural aspects of our national heritage; maintain, wherever possible, an environment which supports diversity and variety of individual choice; achieve a balance between population and resource use that will permit a high standard of living and a wide sharing of life's amenities; enhance the quality of renewable resources and approach the maximum attainable recycling of non-renewable resources.

The legislature also recognized that each person has a fundamental and inalienable right to a healthful environment and the accompanying responsibility to contribute to the preservation and enhancement of the environment. The legislature provided that the policies, regulations, and laws of Washington shall be interpreted and administered in accordance with these objectives to the fullest extent possible.

To achieve these objectives, SEPA grants all local governments and state agencies supplemental authority to condition or deny permits as necessary to protect the environment. Local and State agencies must review the environmental impacts of activities that require their approval in accord with procedural requirements designed to implement the directives above. These procedural requirements are contained in the SEPA Rules, Chapter 197-11 WAC.

SEPA environmental review is conducted by the lead agency after an applicant completes an environmental checklist (a standard form in WAC 197-11-960). The lead agency can issue a determination of nonsignificance (DNS), or a determination of significance (DS). A DNS means the project will probably not have a significant adverse impact on the environment. If changes to a project are necessary so the project will not have a probable significant adverse impact, the lead agency can issue a mitigated DNS incorporating those conditions. Either DNS allows the agencies to approve the activity without further environmental review.

Where the activity will have a probable significant adverse environmental effect, an environmental impact statement (EIS) must be prepared. This involves three steps. First, the lead agency issues a DS/scoping notice. The scoping notice gives interested members of the public, governmental agencies and Indian tribes the opportunity to identify issues that should be addressed in the EIS. Second, a draft EIS is prepared. The public, local governments, state and federal agencies, and Indian tribes then have thirty days to review and comment on the draft EIS during which time a public hearing or meeting may also be held. Third, a final EIS is prepared that responds to comments on the draft.

The EIS describes the proposal and reasonable alternatives, the affected environment, the impacts of the proposal and the alternatives, possible conditions to lessen the impacts (mitigation measures), and any unavoidable adverse environmental impacts. The public agencies that have the responsibility for deciding whether to allow this activity then use the final EIS when making permit decisions. Agencies may use SEPA supplemental authority to condition a proposal when the SEPA document identifies specific adverse environmental impacts. An agency may also use SEPA authority to deny a proposal if the final EIS identifies significant adverse environmental impacts that cannot be reasonably mitigated.

Some projects may require compliance with both SEPA and the National Environmental Policy Act (NEPA) since approvals may be required from both a federal agency and a state or local agency. In these instances, SEPA encourages a combined review process and the issuance of a single document that would meet both laws' requirements. If this is impossible, the state or local agency may wait until the appropriate NEPA document is issued (environmental assessment or EIS) and adopt the NEPA document to meet SEPA requirements. The state or local agency must evaluate the NEPA document to ensure that it provides sufficient environmental analysis to meet SEPA requirements. If it is adequate, the state or local agency can adopt the NEPA document to reduce duplication and streamline the permit process. Agency decisions on SEPA can be appealed to the Washington State Shorelines Hearing Board as part of an appeal of a shoreline permit. Even where a shoreline permit is involved, the parties can request the Shorelines Hearings Board as a forum. SEPA appeals can also be filed in State Superior Court.

WAC 197-11 SEPA Rules  
WAC 173-802 SEPA Procedures

### **3. OCEAN RESOURCES MANAGEMENT ACT - Chapter 43.143 RCW**

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Pursuant to ORMA, uses or activities that require federal, state, or local government permits or other approvals and that will adversely impact renewable resources, marine life, fishing, aquaculture, recreation, navigation, air or water quality, or other existing ocean or coastal uses, may be permitted only if the criteria below are met or exceeded:

1. There must be a significant local, state, or national need for the activity;
2. There is no reasonable alternative to the activity;
3. The activity will likely cause no long-term, significant adverse impacts on coastal or marine resources and uses;
4. All reasonable steps are taken to avoid and minimize adverse environmental impacts;



5. Special protection must be provided for the marine life and resources of the Columbia River, Willapa Bay, Grays Harbor, and the Olympic National Park;
6. All reasonable steps are taken to avoid and minimize adverse social and economic impacts of the activity;
7. Compensation must be provided to mitigate adverse impacts to coastal resources and uses;
8. Plans must be developed to rehabilitate the site after the activity is completed; and
9. The activity must comply with all applicable local, state, and federal laws and regulations.

In 1991, Ecology adopted Ocean Use Guidelines (WAC 173-16-064) to implement ORMA. The Guidelines are used to manage ocean uses and serve as the basis for evaluation and modification of local shoreline master programs. Ocean uses are activities or developments involving renewable and/or nonrenewable resources that occur on Washington's coastal waters and included their associated offshore, nearshore, inland marine, shoreland, and upland facilities and the supply, service, and distribution activities, such as crew ships, circulating to and between the activities and developments. Ocean uses involving nonrenewable resources include such activities as extraction of oil, gas and minerals, energy production, disposal of waste products, and salvage. Ocean uses that generally involve sustainable use of renewable resources include commercial, recreational, and tribal fishing, aquaculture, recreation, shellfish harvesting, and pleasure craft activity.

WAC 173-26-(Part V of new guidelines) old 173-16-064 new is 360

#### **4. CLEAN WATER ACT - Chapter 90.48 RCW**

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The CZMA incorporates the requirements of the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251 et seq.), into Washington's Coastal Zone Management Program. The U.S. Environmental Protection Agency (EPA) has delegated administration of the Federal Water Pollution Control Act to Ecology. Washington also adopted a similar state law, the Water Pollution Control Act (Chapter 90.48 RCW).

The water pollution control program, based upon these laws, requires permits for commercial and industrial uses that discharge to ground waters, surface waters, and, under certain circumstances, municipal treatment systems. Permits are also required for certain non-point discharges. Ecology requires public notice for water pollution control permit applications. Further, members of the public can request a public hearing on an application.

For most permits, the discharge limits in the permit are based on three sets of standards. First, the State Water Pollution Control Act requires that discharges be treated with all known and reasonable methods. At a minimum, this requires that federal technology-based treatment standards be met. Second, discharges must not result in a violation of state water quality criteria and standards. This may result in requirements for higher levels of treatment. The water quality standards can never authorize a level lower than required by the first standard. Third, if the water body into which the effluent will be discharged has a better water quality than the state water quality standards require, Ecology will usually set the permit requirements high enough to prevent degradation of the receiving body's water quality. Where a discharge involves toxic materials, Ecology will condition the permit to require control of toxic discharges.

To enforce the permit standards, operators must report on whether they are following the permit requirements. Ecology can conduct reasonable inspections and issue penalties for violations. Persons who violate the Water Pollution Control Act and cause natural resource damages are liable for those damages. Dischargers of petroleum products, in particular, are strictly liable for damages that result from unpermitted discharges, including damages from oil spills. Liability extends to public and private property, personal injuries, and any plant and animal life harmed. The discharger must clean up the spill and indemnify the state for clean up costs incurred. Permits and penalties can be appealed to the Washington State Pollution Control Hearings Board.

The state nonpoint program governs non-permitted discharges. The nonpoint program includes agricultural operations, forestry, recreation, and urban sources of pollution such as roads and onsite sewer systems. The program is based on several voluntary approaches with, in some cases, financial incentives. In cases of direct environmental impact, enforcement against pollution nonpoint sources is accomplished through the discharge prohibition in the state water pollution law, the substantive requirements of SEPA, the SMA, and the GMA.

WAC 173-40	Pollution disclosure
WAC 173-80	Referendum 39 Grant Funds
WAC 173-95	A Uses and limitations of the Centennial Clean Water Fund
WAC 173-98	Uses and limitations of the Water pollution Control State Revolving Fund
WAC 173-100	Ground Water Management Areas and Programs
WAC 173-200	Water quality standards for ground waters of the state of Washington
WAC 173-201A	Water quality standards for surface waters of the state of Washington
WAC 173-202	Washington Forest Practices Rules and Regulations to Protect Water Quality
WAC 173-204	Sediment Management Standards
WAC 173-205	Whole effluent toxicity testing and limits

WAC 173-208	Grant authority sewerage systems
WAC 173-216	Permits to Discharge Commercial and Industrial Wastes
WAC 173-218	Underground Injection Control Program
WAC 173-220	NPDES Permit System
WAC 173-221	Discharge Standards and Effluent Limitations for Domestic Wastewater Facilities
WAC 173-221	A Wastewater Discharge Standards and Effluent Limitations
WAC 173-224	Wastewater discharge permit fees
WAC 173-225	Federal Water Pollution Control Act
WAC 173-226	Waste Discharge General Permit Program
WAC 173-230	Certification of Operators of Wastewater Treatment Plants
WAC 173-240	Submission of Plans and Reports for Construction of Wastewater Facilities
WAC 173-245	Combined Sewer Overflows
WAC 173-255	Limitations on Use Referendum 26 Grant Funds for Water Pollution Abatement
WAC 173-270	Puget Sound Highway Runoff Program
WAC 372-36	Columbia Basin Irrigation Area—sewage and waste
WAC 372-52	Water District Requests for Approvals and Certifications of Necessity to Operate Sewer Districts
WAC 372-68	Water Pollution Control Abatement Plans for Sewer Drainage Basins

## 5. CLEAN AIR ACT - Chapter 70.94 RCW

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Like the water pollution control program, Washington has integrated federal and state laws into a comprehensive system to protect and improve air quality. The Coastal Zone Management Act incorporates the requirements of the federal Clean Air Act, into Washington's Coastal Zone Management Program. The EPA has delegated administration of many portions of the federal Clean Air Act to Ecology. To protect the state's air quality and to implement federal law, Washington adopted the Washington Clean Air Act. Its requirements are also enforceable policies of Washington's CZM Program. The Washington Clean Air Act exceeds the federal law in certain respects.

Under the federal Clean Air Act, EPA adopts uniform federal standards. Ecology adopts state standards that cannot be less stringent than the federal standards. Washington has seven local air pollution control authorities that can set air pollution standards that are more stringent than Ecology's. There are also a number of counties where there is no local authority, so the air regulation in these areas is conducted by Ecology staff. The regulation of certain major industries (pulp and paper mills, aluminum mills and the Hanford Reservation) in the state is reserved for Ecology. The regulation of sources on Indian lands in the state is reserved to EPA unless the tribes set up their own regulatory bodies.

The local authorities issue source permits and enforce Ecology and local standards. Ecology can enforce its standards and, under certain circumstances, the local standards.

Air operating permits are required for the larger regulated sources. These include sources that emit more than 100 tons per year (tpy), sources that emit less in some nonattainment areas, sources that must comply with toxics regulations, sources that must comply with new source performance standards, and power plants that must comply with the federal acid rain requirements. Nonattainment areas are parts of the state, which do not meet one or more ambient air standards. These air-operating permits place the burden of compliance squarely on the source with extensive self-reporting requirements.

In addition, the local authorities and Ecology staff must approve certain new sources and changes to existing sources before construction begins. Regulated new sources file a notice of construction. Certain new and existing sources must also register with the local authority or Ecology if an air-operating permit is not required.

The local authorities and Ecology can assess penalties. Penalties can be appealed to the Washington State Pollution Control Hearings Board.

For areas that meet ambient air quality standards (called attainment areas), new sources must obtain a prevention of significant deterioration permit from Ecology. These permits limit certain significant pollutants to a maximum allowable increase to prevent deterioration of air quality.

Ecology requires public notices for each permit and takes public comment. The emission limits in the various permits are based on technology standards and emission standards. Technology standards specify the type of pollution control technology that must be used. Emission standards limit the allowable rates of release for some substances for certain sources. After approval, the permit holder must report on whether the source is meeting the permit standards.

The Washington Clean Air Act requires counties with populations of more than 250,000 to prepare and implement commute trip reduction plans to reduce transportation related air pollution. Cities within those counties that have major employers must prepare and implement commute trip reduction plans. Major employers are organizations that employ more than 100 persons for at least six months. Major employers also must prepare and carry out commuter trip reduction programs, which implement the county or city plan.

Over one half of the air pollution in Washington can be attributed to mobile sources, cars and trucks. In certain areas, where there have been problems with automobile related air pollution, cars are required to be tested for emissions on a biannual basis. If the auto fails to pass the test the owner must repair the car, up to a certain dollar amount. Usually this minor repair will allow the car to pass the test. This program keeps the cars in the affected areas emitting less than if the program were not in place.

Washington also has programs in place to reduce emissions from sources that are large in number and spread over a wide area. An example of this type of

source includes smoke from fireplaces and other indoor wood burning devices. There are standards for new wood burning devices, standards for the density of smoke from these fires and educational programs to encourage compliance. Ecology and the local authorities have also written rules and devised other strategies to reduce and eliminate smoke from the agricultural practice of burning a field after harvest to clear for the next planting season. Ecology and the local authorities have also undertaken strategies to reduce wind blown dust from farmer fields in the dry central and eastern parts of the state.

WAC 173-400	General Regulations for Air Pollution Sources
WAC 173-401	Operating permit regulation
WAC 173-405	Kraft Pulping Mills
WAC 173-406	Acid rain regulation
WAC 173-410	Sulfite Pulping Mills
WAC 173-415	Primary Aluminum Plants
WAC 173-420	Conformity of transportation activities to air quality implementation plans
WAC 173-421	Motor Vehicle Emission Control System
WAC 173-422	Emission Inspection
WAC 173-425	Outdoor Burning
WAC 173-430	Agricultural burning
WAC 173-433	Solid Fuel Burning Device Standards
WAC 173-434	Solid Waste Incinerator Standards
WAC 173-435	Emergency episode plan
WAC 173-450	Establishing Requirements for the Receipt of Financial Aid
WAC 173-460	Controls for new sources of toxic air pollution
WAC 173-470	Ambient Air Quality Standards for Particulate Matter
WAC 173-474	Ambient Air Quality Standards for Sulfur Oxides
WAC 173-480	Ambient Air Quality Standards and Emissions Limits for Radionuclides
WAC 173-481	Ambient Air Quality and Environmental Standards for Fluorides
WAC 173-490	Emissions Standards and Controls for Sources Emitting Volatile Organic Compounds
WAC 173-491	Emissions Standards and Controls for Sources Emitting Gasoline Vapors
WAC 173-492	Motor Fuel Specifications for Oxygenated Gasoline
WAC 173-495	Weather Modification

## **6. WASHINGTON STATE ENERGY FACILITY SITE EVALUATION COUNCIL - Chapter 80.50 RCW**

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The Energy Facility Site Evaluation Council serves as a one-stop, state-local permitting system for large thermal energy facilities, oil refineries, and petroleum

and natural gas pipelines. EFSEC is composed of representatives from affected state agencies and a representative of all cities and counties within whose boundaries the facility would be constructed. After applying the substantive requirements of applicable state and local laws and regulations, EFSEC conducts public hearings as a part of its deliberations. Certain facilities may qualify for an expedited permitting process. At the request of an applicant, EFSEC can conduct a preliminary study of any potential site to determine whether it may be suitable for an energy facility. EFSEC must coordinate these activities with federal agencies.

EFSEC makes a recommendation to the Governor whether to approve or deny the application, which may also include proposed conditions on the project. The Governor decides whether to approve the project. This decision can be reviewed by the superior court in a single, consolidated appeal. EFSEC can levy penalties for violations of an approved application and any conditions. In addition, EFSEC can revoke an approval.

WAC 463-06	General - Organization - Public Records
WAC 463-10	Definitions
WAC 463-14	Policy and Interpretation
WAC 463-18	Procedure - Regular and Special Council Meetings
WAC 463-22	Procedure and Guidance - Potential Site Studies
WAC 463-26	Procedure- Initial Public Hearing and Public Information Meeting
WAC 463-28	Procedure - State Preemption
WAC 463-30	Procedure - Contested Case Hearings
WAC 463-34	Procedure - Rule Making Declaratory Rulings
WAC 463-36	Procedure—Amending or Terminating a Site Certification Agreement
WAC 463-38	Regulations for Compliance with NPDES Permit Program Sources
WAC 463-39	General and Operating Permit Regulations for Air Pollution Sources
WAC 463-40	Dangerous Wastes
WAC 463-42	Procedure- Guidelines - Applications for Site Certification Processing
WAC 463-43	Procedure - Applications for Expedited Processing
WAC 463-47	SEPA Rules
WAC 463-50	Independent Consultants - Guidelines
WAC 463-54	Certification Compliance Determination and Enforcement
WAC 463-58	Fees or Charges for Independent Consultant Study, Regular and Expedited Application Processing, Determining Compliance and Potential Site Study



## *Appendix E -*

# **List of Federal Activities, Licences, and Permits Subject to Federal Consistency Review**

The following is the list of federally related activities, licenses, and permits subject to federal consistency requirements in Washington State under the U.S. Coastal Zone Management Act of 1972. The Department of Ecology will review these activities for consistency with the Washington State Coastal Program:

## **A. FEDERAL ACTIVITIES AND DEVELOPMENTS**

1. Resource use and development plans (e.g., Regional Economic Development Plan by the Pacific Northwest Regional Commission).
2. Planning, construction, modification, or removal of public works, facilities, or other structures (e.g., Corps dredging projects).
3. Acquisition, utilization, or disposal of land or water resources (e.g., purchase of a refuge by the Fish and Wildlife Service).
4. Federal agency activities requiring a federal license or permit from another federal agency.
5. Regulation or guidelines affecting the priority, siting, placement, design, or permissibility of uses.
6. Operation or conduct of new or existing uses when such operation would result in physical changes in the coastal zone such as air and water pollution, covering of water surface, removal of vegetation or new construction (e.g., timber harvest and related activities on federal forest lands).
7. Federal assistance to entities other than state or local governments, such as Indian tribes and individuals proposing activities in the coastal zone.
8. DOI pre-lease sale activities for OCS exploration and development.

In addition, the Department may review any of the above activities outside of the coastal zone, but which affect coastal resources. This includes federal activities on all federal lands excluded from the coastal zone including Indian reservations, federal research facilities, federal leaseholds, etc.

## **B. FEDERAL LICENSES AND PERMITS**

1. U.S. Army Corps of Engineers
  - a. *Permits under sections 10 and 11 of the River and Harbor Act of 1899.*



- b. Permits for discharge of dredged or fill material under section 404 of the Federal Water Pollution Control Act.*
  - c. Permits for ocean dumping of dredged material under section 103 of the Marine Protection, Research and Sanctuaries Act of 1972.*
  - d. Approvals of artificial islands and fixed structures on the OCS under section 4(f) of the Outer Continental Shelf Act.*
- 2. Department of Transportation - U.S. Coast Guard
  - a. Permits establishing the location and clearances for construction of bridges and causeways over navigable waters under the Ports and Waterways Safety Act.*
  - b. Permits under section 1503 of the Deepwater Port Act of 1974 for the location, ownership, construction, and operation of deepwater ports.*
  - c. Nominations for anchorages, including layups, under the Ports and Waterways Safety Act.*
- 3. Federal Aviation Administration
  - Certification for operation of airports.*
- 4. Nuclear Regulatory Commission

Licenses for the siting, construction and operation of nuclear power plants; the production, transfer, import and export of fissionable materials; and the disposal of radioactive waste.

- 5. Federal Energy Regulatory Commission
  - a. Permits for the construction and operation of interstate gas pipelines and storage facilities under section 717 (f) of the Natural Gas Act.*
  - b. Permits for the construction and operation of power facilities and transmission lines required under section 4 (e) of the Federal Power Act.*
  - c. Permits for the abandonment of natural gas pipeline facilities under section 717 (f) of Natural Gas Act.*
- 6. Economic Regulatory Administration permits which are required to develop facilities for the import and export of petroleum products, which are mainly for LNG facilities.
- 7. Environmental Protection Agency
  - a. Permits for ocean dumping of material (except dredged material) under the Ocean Dumping Act.*
  - b. NPDES permits issued under the Federal Water Pollution Control Act unless NPDES administration remains delegated to the state.*

- c. Waivers from compliance, allowing an extension of the time for meeting the national primary and secondary ambient air quality standards, under the Clean Air Act.*
  - d. Exemptions for stationary sources under the Clean Air Act.*
  - e. Waivers from compliance from secondary treatment requirements under the Federal Water Pollution Control Act.*
- 8. Office of Coastal Zone Management
  - Certification that all activities in marine sanctuaries are consistent with the Marine Protection, Research and Sanctuaries Act of 1972.*
- 9. National Marine Fisheries Service
  - Permits for the taking or importing of marine animals except for walruses, sea otters and polar bears under the Marine Mammal Protection Act of 1972.*
- 10. Bureau of Land Management
  - a. Approvals for rights of way for oil and natural gas pipelines and pumping plant sites.*
  - b. All federal land leases with the exception of leases issued pursuant to the Outer Continental Shelf Lands Act.*
  - c. Approvals for OCS pipeline rights of way.*
- 11. U.S. Department of the Interior, Minerals Management Service
  - a. Permits for geological and geophysical exploration in the OCS approved under Section 1340(a) of the OCSLA (43 USC 1340)*
  - b. Plans for exploration, development and productions of the OCS which describe in detail federal licenses and permits and which affect the coastal zone.*
  - c. Permits and licenses for offshore drilling, mining, and development.*
- 12. U.S. Fish and Wildlife Service
  - a. Permits for taking or importing sea otters, walruses, and polar bears under the Marine Mammal Protection Act.*

For more information on requirements relative to federal consistency with state programs under the U.S. Coastal Zone Management Act of 1972, contact the Department of Ecology, Shoreland and Environmental Assistance Program (360) 407-6527.



## References

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- 48 Degrees North, The Sailing Magazine. 1993. *Sound Watch: An Environmental Guide for Boaters*.
- British Columbia/Washington Marine Science Panel. August 1994. *The Shared Marine Waters of British Columbia and Washington*.
- Canning, Douglas J. and Hugh Shipman. 1995. Coastal Erosion Management Studies in Puget Sound, Washington: Executive Summary. Coastal Erosion Management Studies, Volume 1. Washington Department of Ecology, Olympia
- Coastal America. January 1994. *Toward a Watershed Approach: A Framework for Aquatic Ecosystem Restoration, Protection, and Management*.
- Kaminsky, G.M. and Gelfenbaum, G. 2000. *The Southwest Washington Coastal Erosion Study: A Scientific Research Project to Address Management Scale Objectives*, Coastal Society 17<sup>th</sup> Conference, Portland, Oregon.
- Knopf, Alfred A. 1985/1994. *National Audubon Society Nature Guides, Pacific Coast*.
- Knutson, K. Lea and Naef, Virginia L. 1977 *Management Recommendations for Washington's Priority Habitats*.
- Kozloff, Eugene N. 1976. *Plants and Animals of the Pacific Northwest*.
- Mazza, Patrick and Fodor, Eben. 1999. *Taking Its Toll: The Hidden Costs of Sprawl in Washington State*.
- Media West. 2000. *Washington State: Visitor's Guide 2000*.
- Hollowed, John. 2000. *Indian Tribes in the Pacific Northwest*, Northwest Indian Fisheries Commission.
- Northwest Indian Fisheries Commission *Comprehensive Tribal Natural Resource Management – A Report from the Treaty Indian Tribes in Western Washington* 1998
- People for Puget Sound, A Report. 1997. *The Loss of Habitat in Puget Sound*.
- Puget Sound Water Quality Action Team. 2000. *2000 Puget Sound Update: Seventh Report of the Puget Sound Ambient Monitoring Program*. Puget Sound Water Quality Action Team. Olympia, Washington.
- Ruggiero, P., B. Voigt, and G. Kaminsky. 2000. *Beach Monitoring for Enhanced Decision Making*, Coastal Society 17<sup>th</sup> Conference, Portland, Oregon
- The Mountaineers. Nisqually River Interpretive Center Foundation. 1995. *Nisqually Watershed, Glacier to Delta, A River's Legacy*.
- Thom, Ronald M., David K. Shreffler, and Keith Macdonald. 1994. *Shoreline Armoring Effects on Coastal Ecology and Biological Resources in Puget Sound, Washington*. Coastal Erosion Management Studies Volume 7 (Pub. 94-80). Shorelands and Water Resources Program, Washington Department of Ecology, Olympia.

- University of Washington. Washington SEA Grant. Strickland, Richard and Chasan, Daniel Jack. 1989. *Washington State Offshore Oil & Gas; Coastal Washington : A Synthesis of Information*.
- Voigt, B., P. Ruggiero, and G. Kaminsky. 2000 *Towards the Development of a Decision Support System for the Columbia River Littoral Cell*, Coastal Society 17<sup>th</sup> Conference, Portland, Oregon
- Washington Council on International Trade. 1998. *The Year in Trade 1998; The Washington State Trade Picture*.
- Washington Department of Community, Trade and Economic Development and co-sponsored by the League of Women Voters of Washington. January 1997. *Growth Management: It's Beginning To Take Shape*.
- Washington Department of Community, Trade and Economic Development. June 1999. *Keeping the Rural Vision: Protecting Rural Character and Planning for Rural Development*.
- Washington Department of Community, Trade and Economic Development. September 16, 1998. *Optional Comprehensive Plan Element for Natural Hazard Reduction*.
- Washington Department of Community, Trade and Economic Development. *Washington State Visitor Profile* March 1997
- Washington Department of Ecology, Olympia, Washington. June 2000. *Proposed Shoreline Master Program Guidelines Rule Amendment (WAC 173-26, Part III and Part IV): Modified Draft Environmental Impact Statement (Pub. 00-06-020)*.
- Washington Department of Ecology, Shorelands and Environmental Assistance Program. September 1, 2000. *SEA Program Workplan: FY2001*
- Washington Department of Ecology, Olympia, Washington. April 1997. *State of Washington Coastal Zone Management Section 309 Assessment and Strategy, 1997* (Pub. 97-92).
- Washington Department of Ecology. June 2000. *Taking Action: To Reduce Nonpoint Water Pollution in Washington* (Pub. 99-21).
- Washington Department of Ecology. April 2000. *Washington's Water Quality Management Plan to Control Nonpoint Source Pollution; Final* (Pub. 99-26).
- Washington Governor's Salmon Recovery Office. September 1999. *Summary: Statewide Strategy to Recover Salmon; Extinction Is Not An Option*.
- Washington Interagency Committee for Outdoor Recreation. April 1990. *Washington Outdoors: Assessment and Policy Plan 1990-1995*.
- Washington Department of Natural Resources. 1998. *Our Changing Nature, Natural Resource Trends in Washington State*.
- Washington Public Ports Association. April 1, 1999. *News Release: New Study Predicts Strong Growth in International Trade*.

Washington Sea Grant Program, University of Washington. August 20, 1998.  
Murray-Metcalf; *Northwest Straits Citizens Advisory Commission: Report to the Convenors.*

## Web Sites

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Buerge, David M. University of Washington Libraries Digital Collections *Native Americans of the Pacific Northwest: An Introduction*

Friends of the San Juans Spring 2000 *"Scientists Discover Pacific Northwest Orcas Heavily Loaded with Toxins"*

Governor's Office of Indian Affairs and the following links from GOIA:

Governor's Salmon Recovery Office October, 2000 *Salmon Recovery Home Page*

Northwest Indian Fisheries Commission *Comprehensive Tribal Fisheries Management*

Puget Sound Water Quality Action Team *Puget Sound Nearshore Habitat Regulatory Perspective: A Review of Issues and Obstacles* 1998

Puget Sound Water Quality Action Team *Puget Sound/Georgia Basin Shared Waters Program* 1999

Puget Sound Water Quality Action Team *Shared Waters: The Vulnerable Inland Sea of British Columbia and Washington*

Tokitae Foundation *Orca Conservancy - Lolita Come Home Page* 1999

Uhler, John *Mount Rainier National Park Information Page* 1998 Page Makers, LLC

Uhler, John *North Cascades National Park Information Page* 1998 Page Makers, LLC

Uhler, John *Olympic National Park Information Page* 1998 Page Makers, LLC

Washington Department of Ecology *Puget Sound Shorelines* 1999-2000

Washington Department of Fish and Wildlife *Salmon Facts* 1997-1999

Washington Department of Fish and Wildlife *Hydraulic Project Approval* 1998-1999

Washington Public Ports Association. *Washington Public Ports Association*

Washington Public Ports Association. *Freight Mobility: Moving the World's Goods.*

Washington Public Ports Association. *History of Ports*