# OREGON COASTAL MANAGEMENT PROGRAM

## Coastal Zone Management Act §309 Assessment and Strategy 2011–2015

**Prepared by the Oregon Coastal Management Program**
**For Federal CZMA §309 Program Enhancement Funding**
**Office of Ocean and Coastal Resources Management,**
**National Oceanic & Atmospheric Administration,**
**U.S. Department of Commerce**

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# I. Introduction/CZMA §309 Program Enhancement Overview

Section 309 of the Coastal Zone Management Act (CZMA), as amended in 1990 and 1996, establishes a voluntary coastal zone enhancement grants program to encourage State and Territory Coastal Management Programs to develop program changes in one or more of nine enhancement areas:

- Wetlands
- Coastal Hazards
- Public Access
- Marine Debris
- Cumulative and Secondary Impacts
- Special Area Management Planning
- Ocean/Great Lakes Resources
- Energy and Government Facility Siting
- Aquaculture

The Secretary of Commerce is authorized to make awards to states and territories to develop and submit for federal approval, program changes that support attainment of one or more of the enhancement area objectives.

A coastal management program must have an approved Assessment and Strategy to be eligible for Section 309 funding in FY2011-2015. top

### CZMA §309 Activities

The following activities are eligible for Section 309 funding:

1. Assessment and Strategy-The "Assessment" determines the extent to which problems and opportunities for program enhancement exist; determines the effectiveness of existing efforts to address problems for each of the enhancement objectives; and identifies priority program enhancement needs.

The "Strategy" is a comprehensive, multi-year statement of goals, objectives and the methods to attain them, consistent with requirements outlined in CZMA §309. The Strategy should address the priority program enhancement needs and describe specific program changes related to the enhancement objectives. The Strategy must include a "Work Plan" consistent with NOAA guidance.

2. Program Changes-A program change, as defined in 15 CFR 923.123, includes the following:

- A change to coastal zone boundaries that will improve a State's ability to achieve one or more of the enhancement objectives.
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding, that will improve a State's ability to achieve one or more of the enhancement objectives.

- New or revised local coastal programs and implementing ordinances that will improve a State's ability to achieve one or more of the enhancement objectives.
- New or revised coastal land acquisition, management, and restoration programs that improve a State's ability to attain one or more of the enhancement objectives.
- New or revised Special Area Management Plans or plans for Areas of Particular Concern (APC), including enforceable policies and other necessary implementing mechanisms or criteria and procedures for designating and managing APC that will improve a State's ability to achieve one or more of the enhancement objectives.
- New or revised guidelines, procedures, and policy documents which are formally adopted by a State and provide specific interpretations of enforceable CZM policies to applicants, local governments and other agencies that will result in meaningful improvements in coastal resource management and that will improve a State's ability to attain one or more of the enhancement objectives.

Upon completion of an enhancement area strategy, the OCMP will provide a summary of the program change to OCRM as part of the semi-annual Performance Progress Report. When appropriate, the OCMP will submit the program change for OCRM's review and approval pursuant to the program change regulations at 15 CFR Part 923, subpart H.

3. Program Change Implementation-Section 309 funds may be used to support implementation activities for Section 309 program changes for up to two grant years from program change completion.

**Allocation of §309 Funds**
OCRM may allocate Section 309 funds in two ways: (1) weighted formula and (2) Projects of Special Merit (PSM). top

## CZMA §309 Assessment and Strategy Review Process

The OCMP will submit its Assessment and Strategy electronically to its OCRM Program Specialist as a single document following the format and templates provided in NOAA guidance. The Assessment and Strategy must be made available for public review.

OCRM will review the Assessment and Strategy for compliance with NOAA guidance and apply two ranking levels: "acceptable" and "not acceptable". OCRM will evaluate each Assessment and Strategy based on the following evaluation criteria.

1. Scope and Value-OCRM will consider the following factors:
- The scope of the proposed program change in terms of tangible benefits and quantifiable improvements in coastal resource management programs and policies. Examples are: increases in wetland protection and restoration, increases in public access ways and site improvements, etc.
- The qualitative magnitude of the proposed program change in terms of improved management of coastal resource(s) of local, state, or national significance, including state or federally listed endangered and threatened species.

- The threat to the resource or the need for improved management. Will the opportunity to protect the resource or address the issue be lost in the short term if the proposed change is not made?

2. Technical Merit-OCRM will consider the following questions:

- Is the program change or implementation activity an appropriate means for addressing the priority need? Is the program addressing the most appropriate enhancement area objective with appropriate tools or mechanisms (planning, regulation, management) at the right level of government (state, regional, local), or are there more effective or efficient ways of addressing the need?
- Is the work plan comprehensive in overall design, personnel, funding, and organization? Are there appropriate activities related to data collection and synthesis, issue development, and public involvement? Does the work plan include sufficient information to gauge progress toward attaining the proposed program change?
- Does the work plan schedule reflect the most effective and logical approach to enacting or implementing the program change?
- Is the work plan cost-effective? Are the costs of developing or implementing the program change commensurate with the value of the proposed improvement in coastal resources or management?

3. Likelihood of Success-OCRM will consider the following factors:

- The nature and degree of existing support for the Assessment and Strategy;
- The strength of the Assessment and Strategy to maintain and build future support and consensus; and
- Past performance under Section 309.

4. Technical and Fiscal Need

OCRM will consider the technical and fiscal needs described the Assessment and Strategy. The Assessment and Strategy should describe the extent to which a state lacks trained personnel or equipment to complete a project and describe fiscal needs, including the extent to which a state must rely solely on federal funds to complete a project because state funds are not otherwise available.

**Public Review**

The OCMP must provide public review and comment opportunities for the Assessment and Strategy. The public review and comment period may occur concurrently with OCRM's review of the draft submission and must be open for at least 30 days. Use of the Internet is encouraged to make the Assessment and Strategy widely available for public review and comment. A summary of public comments and responses must be included with the final Assessment and Strategy. A summary of public comments and the OCMP response is outlined on page 8.

**Threatened and Endangered Species Considerations**

Many species found in the coastal zone have been identified as threatened or endangered, both at the State and Federal levels, with the loss or modification of habitat being identified as a national concern. Consequently it has become increasingly important to look at how CZM activities might

affect threatened and endangered species. The Assessment and Strategy should consider the following:

- Examine potential threatened and endangered species issues in each of the enhancement areas, including implications for identifying priority enhancement areas.
- Identify opportunities for program changes related to habitat conservation and restoration.
- Consider potential negative effects on threatened and endangered species when developing proposed program changes and determine ways to eliminate or lessen these potential effects.

**Marine Protected Areas and other Special Areas**
The Assessment and Strategy should consider the Executive Order on Marine Protected Areas provide an important opportunity to enhance protection and management of marine and other special coastal land and water areas.

Section 309 also provides several opportunities for addressing estuaries and other types of possible marine protected areas as "special areas." The Special Area Management Planning enhancement area calls for preparing and implementing special area management plans for important coastal areas. There are also opportunities to address specific issues within special management areas through the other enhancement areas such as coastal hazards, cumulative and secondary impacts, wetlands, and planning for ocean resources. top

## Assessment and Strategy Format

The Assessment and Strategy should be a single document with the following sections:

**I. Introduction**
The Assessment and Strategy should include a brief summary describing its development and the public review process. This section should include background information that describes the coastal management and §309 program.

**II. Summary of Completed Section 309 Efforts**
The Assessment and Strategy should include a brief summary of completed efforts under the Section 309 program since the last Assessment and Strategy. This section should clearly identify and summarize program changes and other major accomplishments completed under the previous Strategy, including the date of NOAA approval. The Assessment and Strategy should identify the expected submission date(s) for expected program changes.

**III. Assessment**
This section should address each of the nine enhancement areas, consistent with OCRM guidance. Additional documentation, such as reports or studies directly related to an enhancement area objective, may be attached. Each enhancement area should be ranked as high, medium, or low priority, based on the enhancement area assessment and OCRM guidance.

**IV. Strategy**
The purpose of the Strategy is to identify program changes and implementation activities to address Section 309 enhancement areas identified as either a High or Medium priority in the Assessment.

Strategies should include information for OCRM to determine that:
(1) A proposed program change or implementation activity adequately addresses the needs identified in the Assessment; and, (2) The work plan to achieve the program change is appropriate and cost-effective. Strategies can address more than one enhancement area.

**Changes to an Approved Assessment and Strategy**
The OCMP may submit proposed changes to an approved Section 309 Assessment and Strategy to the OCRM Program Specialist. The OCMP will consult with their Program Specialist when the need for a change arises to determine if it is necessary to submit a revised Assessment and Strategy. OCRM will review proposed changes to determine if they continue to meet the needs identified in the Assessment and approval criteria. top

## CZMA §309 Review Schedule

| | |
|---|---|
| **July 1, 2010** | Draft Assessment and Strategy Due |
| **September 3, 2010** | OCRM provides comments to CMPs |
| **November 1, 2010** | Final Assessment and Strategy Due |
| **January 31, 2011** | OCRM approves Final Assessment and Strategy |

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## Assessment and Strategy Development Process/Public Involvement

**Preparation and Planning**: The process for developing this CZMA §309 Assessment and Strategy began following NOAA's issuance of guidance for 2011-2015. The OCMP announced the effort to program partners, including state agency and local government representatives at its Fall network meeting held on October 7-8, 2009. OCMP staff handed out an overview of the process, invited active participation and announced that additional opportunities for input would be available.

On November 24, 2009, the OCMP Senior Policy Analyst met with Kris Wall, NOAA's Coastal Management Specialist, to discuss the overall §309 process and to clarify NOAA guidance and strategy priorities for 2011-2015.

The OCMP developed an internal steering/oversight committee with diverse representation, including one representative from each field office. The committee is responsible for coordination with other OCMP staff in their respective offices and with representatives of network agencies and local government. Assessment chapters for §309 enhancement areas were assigned to staff, with overall coordination through the Senior Policy Analyst. The steering/oversight committee met on April 1, 2010 to begin the initial priority setting and brainstorming potential strategy components.

The results of the steering/oversight committee work were shared with state agency and local government program partners at the Spring Network meetings on April 7, 2010 in Pacific City

and April 9, 2010 in Bandon. A PowerPoint presentation summarized the enhancement area priorities and outlined NOAA criteria for strategy components and §309 review. State and local government representatives were invited to contact OCMP staff and provide any input on Assessment work related to enhancement areas and to suggest potential strategies.

**Draft Assessment and Strategy Development**: A diverse team of OCMP program staff members developed the assessment and strategy. Each team member reviewed draft materials and provided comments to the staff lead. Potential strategies were developed in a collaborative process. A draft of the overall strategy was evaluated together with the budget and timing summary. Based on this collaborative effort, potential strategies were narrowed and budgets refined. Some draft strategies were eliminated while others were combined to make up a more comprehensive work program. Ultimately, the steering/oversight committee developed three primary strategies, Ocean Resources Planning; Coastal Hazards Planning; and, Estuary/Ocean Shores Planning. A fourth Strategy was developed, but because of cost and timing uncertainty, "Climate Change Adaptation Planning" was described, but identified as a potential Project of Special Merit (PSM). The Ocean Resources Planning and Estuary/Ocean Shore Planning strategies also include potential supplemental funding for Projects of Special Merit (PSM).

**Formal Public Involvement**: A public notice was published on the OCMP website and sent to those on the DLCD/OCMP mailing list. A 30 day comment period was provided, although the comment opportunity remained open. Copies of the Draft Assessment and Strategy and the Public Notice were available to the public in an electronic form on the agency website from June 30, 2010 through September 15, 2010.

**Comments**: The OCMP received comment letters/e-mails from two state agencies, one local government and one individual.

- ODFW sent extensive comments on various coastal management and ocean resource topics. The primary focus was on coastal erosion/shorefront protective structure regulations and impacts; ocean resources/fishery management; climate change, sea level rise and ocean acidification issues; Sea Otter (keystone species) issues; marine reserve planning and management; and nearshore planning.
- The OPRD noted some additional acquisition areas not reflected in tables.
- The City of Brookings (Dianne Morris) indicated support for added funding to retain or improve public access because of some ongoing local ocean shore access issues.
- Jody McCaffree (citizen from Coos Bay) noted concerns with "three incredibly large and very destructive projects currently being proposed in the Coos Bay area that will affect the Coastal Zone. Her concerns note that major projects in this area may damage natural systems and that mitigation or restoration may not be successful strategies. She noted that the CSC is proposing some courses at South Slough Interpretive Center. She expresses concern that the topics are "Negotiating for Coastal Resources" and "Project Design and Evaluation." She indicates, "it was really disappointing to find out the South Slough was even involved in something like this. South Slough ought to be concentrating on developing ways to integrate science into local decision processes." Her comments state support for updated estuary planning: "What our area greatly needs is a scientifically-sound and comprehensive description of the current condition of our estuary that could serve as a rational baseline to

evaluate the cumulative environmental impacts of any planned development, and as a basis for identifying the types of development that might be a 'best fit' for our area." She concludes her comments by stating, "I do hope that at some point something will be done about the problems within our Coastal Zone and the need to not only protect what we have but work towards restoring what has already been damaged. In other words, keep intact the very intent and heart of the Coastal Zone Management Act."

**Response**:

- ODFW's detailed comments and suggested edits have been incorporated within the final draft of the CZMA §309 Assessment and Strategy.

- Updated information on the OPRD acquisition areas have been added to the appropriate table in the Public Access portion of the Assessment.

- The City of Brookings comment is not directly relevant to §309 work, however, DLCD has independently responded to the city's comment and indicated how it intends to support the city's public access effort and needs through technical assistance supported by §306 funds.

- Jody McCaffree's issues represent a combination of concerns over a proposed LNG import terminal, natural gas pipeline; and proposed channel modification to support a speculative shipping terminal. While her concerns about these projects are supportive of the value of land use, natural resource and estuary planning that protects the coastal use and resource values in her area, there is still frustration with the lack of currently available scientific data and information on project impacts and a process which can be lengthy and complex. Her overall point is well taken. The estuary plan for Coos Bay is dated and needs to be updated. Over the years, habitat values and estuary characteristics have changed and are not adequately reflected in current planning and resource management documents. Likewise, the economic projections that formed the basis for upland water dependent development and the linkages to the estuary through the shorelands goal are out of date. These estuary and coastal shoreland planning documents should be updated to reflect current conditions. While this example is specific to the Coos Bay area and concerns with specific projects, the comment is illustrative of why the assessment and strategy identifies estuary and coastal shoreland plans as key elements of the state's 2011-2015 strategy. top

# II. Summary of Completed §309 Work

This is the fifth Assessment and Strategy that the Oregon Department of Land Conservation and Development (DLCD) has submitted under §309 of the federal Coastal Zone Management Act. Previous assessments were prepared for 1992-1997, 1996-2001, 2001-2005, and 2006-2010. As in previous assessments, this one is directed at the nine §309 enhancement areas delineated by the Congress. Each is discussed in a separate chapter following the format provided by the National Oceanic and Atmospheric Administration (NOAA).

For the 2006-2010 §309 Strategy, the OCMP consolidated its work on several enhancement areas under the overarching topic of Special Area Management Planning which was ranked "Highest" in the assessment process. The §309 Strategy included goals objectives and work tasks to implement both the Ocean Shore Management Plan prepared by the Oregon Parks and Recreation Department (OPRD) and adopted by the Oregon Parks and Recreation Commission in 2005 and the Nearshore Marine Resources Management Strategy prepared by the Oregon Department of Fish and Wildlife (ODFW) and adopted by the Oregon Fish and Wildlife Commission in 2005.

Work under this strategy was coordinated with the requirements of Oregon's "*Territorial Sea Plan.*" This plan was initially adopted in 1994 by the Land Conservation and Development Commission and subsequently amended in 2000 and 2001 to provide additional management measures for the ocean shore region.

The overall goals of the 2006-2010 §309 Strategy were:

- To assist OCMP partner agencies (OPRD, ODFW) in timely and effective implementation of their SAMP's.
- To ensure the implementation of each SAMP is coordinated with other planning and management policies, such as Statewide Planning Goal 18 – Beaches and Dunes and the *Territorial Sea Plan*.
- Increase public support and understanding of ocean shore and nearshore resources and need for conservation and stewardship.

The priority action areas for the 2006-10 §309 Strategy were:

1. Implementing the OPRD 2005 Ocean Shore Management Plan by:

a. Updating regional OPRD master plans for coastal state parks to enable park managers to take specific administrative actions to address resource or use-conflict issues affecting coastal resources.
b. Improving management of ocean shores by enhancing local and state regulatory decisions for shorefront protective structures and continuing detailed beach monitoring to determine erosion and accretion patterns.

2. Implementing the ODFW 2005 Oregon Nearshore Strategy through improvements to data to support nearshore stock assessments and aggregation of critical ecological data.

3. The strategy was amended in December 2008 to delete some tasks in Years 4 and 5 to support work to amend the *Territorial Sea Plan* to address siting of ocean alternative energy development. This change in the Strategy was approved by OCRM January 9, 2009.

**Status and Results of 2006-2010 §309 Work**

**1. OPRD Ocean Shore Management Plan Implementation**

a. Coastal Park Master Planning

The OCMP used §309 funds to support a contract with the Oregon Parks and Recreation Department to conduct research and planning in Oregon's rocky shore environment, to support new regional state park master plans that implement the OPRD *Ocean Shore Management Plan.* To support these plans, the OPRD conducted biological inventories and recreational visitor use studies of the rocky shore areas in each of the regions through a subcontract with the Partnership for the Interdisciplinary Studies of Coastal Oceans – PISCO-at Oregon State University. Work was completed for new management plans for: Devils Punchbowl State Natural Area, Seal Rock State Recreation Site, Sunset Bay Management Unit - Rocky Shore Areas, Strawberry Hill State Park, Yachats State Park, and Harris Beach, all of which have significant rocky shore resources and high visitor usage. The new park management plans, which were approved by the Parks and Recreation Commission, represent a new level of commitment by the OPRD to protect significant natural resources and habitats within the rocky intertidal zone.

b. Improving Ocean Shore Management

1. Shorefront Protective Structure Eligibility Mapping-

To assist the OPRD and local governments in implementing provisions of Statewide Planning Goal 18 (Beaches and Dunes) to protect Oregon's beaches, the OCMP created maps for Clatsop, Tillamook, Lincoln Coos and Curry counties (including cities) that identify properties eligible for beachfront protective structures under the state's policy limiting such structures to development approved prior to 1977. The new maps are based on current aerial photos, county assessor property map files and other mapped data and have been posted on the Oregon Coastal Atlas website. These maps represent a significant improvement in specificity due to the use of a digital GIS format.

2. Beach Monitoring and Erosion Analysis-

The OPRD continued to implement its *Ocean Shore Management Plan* through §309-supported work with the Oregon Department of Geology and Mineral Industries (DOGAMI) to closely monitor beach erosion and accretion processes in littoral cells at Neskowin and Rockaway (Tillamook County). In addition, DOGAMI completed a report titled *Evaluation of Coastal Erosion Hazard Zones Along Dune and Bluff-Backed Shorelines in Southern Lincoln County: Seal Rock to Cape Perpetua.* DOGAMI completed phase 1 and 2 of the erosion hazard mapping study for Clatsop County. This work included development and analysis of a GIS database with erosion hazard zones that depict geologic units and landslides, both active and inactive.

**2. ODFW Nearshore Management Plan Implementation**

During the 2006-2010 strategy period, the OCMP used §309 funds to support the work of a Marine Habitat and Nearshore Project team at the Oregon Department of Fish and Wildlife to conduct three fisheries-independent surveys of nearshore rocky reef habitat, one at Redfish Rocks (site of a new Marine Reserve off the southern Oregon coast), and one each at Otter Rock (site of a new Marine Reserve off the central coast) and Cape Foulweather off of the central Oregon Coast.

Surveys provided field verification of previously-collected remotely sensed data and obtained new data to support characterization of important benthic habitats, descriptions of nearshore reef fish communities, and analysis of fish-habitat associations. In accomplishing the contract work, the Project Team developed a database for habitat and fish survey data, and created a digital capture and archival system for video footage collected during the surveys.

During the assessment period, the ODFW Marine Resources Program obtained additional grants through the State Wildlife Program to conduct additional surveys in key areas, thereby leveraging the §309 funding. Completion of these fisheries-independent surveys will help to inform implementation of the legislatively-established (2009) pilot marine reserves at Redfish Rocks and Otter Rock. Overall, the §309 funding enabled the ODFW Marine Region to maintain core capacity necessary to collect data and process information needed to implement the Nearshore Strategy and manage Oregon's nearshore environment.

During Year 5 of the 2006-2010 Strategy, the ODFW Marine Program will complete the first phase of a nearshore habitat atlas that will compile existing nearshore ecological and habitat data from agency, The Nature Conservancy's marine ecoregional assessment, and other sources into a spatial database to support marine spatial planning for Phase 2 of planning for ocean alternative energy.

In December 2008, the Department submitted a proposed amendment to the approved Strategy to re-direct some funds from Years 4 and 5 to support planning for ocean alternative energy development. This change in the Strategy was approved by OCRM on January 9, 2009.

**3. Territorial Sea Plan Revisions (Marine Spatial Planning)**

The OCMP amended the Strategy in December 2008 to reallocate §309 funds to support acquisition of fisheries data needed to create the spatial planning component of amendments to the state's Territorial Sea Plan (TSP) for ocean alternative energy. Phase One of those amendments related to policies, standards, and procedures was approved in November 2009 by the Land Conservation and Development Commission as *Part Five: Use of the Territorial Sea for the Development of Renewable Energy Facilities or Other Related Structures, Equipment or Facilities*.

Use of §309 funds to support the spatial analysis, mapping and planning work began in Year 4 and continues in Year 5 of the 2006-2010 Strategy. This Phase Two will likely be completed

prior to the end of 2011 in Years 1 and 2 of the 2011-2015 strategy period and will result in maps specifying the areas that are appropriate for development of renewable energy projects as well as areas important to fisheries and areas of ecological importance.

A pilot project to survey fishermen in Coos Bay to map their fishing grounds on the south central coast was completed in December 2009. This pilot project helped to resolve issues over proprietary data, public data and techniques in the fisherman interview process. Data and maps from that work are already being used in the planning process for several site specific renewable energy facility license and permit applications that are pending before the Federal Energy Regulatory Commission.

Subsequent to the initial §309 pilot project, fisheries mapping has continued with fishermen in other ports using both federal §309 funds and funds from other sources. In addition, §309 funds are being used to obtain spatial and economic data from recreational fishers that will be included in the coast wide spatial analysis. In summary, §309 funds have leveraged considerable additional funding from other sources, and have been the key to developing a marine spatial planning approach for renewable energy planning. top

# III. Assessment

## Coastal Zone Management Act
## §309 Assessment
## 2011–2015

**Oregon Coastal Management Program**

## Wetlands

**Section 309 Enhancement Objective**
Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. Extent, status, and trends of wetlands in the coastal zone:

Data and information for wetland areas within Oregon's Coastal Zone are not available to complete the following table included in NOAA Guidance Documents.

| **Wetlands type** | **Estimated historic extent** (acres) | **Current extent** (acres) | **Trends in acres lost since 2006** (Net acres gained & lost) | **Acres gained through voluntary mechanisms since 2006** | **Acres gained through mitigation since 2006** | **Year and source(s) of Data** |
|---|---|---|---|---|---|---|
| Tidal vegetated | | | | | | |
| Tidal non-vegetated | | | | | | |
| Non-tidal/ freshwater | | | | | | |
| Other (please specify) | | | | | | |

2. In lieu of the above information, the following information provides a summary of Wetland Resources in Oregon, the state's regulatory approach to protect the current wetland base and opportunities for conservation efforts to restore and enhance wetlands.

A current, comprehensive and detailed inventory of coastal freshwater and estuarine wetlands within the coastal zone does not exist for Oregon. The Department of State Lands (DSL), the state agency with jurisdiction over wetlands, does not have a comprehensive state program for tracking all wetland changes and does not track wetlands in the coastal zone separately from wetlands in other areas of the state. Oregon has a "no net loss" policy for freshwater wetlands and a "net gain" policy for tidal wetlands. Information for DSL-regulated wetland removal-fill permits for fiscal year 2008 shows a gain of 182.64 acres for freshwater wetlands and a gain of 5.97 acres for estuarine wetlands (2007-2008 Department of State Lands Removal Fill Report). Small wetland alterations (less than 50 cubic yards) and many voluntary wetland enhancement and restoration activities are neither regulated nor comprehensively tracked by DSL. DSL records from FY 2008 show they authorized enhancement of 2,871.73 acres of existing wetlands statewide. The state's removal fill program includes monitoring requirements to ensure that projected functions and values are provided.

Oregon uses information from the National Wetlands Inventory (NWI) as the baseline statewide wetlands inventory. Approved Local Wetland Inventories provide supplementary wetlands inventory information. More specific wetlands information (boundaries, acreage, functions and values) is obtained during fieldwork for specific regulated fill and removal activities. When ground-altering site work is proposed, a more precise wetland boundary may be identified through wetland "delineation" that determines applicable state requirements. Local and National Wetland Inventory Maps are available through the Department of State Lands. The small scale, accuracy limitations, age (1980s), and absence of property boundaries make the NWI unsuitable for parcel-based decision making. DSL provides information about wetland function and condition assessment and has prepared the "Oregon Wetland Planning Guidebook" to assist applicants and the public in better understanding the state's wetland regulations. *See*:
http://www.oregon.gov/DSL/PERMITS/index.shtml
http://www.oregon.gov/DSL/WETLAND/index.shtml

3. **Estuarine Wetlands Historic Extent and Trends**

Oregon has 22 coastal estuaries that range in size from the Columbia River estuary, with about 80,000 acres, to small 20 acre estuaries. Excluding the Columbia River estuary, Oregon's total estuarine area is about 53,000 acres (*Oregon Estuary Plan Book*, 1987).

Research shows that the state has experienced significant loss of historic estuarine wetlands. For example, studies show 43% loss of tidal marsh and a 78% loss of forested tidal swamp in the Columbia River; 88% loss of salt marsh in Coos Bay; and 72% loss of tidal marsh in Tillamook Bay (James Good, 1996; Oregon *CZM Profile – Protection of Estuaries and Coastal Wetlands*). Much of the loss of historic estuarine wetland acreage is due to diking for agricultural use and filling for port facilities and other development. Recent mapping and assessments on the Siuslaw River and other coastal systems suggest that tidally-influenced wetlands historically associated with estuarine functions may have been far more extensive than previously reported or mapped. Consequently, the amount of loss of estuarine wetlands may have been greatly underreported. Oregon's Statewide Planning Goals 16 (Estuarine Resources) and Goal 17 (Coastal Shorelands) adopted in 1977 comprise a clear, strong regulatory framework for preventing additional loss of estuarine wetlands.

Local estuary management plans adopted in the 1980's by local governments to implement goals 16 and 17 have largely stopped the loss of estuarine wetlands and created conditions to restore tidal wetlands and functions. Less than 2% of Oregon estuarine wetlands are designated for development, while 34% are designated for conservation and 78% are designated "natural." Efforts now focus on restoration and enhancement, particularly for estuaries that have experienced significant wetland loss. There is a growing public understanding of the functions and values associated with wetlands. In addition, economic trends that resulted in creating diked agricultural land and extensive fill for resource-related port development have changed. This results in less pressure to maintain these areas for agricultural and resource related port facilities.

**Freshwater and Non-Tidal Wetlands Historic Extent and Trends**

Oregon's non-estuarine coastal wetlands (i.e. freshwater/no tidal influence) include marshes adjacent to coastal lakes; wet meadows; riparian wetlands next to streams; swamps and bogs; and

interdunal wetlands. The U.S. Fish and Wildlife Service (USFWS) estimates that 38% of Oregon's historic wetlands have been lost. No specific delineation of these historic wetlands by area or type has been developed (Leibowitz, Nancy; 1995; *Oregon's Wetland Conservation Strategy*). The most comprehensive data available estimate freshwater wetland acreage in the Coastal Zone at 45,150 acres, a number thought to be a low estimate (James Good, 1996; Oregon *CZM Profile – Protection of Estuaries and Coastal Wetlands*).

4. The Department of State Lands has partially completed a wetland mapping project to determine wetland changes for areas below the 100' contour within the coastal zone. This mapping effort uses 1980's era National Wetland maps as the Time 1 benchmark and 2001 maps for the Time 2 benchmark. However, there were some technical issues related to the photo baseline map that required many corrections to the Time 1 maps in order to avoid major errors, which caused a delay and increased costs, resulting in insufficient funding to complete the effort. At present, the project requires additional funding to complete the mapping and comparison work. When completed, the work will provide significant data on the state's effort to achieve its no-net-loss policy for coastal wetlands. In addition, the updated mapping will be important to DSL's regulatory program by providing updated hydrogeomorphic (HGM) classification data that will assist DSL in making wetland jurisdiction determinations.

5. Use the following table to characterize direct and indirect threats to coastal wetlands, both natural and man-made. If necessary, additional narrative can be provided below to describe threats.

| **Type of threat** | **Severity of impacts** (H,M,L) | **Geographic scope of impacts** (extensive or limited) | **Irreversibility** (H,M,L) |
|---|---|---|---|
| Development/Fill | H | Extensive | H |
| Alteration of hydrology | M | Extensive | M |
| Erosion | L | Limited | L |
| Pollution | M | Limited | L |
| Channelization | M | Limited | L |
| Nuisance or exotic species | Unknown | Likely Extensive | H |
| Freshwater input | L | Limited | L |
| Sea level rise | Unknown | Extensive | H |
| Cascadia Subduction Zone Earthquake | Unknown | Extensive | H |

**Development/Fill**-There are a number of direct and indirect threats from development and fill activities, pollution, stream channelization and nuisance or non-native species. Sea level rise and impacts of a predicted Cascadia subduction zone earthquake are thought to be high, due to the potential for significant ecosystem changes.

Loss of coastal freshwater wetlands from development or fill remains a substantial threat in Oregon. Despite a state regulatory system for activities involving 50 cubic yards or more, there is still the potential for significant impacts from smaller projects and cumulative effects of unregulated fill. The lack of comprehensive information on the location, extent and condition of

coastal freshwater and estuarine wetlands is still a major impediment to protection, management and monitoring efforts. Local, state and federal government cannot easily manage wetland impacts without baseline information. Currently, little financial assistance is available for data collection needed to comprehensively identify wetlands on a ecosystem level. Reliance on the National Wetland Inventory as supplemented by some local wetland inventories does not provide a sufficient baseline for governmental conservation efforts.

Local wetland inventories have been partially funded by federal §310 and §306 funding. Since 2001, approximately $61,000 has been provided by the Department to local government for completion of local wetland inventories.

Data and information from the most recent DSL annual report on wetland loss indicate that state "no-net-loss" policy objectives are being achieved. Despite this positive conclusion, there is still a need to complete a baseline inventory for areas within the Coastal Zone. The state has only recently reversed the trend of wetland loss and achieved its "no-net-loss" policy objective. DSL's focus on appropriate mitigation ratios and ties between wetland fill projects and replacing functions and values has resulted in significant improvements.

**Pollution**-Some coastal wetlands are likely impacted by non-point pollution, particularly runoff from streets, roads, and other impervious surfaces in urban areas centered primarily around estuaries, as well as septic tank effluent in rural areas. However, there is little specific evidence or monitoring of the scope of this problem.
**Channelization**-Historic preferences for hardened structures (e.g. rip rap, groins) for erosion control have lasting impacts on stream channels and resulting impacts on associated wetlands. However, state policies favoring non-structural solutions along with environmental effects analysis have minimized or blunted these historic practices. Bioengineered solutions to streambank erosion have advantages for applicants and reduce adverse resource effects. There have not been efforts to comprehensively evaluate the ecosystem benefits of these practices.

**Non-Native and Nuisance Species**-With minor exceptions, the extent of non-native and nuisance species in coastal wetlands in Oregon is undocumented. Some general information is available on obvious non-native plants and weeds (e.g. purple loosestrife and *spartina*). Efforts to identify infestations and opportunities for eradication are sporadic. While the threats to wetlands and ecosystems are difficult to estimate, the situation requires general monitoring efforts. There is certainly some concern and awareness of the potential for a threat from yet unknown nuisance species that could significantly impact important wetland ecosystem functions and values.

**Erosion and Freshwater Input**-Erosion (except as discussed under channelization) and freshwater input are not threatening Oregon's coastal wetlands.

6. **(CM)** Indicate whether the Coastal Management Program (CMP) has a mapped inventory of the following habitat types in the coastal zone and the approximate time since it was developed or significantly updated

| **Habitat type** | **CMP has mapped inventory** (Y or N) | **Date completed or substantially updated** |
|---|---|---|
| Tidal Wetlands | Partial NWI/LWI; Estuary Plan Book | Various (1980's and (1990's) |
| Beach and Dune | Y | 1991 (Last County Plan RPC) Goal 18 Inventories |
| Nearshore | Y (Partial) | 1994 Rocky Shores Inventory with Territorial Sea Plan |
| Estuarine Habitat Inventory | Y | 1987 Estuary Plan Book based on 1970's ODFW Data |

A coastal change wetland mapping project was expected to be completed in 2007. However new technology that provided improved accuracy was not consistent with baseline mapping done in 1982. The process of reconciling inconsistent data has delayed project completion (DSL).

Maps for this contextual measure are generally contained in local comprehensive plan inventories and cover nearly all of the areas expected to comprise the identified habitat types. Estuarine habitat mapping is somewhat dated, and in need of an update. Mapping of estuarine habitat for major estuaries is consolidated in the Oregon Estuary Plan Book (1987), which is accessible through links in the Oregon Coastal Atlas website. Areas of nearshore habitat are mapped in recent ODFW nearshore planning documents. Updated habitat mapping for the Territorial Sea is an ongoing project that will form the basis for Marine Spatial Planning. None of the baseline habitat mapping for beach and dune, coastal shorelands and estuarine habitat has been converted to a usable GIS format. Much of the information on beach and dune areas and coastal shorelands (nearshore habitat) is from comprehensive plans that do not share a common format or scale. DSL has hired a GIS technician and is now recording wetland permit and mitigation data in more detail. This work will likely be reflected in the next §309 Assessment.

7. **(CM)** Use the table below to report information related coastal habitat restoration and protection. The purpose of this contextual measure is to describe trends in the restoration and protection of coastal habitat conducted by the State using non-CZM funds or non Coastal and Estuarine Land Conservation Program (CELCP) funds. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

| **Contextual measure** | **Cumulative acres for 2004-2010** |
|---|---|
| Number of acres of coastal habitat restored using non-CZM or non-Coastal and Estuarine Land Conservation Program (CELCP) funds | Information is not available for this time frame. OWRI and DSL data may be available for the next Assessment.. |
| Number of acres of coastal habitat protected through acquisition or easement using non-CZM or non-CELCP funds | Information is not available for this time frame. OWRI and DSL data may be available for the next Assessment. |

The Oregon Watershed Enhancement Board (OWEB) has created a voluntary reporting system to identify restored habitat (i.e. the Oregon Watershed Restoration Inventory (OWRI)). This data base may serve as a source of information for future Assessment periods. At this point, this tool

is used by OWEB to report on Oregon Plan accomplishments, support effectiveness monitoring of restoration activities, and support watershed assessments and future restoration project planning and prioritization. The OCMP will explore the use of this voluntary system in the future to serve as a baseline reporting mechanism for this measure.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

The State of Oregon implements a number of programs that manage or affect both fresh and tidally influenced wetlands on the Oregon coast. These include:

**Salmonid Habitat**-The Department of State Lands (DSL) and Oregon Department of Fish and Wildlife (ODFW) continue to work with the National Marine Fisheries Service (NMFS) to identify and protect essential salmonid habitat areas for Oregon. In areas mapped as salmonid habitat, the thresholds for regulation under the state's Removal-Fill law has been reduced from 50 cubic yards to any amount of removal or fill.

**Goal 5 Implementation-**The DLCD continues to work with coastal cities and counties to achieve compliance with revised Statewide Planning Goal 5 (Natural Resources) and the updated administrative rules (OAR 660-Division 23). Some of this work has been supported with §310 funding. The loss of this funding source in the Congressional appropriations to NOAA will reduce the state's ability to improve and update local wetland inventories. The DLCD also provides technical and policy advice to state agencies and local governments regarding requirements of Statewide Planning Goal 5 and 17 (Coastal Shorelands), which includes significant habitat for coastal salmonids.

**Oregon Plan for Salmon and Watersheds**-The Oregon Plan is an effort to form partnerships and coordinate actions to improve the ecological conditions in watersheds important to salmon throughout the state. The Oregon Watershed Enhancement Board (OWEB) administers funding approved by voters for projects to restore and protect watersheds. The OWEB 2007-09 Biennial Report to the legislature states that, "Between 1995 and 2007, the total funding for completed and reported restoration projects from state, federal, private , and other sources exceeded $514 million." During 2006-07, $3.2 million was spent on wetland restoration projects (OWEB 2007-09 Biennial Report). The Biennial Report also includes information on efforts within each watershed, including those on the North Coast, South Coast, Lower Columbia, Rogue and Umpqua Basins, which generally cover the state's Coastal Zone. OWEB maintains the "Oregon Watershed Restoration Inventory," (OWRI) a voluntary reporting system for watershed restoration projects. Although the data base can not be verified as complete, it is the best and most comprehensive information available on restoration efforts. Data from the inventory are available in several forms, including spreadsheets and maps. This information is summarized in the biennial report cited in this section. Although data are not available to provide information for the CM reporting time frames for this §309 reporting period, the data may be adequate for future §309 reporting periods.

**Mitigation Banking**-In 1997, DSL developed mitigation banking rules to regulate siting, permitting, establishment, use and sale of credits, service areas and long-term protection and management requirements applicable to mitigation banks (*See* OAR 141-085-0300 through 0365).

**Payment to Provide Program**-DSL requires mitigation for projects resulting in wetland loss. In order to achieve the state's policy goal of no net loss of wetlands, DSL regulations require replacement of comparable wetlands. In cases where an applicant proposes an unavoidable impact and no viable wetland mitigation options are available, DSL may allow payment to provide mitigation. The price for this mitigation is set at the statewide average cost of purchasing one credit from an established wetland mitigation bank. For 2007, the average price was $75,000 per acre of wetland impact.

**Wetland Assessments**-The Department of State Lands completed a tidal wetlands chapter in its Hydrogeomorphic (HGM) Assessment Guidebook (August 2006) to provide instructions and a methodology to rapidly assess Oregon's tidal wetlands. The method assigns scores to a tidal wetland based on 12 functions performed by wetlands and assesses the potential value of functions, the indicators of biological and geomorphic condition and the potential risks to a wetland's integrity. In addition to the HGM method, DSL has developed a new wetland assessment methodology using funding from the U.S. Environmental Protection Agency (EPA). The Oregon Rapid Wetland Assessment Protocol (ORWAP) was published in July of 2010. This new method is used for assessing wetlands for purpose of the state Removal-Fill Law and is recommended by the Portland District of the U.S. Army Corps of Engineers. The protocol is a standardized method for rapidly assessing the functions and values of wetlands of any type in any area of Oregon. Information on the protocol is available at the DSL website.

**Dike and Levee Inventory-**The OCMP has a NOAA Coastal Fellow (2009-2011) currently working to inventory of dikes, levees, and diking districts within the Coastal Zone. The results of this work will help to identify diked areas with wetland restoration potential. The inventory will be based on GIS mapping of a variety of resource and ownership data and is expected to be complete in mid-2011.

**Restoration-**Significant estuarine restoration work is being conducted by a variety of governmental and NGO partners, including the Pacific Coast Joint Venture (http://www.pcjv.org/), the Lower Columbia River Estuary Partnership, the South Slough National Estuarine Research Reserve (SSNERR) near Coos Bay, which is conducting important scientific research on restoration of estuarine wetlands (http://www.oregon.gov/DSL/SSNERR/).

Coastal local governments are also involved in the protection and restoration of wetlands within the coastal zone. Statewide Planning Goals 5 (Natural Resources) and 17 (Coastal Shorelands) require inventories and protection for significant wetlands. These requirements are implemented by provisions contained in comprehensive plans and land use regulations. Development within these areas requires appropriate conservation measures. In addition to regulating development in significant wetland areas in order to protect resource values, many coastal plans identify areas with characteristics that make them appropriate candidate sites for restoration and enhancement. Most local government estuary management plans were completed and adopted in the early to

mid-1980s. While they have been effective in protecting existing (remaining) estuarine wetlands, these plans are increasingly out of date in terms of changes in local economic circumstances and aspirations, enhanced understanding of the necessity of estuarine functions as a necessary component of restoration of coastal salmonids and other species, and the vulnerability of estuarine areas to sea level rise.

1. For each of the wetland management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Wetland regulatory program implementation, policies, and standards | Y | N |
| Wetland protection policies and standards | Y | N |
| Wetland assessment methodologies (health, function, extent) | Y | Y |
| Wetland restoration or enhancement programs | Y | Y |
| Wetland policies related public infrastructure funding | Y | N |
| Wetland mitigation programs and policies | Y | Y |
| Wetland creation programs and policies | Y | N |
| Wetland acquisition programs | Y | N |
| Wetland mapping, GIS, and tracking systems | Y | N |
| Special Area Management Plans | N | N |
| Wetland research and monitoring | Y | N |
| Wetland education and outreach | Y | N |
| Estuary Management Plans | Y | N |

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
    a) Characterize significant changes since the last assessment;
    b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
    c) Characterize the outcomes and effectiveness of the changes.

**Wetland Assessment Methodologies**-DSL published its Hydrogeomorphic Assessment Guidance Guidebook (August 2006) for Tidal Wetlands without §309 funding to meet a need for more detailed guidance in the field. With funding assistance from the EPA, DSL developed a new wetland assessment tool to improve and streamline wetland assessments required by the state's Removal-Fill law and the Corps 404 permit program (*See* Adamus, P., J. Morlan, and K.

Verble. 2010. Manual for the Oregon Rapid Wetland Assessment Protocol (ORWAP) Version 2.0.2. Oregon Dept. of State Lands, Salem, OR). The use of this guidance is expected to improve the overall effort to properly classify, regulate and mitigate for loss of functions and values in tidal wetlands. While the specific outcome is difficult to measure in terms of wetland restoration, better informed applicants and the public will benefit from the knowledge and awareness. We expect better decisions that are more targeted and will link mitigation to predicted effects.

**Wetland restoration or enhancement programs**-The "payment-to-provide" (aka: in-lieu fee) wetland mitigation program and addition of a new voluntary wetland restoration program (2005 EPA Grant) through the Department of State Lands will significantly improve wetland restoration efforts in the Coastal Zone through education and technical support. These efforts do not rely on §309 funds. The DSL "payment-to-provide" program will likely improve wetland mitigation success, particularly when a small acreage impacted by a single project is mitigated by a much larger and more viable mitigation project. Replacing the functions and values of small wetland areas lost through fill or development is important, but larger scale projects typically provide more cost effective and higher quality ecological value.

A three year grant from the USEPA that began in 2005 has enabled the DSL to increase its capacity to assist Oregonians with implementing voluntary wetland restoration projects. Two new full-time wetland restoration specialists actively facilitate voluntary wetland restoration projects. The primary objectives for the voluntary restoration program are to accurately track and report the quality and quantity of wetland restoration projects; provide technical assistance on site assessment, permitting and monitoring; facilitate the restoration of historical wetland types with an emphasis on rare and "at-risk" habitats; and complete a new Oregon Rapid Wetland Assessment Protocol to support consistent assessment of wetland functions. DSL provides many wetland restoration resources on its website, including general information on restoration; sources of funding and technical assistance; non profit organizations working on wetland restoration; public agencies working on wetland restoration; technical and scientific information on wetlands; and information about wetlands and mosquito concerns. Since this is a relatively new program, the outcomes are not yet known. The support and assistance is expected to provide significant benefits in the amount of wetland acreage restored by voluntary means. The quality of wetland restoration projects is also expected to increase, including creation of important categories of historical and at-risk habitat. More information on DSL wetland programs is available online at: www.oregon.gov/DSL/WETLAND/index.shtml

**Wetland mitigation programs and policies**-As previously noted the addition of the Payment-to-Provide and Voluntary Wetland Restoration efforts represent significant improvements in the state's wetland program.

3. **(CM)** Indicate whether the CMP has a habitat restoration plan for the following coastal habitats and the approximate time since the plan was developed or significantly updated.

| **Habitat type** | **CMP has a restoration plan** (Y or N) | **Date completed or substantially updated** |
|---|---|---|
| Tidal Wetlands | N | |

| | | |
|---|---|---|
| Beach and Dune | N | |
| Nearshore | N | |
| Estuarine Habitat | N | |

Although the state does not have a restoration plan for the above habitat types, the comprehensive plans of local governments generally identify estuarine and shoreland habitat areas. Some restoration sites are identified in these plans based on the requirements of statewide planning goals 16 (Estuarine Resources) and 17 (Coastal Shorelands). Restoration sites identified in local comprehensive plans are also identified in the Estuary Plan Book.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the Coastal Management Program and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need description** | **Select type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority (H, M, L)** |
|---|---|---|
| Update Estuary Habitat Inventory | Spatial data, Capacity | H |
| Update High Priority Estuary Plans | Capacity, Communications & Outreach | H |
| Impact of sea level rise and climate change on estuaries under various scenarios, particularly deep draft development estuaries | Data, Policy, Regulatory | H |
| Update dune grading requirements for habitat (Western Snowy Plover) | Policy/Regulation | M |
| Review & Revise non-native beach grass requirements for beaches and dunes | Policy/Regulation, Capacity | L |

The above identified gaps/needs are linked to the proposed Estuary/Ocean Shore Planning Strategy and the Climate Change Adaptation Planning PSM Strategy. The strategy will provide updated estuary habitat inventory information; update one or more high priority estuary plans as a pilot program and present model planning and code provisions to deal with impacts of climate change and sea level rise.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

**High** __X__
**Medium** _____
**Low** _____

Briefly explain the level of priority given for this enhancement area.

Wetlands, especially tidal wetlands are finite, critical resources of fundamental ecological value. Restoration and improved protection of tidal wetlands in coastal estuaries is a priority in order to improve salmon recovery efforts, adapt to the effects of climate change, and maintain livability in coastal communities.

2. Will the CMP develop one or more strategies for this enhancement area?

**Yes** __X___
**No** _____

Briefly explain why a strategy will or will not be developed for this enhancement area.

Wetlands remain a high priority in Oregon. DSL plays a lead role in protecting and conserving the state's wetland resources. While statewide planning goals require protection of wetlands at the local government planning level, the lead responsibility belongs to DSL. Although important advancements have been made in inventory data and regulation, there are still significant gaps and needs at the land use planning level rather than the on-site regulatory level. Completion of an up to date inventory of coastal wetlands and updates to local government estuary management plans will enhance the state's protection and conservation programs for coastal wetlands.

High priority actions include:

1. Complete mapping of freshwater wetlands in the Coastal Zone. (Estuary/Ocean Shore Planning Strategy Year 2, depending on cost and funding support.)

2. Update estuarine habitat inventories for the Columbia River, Yaquina Bay and Coos Bay estuaries. (Estuary/Ocean Shore Planning Strategy Years 2 and 4 + Potential PSM)

3. Work with local government and state and federal agencies to update the policy/regulatory framework in local estuary plans for the three Deep Draft Development estuaries (Columbia River, Yaquina Bay, and Coos Bay) based on new habitat information and revised economic opportunity analyses. Efforts should be made to specifically identify restoration sites, particularly in connection with the OCMP dike inventory project and sites that contain public infrastructure that may be affected by increasing tidal elevations. (Estuary/Ocean Shore Planning Strategy Years 2 and 4 + Potential PSM; Climate Change Adaptation Strategy PSM, Years 3 and 5) top

## Coastal Hazards

**Section 309 Enhancement Objective**
Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. Characterize the level of risk in the coastal zone from the following coastal hazards:

   (Risk is defined as: "the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage." *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*)

| **Type of hazard** | **General level of risk** (H,M,L) | **Geographic Scope of Risk (Coast-wide, Sub-region)** |
|---|---|---|
| Flooding | H | Coast-wide |
| Coastal storms, including associated storm surge | H | Coast-wide |
| Geological hazards (e.g., tsunamis, earthquakes) | H | Coast-wide |
| Shoreline erosion (including bluff and dune erosion) | H | Coast-wide |
| Sea level rise and other climate change impacts | H | Coast-wide |
| Great Lake level change and other climate change impacts | N/A | N/A |
| Land subsidence | M/L | Central and North Coast |

Sea level and other climate change impacts underlie storms, storm surges, and erosion. They represent significant risks and as such require further study and possible adaptation measures.

2. For hazards identified as a high level of risk, please explain why it is considered a high level risk. For example, has a risk assessment been conducted, either through the State or Territory Hazard Mitigation Plan or elsewhere?

Sea level rise (SLR) is a high risk because of the anticipated shoreline erosion, inundation, estuarine wetland migration, and infrastructure damage that it will cause. The amount of infrastructure and private property that is at some risk due to sea level rise is not quantified, but

is thought to be significant. Shoreline erosion and increasing intensity of coastal storms appear to be correlated with climate change and sea level rise.

The Oregon coastline in general, has experienced significant erosion of its beaches in recent years. Ongoing research by the Oregon Department of Geology and Mineral Industries (DOGAMI) suggests that our coast could experience additional significant negative impacts in the future related to increase in significant storms, wave heights, and sea level rise. Some of these impacts over time may be directly related to climate change factors. Jonathan Allan (DOGAMI staff) has led several coastal erosion research projects over the past decade related to erosion risks and indicates:

1. Ocean winter wave heights have increased significantly during the past decade, and are the highest they have been in the past three decades.
2. Significantly stronger wave events are happening earlier in the Fall/Winter and not subsiding until later in the Winter/Spring, effectively lengthening the period of winter erosion.
3. In general, many beach/dune complexes continue to erode with little sand replenishment in typical summer low energy periods.
4. The volume of sand contained on many of our beaches and dunes is much lower than was present in the mid 1990s (for example the dune face north of Proposal Rock in Neskowin has eroded landward ~150 ft since 1997). Should these areas experience storms today with intensities comparable to those of the late 1990s, combined with high tides, there is a strong probability that these areas could experience significant additional damage.

These issues are significant related to flooding, coastal storms, coastal erosion and sea level rise.

In addition, as a result of the 2004 Indian Ocean magnitude 9.3 Sumatra-Andaman Islands earthquake and subsequent tsunami, DOGAMI has led a re-evaluation of Oregon's tsunami hazard mapping program DOGAMI research from 2004 to the present combined with the re-evaluation effort and a pilot project in Cannon Beach, has led to a comprehensive coast wide effort which is currently underway. This research related to a Cascadia event earthquake and a related tsunami indicate much high probabilities of these events occurring in the near term. New and on going analysis and mapping of potential tsunami hazard risk combined with a meter or more of potential subsidence with these events make these hazards very significant. Significant portions of areas developed on the coast would be dramatically impacted.

3. If the level of risk or state of knowledge of risk for any of these hazards has changed since the last assessment, please explain.

   A) Ocean Flooding: New modeling is nearly complete in Coos County. Clatsop, Tillamook, Lincoln, and Curry Counties will have new ocean flooding mapping within the next 2 years.
   B) Riverine Flooding: Revised maps utilizing accurate lidar elevation data is nearly complete in Coos County. Clatsop, Tillamook, Lincoln, and Curry Counties will have lidar elevation data within the next 2 years.
   C) Sea Level Rise: Sea level rise and other climate change impacts are now understood to underlie most of the other high risk hazards (e.g. erosion, inundation, flooding, and storm

surge). Sea level rise is classed as a high risk because recent assessments of the rate of continental ice loss result in estimates of potential future sea levels that are significantly greater than previous estimates.

D) Wave heights: Recent new data is indicating a significant increase in coastal storm wave heights.

E) Tsunami/earthquake risk: Recent paleotsunami research indicates increase risk of a large Cascadia earthquake and related tsunami. DOGAMI has piloted a new detailed analysis in Canon Beach. DOGAMI will produce this type of information and analysis along the entire length of the Oregon Coast within the next 3 years.

4. Identify any ongoing or planned efforts to develop quantitative measures of risk for these hazards.

   i. Ocean Flooding: As stated above, new modeling is nearly complete in Coos County. Clatsop, Tillamook, Lincoln, and Curry Counties will have new ocean flooding mapping within the next 2 years.
   ii. Riverine Flooding: As stated above, revised maps utilizing accurate lidar elevation data is nearly complete in Coos County. Clatsop, Tillamook, Lincoln, and Curry Counties will have lidar elevation data within the next 2 years.
   iii. Tsunami/earthquake risk: As stated above, recent paleotsunami research indicates increase risk of a large Cascadia earthquake and related tsunami. DOGAMI has piloted a new detailed analysis in Cannon Beach. DOGAMI will produce this type of information and analysis along the entire length of the Oregon Coast within the next 3 years.
   iv. Sea level Rise: If reliable methodologies and data can be developed to map areas subject to future sea levels, then some approximation of property and infrastructure at risk of damage or loss due to sea level rise can be made using census and local data on improved property values. Data on total value and on insured values would vastly improve the ability to quantify risk.
   v. Please see issue 2 in the "Management Characterization" section below for key additional planned efforts.

5. **(CM)** Use the table below to identify the number of communities in the coastal zone that have a mapped inventory of areas affected by the following coastal hazards. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

| **Type of hazard** | **Number of communities that have a mapped inventory (of 36 in CZ)** | **Date completed or substantially updated** |
|---|---|---|
| Flooding | 36 (FEMA FIRMS) 100% | Completed and varies by jurisdiction; New FEMA mapping for entire coast to be completed in 3 years |
| Storm surge | Ocean flooding: 36 coastal jurisdictions 100% | Completed and varies by jurisdiction; New FEMA |

| | | |
|---|---|---|
| | | mapping for entire coast to be completed in 3 years |
| Geological hazards (including Earthquakes, tsunamis) | 36 (DOGAMI SB 379 line for tsunami) 100% | 1995 |
| Shoreline erosion (including bluff and dune erosion) | 22 (DOGAMI Hazard Maps) | Lincoln County 2004 (north), 2007 (south); Tillamook County 2001; Clatsop County South 2009; Bandon 2002 |
| Sea level rise | 0 | Future task |
| Great lake level fluctuation | N/A | N/A |
| Land subsidence | 0 | Future task |

Coastal counties with the above mapped hazards include Clatsop County; Tillamook County; Lincoln County; Lane County; Douglas County; Coos County; and Curry County.

Actions being taken to collect data: DLCD is monitoring both scientific literature related to projecting future sea levels and efforts to develop methodologies to map future sea levels under varying conditions. DLCD needs both data and reliable methodology to map future sea levels and their effects on shoreland features and ecosystem services. ODFW indicates that within the last year, the estimated probabilities for a major earthquake and associated tsunami resulting from a rupture of the Cascadia Subduction Zone have been revised significantly higher (~37% and 80% chance in the next 50 years for the central and southern Oregon coast, respectively, according to Chris Goldfinger of OSU).

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Building setbacks/ restrictions | Y | N |
| Methodologies for determining setbacks | Y | N |
| Repair/rebuilding restrictions | Y | N |
| Restriction of hard shoreline protection structures | Y | N |
| Promotion of alternative shoreline stabilization methodologies | Y | N |
| Renovation of shoreline protection structures | Y | N |

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Beach/dune protection (other than setbacks) | Y | N |
| Permit compliance | Y | N |
| Sediment management plans | In Process | N/A |
| Repetitive flood loss policies, (e.g., relocation, buyouts) | Y | N (local flood ordinance provisions and Goal 7 and Tillamook buy outs) |
| Local hazards mitigation planning | Y | Y (yes… a lot of new local hazard mitigation plans) |
| Local post-disaster redevelopment plans | N | N/A |
| Real estate sales disclosure requirements | Y | N |
| Restrictions on publicly funded infrastructure | Unknown | N |
| Climate change planning and adaptation strategies | Y | Y (LCDC's new strategy) |
| Special Area Management Plans | Y | N |
| Hazards research and monitoring | Y | Y |
| Hazards education and outreach | Y | Y |
| RiskMAP | Y | Y |

RiskMap: DLCD is drafting a new five-year plan under FEMA's RiskMAP program that will allow Oregon and the OCMP to integrate climate change, an all-hazard approach, and community engagement into efforts to improve the effectiveness of state and local hazard mitigation plans. The five-year plan will provide a framework for continued improvement of local hazard mitigation planning efforts in the coastal zone. These efforts compliment the §309 strategy. ODFW suggests that ongoing mapping of properties eligible for shoreline mapping is a high priority. ODFW comments that a cumulative effects analysis or shoreline armoring is a high priority and those areas eligible for shorefront armoring are not necessarily guaranteed for approval. Impacts on sandy beach habitats and intertidal zone areas should be evaluated in order to protect those areas from beach loss and associated impacts on recreational fishing and clamming. Goal 18 standards require maintaining access to the beach and impact minimization on adjacent properties. OPRD and local regulations implement these requirements. It is prudent for the OCMP staff to continue to monitor actions related to beachfront protective structures and for ODFW to provide comments during the OPRD and local review of proposals for armoring.

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment;
   b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

Local Hazard Mitigation plans: The majority of coastal local governments have either developed or revised existing local hazard mitigations plans since the last assessment. Local jurisdictions worked with Oregon Emergency Management and FEMA. These changes were not driven by 309 or other CZM funding. Local governments developed the plans consistent with new federal hazard mitigation plan guidelines and are working on implementation of specific plan projects and strategies.

Climate Change Planning and Adaptation Strategies: The Oregon Land Conservation and Development Commission adopted an interim strategy for climate change in 2009. The interim strategy has three (3) elements: adaptation and preparation for climate change; mitigation of greenhouse gas emissions; and community engagement. Each element involves a series of priority actions which DLCD anticipates beginning in the 2009-2011 biennium and continuing in the next biennium. These changes were not driven by 309 or other CZM funding but included significant CZM staff support and work. The strategy has been effective in identification of gaps in needed climate change efforts within DLCD and related Oregon CZM agencies. Coordination of local adaptation planning work has begun.

Hazard Research and Monitoring: the Oregon Coastal management Program (OCMP), through the Department of Geology and Mineral Industries (DOGAMI) has done extensive additional hazard research and monitoring. New hazard mapping in south Lincoln County and Clatsop County coastlines have been completed. Also, additional and ongoing beach profile monitoring in Curry, Lincoln, Tillamook and Clatsop Counties have been ongoing. These efforts have utilized 309 funding. The hazard efforts have produced scientifically based hazard risk maps and analysis. In addition, the monitoring efforts are developing a significantly better understanding and baseline data of beach morphodynamics and bluff erosion. This will enable agencies and local governments to begin to predict future rates of coastal erosion and shoreline positions as well as provide the quantitative basis for establishing scientifically defensible coastal hazard setback lines.

Hazard Education and Outreach: The OCMP has done additional hazard education and outreach work since the last assessment. These efforts have been CZM driven. The OCMP has worked with Oregon Sea Grant and others to develop a DVD entitled "Living on the Edge, Buying and Building Property on the Oregon Coast. The OCMP published "Climate Ready Communities" and has worked with local governments on climate and hazard related issues. The Coastal Processes and Hazards Working Group (CPHWG), sponsored by the OCMP, has been active over the past few years and have produced documents related to "Geological Report Guidelines for New Development on Oceanfront Properties" and "Geological Report Guidelines for Shoreline Protective Structures". The OCMP Coastal Shores Specialist and other OCMP staff have been active in working with local governments and other in coastal hazard education and outreach related to the above reference, and other coastal hazard, materials.

3. **(CM)** Use the appropriate table below to report the number of communities in the coastal zone that use setbacks, buffers, or land use policies to direct development away from areas vulnerable to coastal hazards. If data is not available to report for this contextual measure,

please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

For CMPs that use numerically based setback or buffers to direct development away from hazardous areas report the following:

| Contextual measure | Number of communities |
|---|---|
| Number of communities in the coastal zone required by state law or policy to implement setbacks, buffers, or other land use policies to direct develop away from hazardous areas. | N/A |
| Number of communities in the coastal zone that have setback, buffer, or other land use policies to direct develop away from hazardous areas that are more stringent than state mandated standards or that have policies where no state standards exist. | N/A |

For CMPs that do not use state-established numerical setbacks or buffers to direct development away from hazardous areas, report the following:

| Contextual measure | Number of communities |
|---|---|
| Number of communities in the coastal zone that are required to develop and implement land use policies to direct development away from hazardous areas that are approved by the state through local comprehensive management plans. | 36-100% |
| Number of communities that have approved state comprehensive management plans that contain land use policies to direct development away from hazardous areas. | 36-100% |

All coastal cities and counties must have state approved comprehensive plans and implementing measures meeting the above hazard protection requirements. For §309 CM reporting purposes, coastal counties include: Clatsop County; Tillamook County; Lincoln County; Lane County; Douglas County; Coos County; and Curry County.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H,M,L) |
|---|---|---|
| Beach Profile Monitoring: | Data/Monitoring-Despite significant progress on beach monitoring, there are two significant gaps: the Yaquina Head to Cape Foulweather area; and Cape Foulwether to Cascade Head | H |
| Sediment(sand) budget Analysis | Data/Modeling-We do not have adequate data, modeling or analysis to determine sediment loss and transport within key areas. | H |
| Coastal Erosion Risk Probability Mapping (Including Sea Level Rise Data/Mapping) | Data/Mapping-The option of using risk zone analyses to limit land uses based on relative risk requires additional detailed chronic coastal erosion probability lines, which includes sea level rise data. (See Also-Climate Change Adaptation Planning PSM) | H |
| Coastal Storm Data | Data-Projections and analysis of storm hazard impacts tied to hazard protection standards and planning requirements. | H |

**<u>Enhancement Area Prioritization</u>**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** __X__
   **Medium** _____
   **Low** _____

   Briefly explain the level of priority given for this enhancement area.

The Pacific Northwest is experiencing significant high energy winter storm events. The Oregon coast is faced with significant chronic coastal erosion. Addressing these issues is a high priority.

2. Will the CMP develop one or more strategies for this enhancement area?

**Yes** ___X__
**No** _____

Briefly explain why a strategy will or will not be developed for this enhancement area.

Coastal hazard issues have been a high priority for the OCMP for some time. Although we have made good progress in addressing coastal hazards, increased coastal hazard risks due to sea level rise and increasing storm energies and wave heights continue to keep this enhancement area a high priority. Local governments have identified this area as a high priority for assistance. Development pressure in high risk areas remain with a need for additional data and management tools to address it. (Coastal Hazards Planning Strategy, Years 1-5; Climate Change Adaptation Planning PSM, Years 3 and 5)

The data and management measure information gaps will be addressed through detailed updates to various hazard threats. Model codes will be developed to assist local government in minimizing threats to life and property. Pilot communities will likely address updated data and may be eligible for estuary and shoreland planning to address climate change and sea level rise (depending on the level of §309 funding and the proposed PSM in years 3 and 5 of this strategy. The proposed Coastal Hazards Planning strategy includes developing second generation mapping coupled with enhanced regulation. This §309 strategy also includes enhancements in tsunami inundation/recovery planning and regulation. (Coastal Hazards Planning Strategy, Years 1-5: Climate Change Adaptation Planning PSM, Years 3 and 5). top

## Public Access

**Section 309 Enhancement Objective**
Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. Characterize threats and conflicts to creating and maintaining public access in the coastal zone:

| **Type of threat or conflict causing loss of access** | **Degree of threat** (H,M,L) | **Describe trends or provide other statistics to characterize the threat and impact on access** | **Type(s) of access affected** |
|---|---|---|---|
| Private residential development (including conversion of public facilities to private) | L | OCMP Requires existing public access to be maintained or replaced if converted. | Ocean Shore |
| Non-water dependent commercial/industrial uses of the waterfront (existing or conversion) | L | OCMP Requires maintenance of an adequate inventory of water dependent development sites based on Goal 17. | Navigable Waterways |
| Erosion | M | Coastal Erosion can impact public access, but such access is maintained, where safe. | Public Access to Ocean Shore |
| Sea level rise | Unknown | Sea level rise is not expected to affect public access. | Ocean Shore and Estuaries. |
| Natural disasters | Unknown | The effects of a Cascadia subduction zone earthquake and/or tsunami are not known. | Ocean Shore and Estuaries. |
| National security | L | There are no known threats to national security at this time. Should any of the proposed LNG import terminals be developed there may be potential for limitations on access to protect these sites. | Access to Shorelands and water areas near proposed LNG import terminals. |
| Encroachment on public land | L | This has not been an issue in Oregon. | Ocean Shore, Estuaries, Forest Land. |

Nearly all of Oregon's 362 miles of ocean shoreline is open and accessible by the public. With the passage of the Beach Bill in 1967 and resolution of court challenges the public in Oregon retains an easement up to the vegetation line. The publication *Oregon's Beaches, A Birthright Preserved* describes the background and history of public beach access in Oregon. The following quote from Chapter 601, Oregon Laws 1967 summarizes the Beach Bill. The Legislature:

> "…recognizes that over the years the public has made frequent and uninterrupted use of the ocean shore…sufficient to create easements in the public through dedication, prescription, grant or other use…the Legislative Assembly hereby declares that all public rights…are vested exclusively in the State of Oregon."

The state Supreme Court determined that the Beach Bill was lawful by a December 19, 1969 opinion in Thornton v. Hay. The court determined that the bill was a lawful exercise of state authority to protect the public use and enjoyment of beaches. The opinion relied on the English doctrine of Custom to support its decision.

The OCMP conducted a survey of beach access in 2000 and identified 645 points of access perpendicular to the ocean shore. Information on access is also included in the Oregon Coastal Atlas website. During 2009 and 2010, additional access survey work has been carried out by OCMP staff in order to verify and add information on various types of access to various natural features, including the ocean shore. New survey work includes extensive digital photos of access sites and amenities. This updated information has not yet been added to the Coastal Atlas, but will likely be added in 2011.

Creating an accurate, unambiguous inventory of public access sites is difficult. Several surveys have been conducted, but criteria for what qualifies as a "site" and characteristics of what qualifies as "access" varies considerably. Each site may provide several different types of access (e.g. recreational trailhead, boat, scenic vista), making it difficult to calculate qualitative and quantitative features by simple numerical measures.

The Coastal Atlas currently includes 651 sites. In general, there are 216 county and local park sites; 232 boat ramps, 271 scenic vistas, and 119 disabled access sites. In addition, we have identified 695 rights-of-way that provide scenic vistas or recreational access. Updated public access information (not included in the current Coastal Atlas website) is provided in the table under question 4 below.

2. Are there new issues emerging in your state that are starting to affect public access or seem to have the potential to do so in the future?

There are no new or emerging issues in Oregon affecting public access. ODFW has commented that beachfront protective structures can impact access to beach areas. As noted in the hazard section of this assessment, the provisions of statewide planning goal 18 (Beaches and Dunes) that regulate beachfront protective structures require maintenance of beach access (*See* Implementation Requirement 5).

3. **(CM)** Use the table below to report the percent of the public that feels they have adequate access to the coast for recreation purposes, including the following. If data is not available to report for this contextual measure, please describe below actions the CMP is taking to develop a mechanism to collect the requested data.

| **Contextual measure** | **Survey data** |
|---|---|
| Number of people that responded to a survey on recreational access | 4,400 Oregonians and 800 non-residents |
| Number of people surveyed that responded that public access to the coast for recreation is adequate or better. | This specific question was not part of the SCORP survey. |
| What type of survey was conducted (i.e. phone, mail, personal interview, etc.)? | Phone and Mail |
| What was the geographic coverage of the survey? | Oregon-Washington-Idaho-California |
| In what year was the survey conducted? | 2001-2002 |

For future reporting on this contextual measure, DLCD will work with OPRD to determine how to obtain survey data from the public on their perceptions regarding the adequacy of public access along the Oregon Coast for recreational purposes.

4. Briefly characterize the demand for coastal public access within the coastal zone, and the process for periodically assessing public demand.

OPRD periodically updates the state's Comprehensive Outdoor Recreation Plan. The current Plan is for the 2008-2012 time period. "The primary purpose of this planning effort is to provide recommendations to the Oregon State Park System operations, administration, planning, development, and recreation programs." (February 2008 Executive Summary-SCORP Plan)

The most recent SCORP planning process did not rely on regional issues workshops. Instead, the OPRD took a proactive approach to addressing a limited number of previously identified and defined issues. These issues are linked to important demographic and social changes facing outdoor recreation. The issues include A Rapidly Aging Oregon Population; Fewer Oregon Youth Learning Outdoor Skills; An Increasingly Diverse Oregon Population; and Oregon's Physical Activity Crisis (e.g. obesity and inactivity). The SCORP "planning effort relied on research and studies designed to provide managers and planners across Oregon with usable knowledge so they can proactively address the four key statewide demographic and social changes affecting recreation in Oregon." (February 2008 Executive Summary-SCORP Plan)

Key findings of the research project will guide OPRD efforts, rather than a specific demand analysis. The following list is a sampling of some of the resulting planning recommendations:

- Develop a statewide trails web site
- Develop a statewide marketing plan
- Facilitate development of walking clubs
- Plan and develop regional trail systems
- Develop a statewide youth outdoor programming framework

- Develop a "lets go Camping" marketing campaign
- Encourage organizational cultural change to address diversity
- Create a pilot project to identify how to increase under-represented population use of outdoor facilities and programs
- Develop a marketing modes targeted toward under-represented populations
- Develop a marketing plan to encourage Oregonians to become more physically active by using park and recreation facilities and services

Because of the significant existing coastal access opportunities in Oregon, the state's policy is to maintain existing access and replace any access lost through development actions with equivalent alternative access.

5. Please use the table below to provide data on public access availability. If information is not available, provide a qualitative description based on the best available information. If data is not available to report on the contextual measures, please also describe actions the CMP is taking to develop a mechanism to collect the requested data.

| **Types of public access** | **Current number(s)** | **Changes since last assessment (+/-)** | **Cite data source** |
|---|---|---|---|
| **(CM)** Number of acres in the coastal zone that are available for public (report both the total number of acres in the coastal zone and acres available for public access) | 69,797 acres in state, county and local parks. The coastal zone is 5M acres (7,800 square miles). (*See* explanation below) | Unknown | Coastal Atlas and updated OCMP Staff Survey |
| **(CM)** Miles of shoreline available for public access (report both the total miles of shoreline and miles available for public access) | 362 miles<br>All are available for public recreational use (*See* explanation below) | No change | The entire coastline is subject to a public recreational use easement |
| Number of State/County/Local parks and number of acres | 216 Total<br>72 state<br>28 city/county<br>(69,797 acres) | 4 new state parks/access areas (Sunset Beach/120 acres; Crissey Field/40 acres; Beaver Creek/320 acres; Arizona Beach /~68 acres) | OPRD and Coastal Atlas |
| Number of public beach/shoreline access sites | 746 | Unknown | Coastal Atlas and updated OCMP Staff Survey |

| **Types of public access** | **Current number(s)** | **Changes since last assessment (+/-)** | **Cite data source** |
|---|---|---|---|
| Number of recreational boat (power or non-power) access sites | 248 | Unknown | Oregon State Marine Board |
| Number of designated scenic vistas or overlook points | 230 | Unknown | Coastal Atlas and updated OCMP Staff Survey |
| Number of State or locally designated perpendicular rights-of-way (i.e. street ends, easements) | 312 | Unknown | Coastal Atlas and updated OCMP Staff Survey |
| Number of fishing access points (i.e. piers, jetties) | 199 | Unknown | Coastal Atlas and updated OCMP Staff Survey |
| Number and miles of coastal trails/boardwalks | Extensive, but not measurable within the CZ (1345.6 miles in NW and SW OPRD Regions) | Unknown | OPRD Statewide Trails Inventory |
| Number of dune walkovers | 0 | No Change | Coastal Atlas |
| Percent of access sites that are ADA compliant access | 345-Number of sites with some ADA accommodation, but not necessarily fully ADA compliant | Unknown | |
| Percent and total miles of public beaches with water quality monitoring and public closure notice programs | 47%<br>171.4 miles<br>(*See* explanation below) | 92 Recreational Beaches; Data on 50; 25 actively monitored; (increase of 5 actively monitored) | State Beach Water Quality Monitoring Program |
| Average number of beach mile days closed due to water quality concerns | 2009 data: 26 advisories;145 days; 306 beach mile days<br>(*See* explanation below) | NA<br>(*See Below*) | State Beach Water Quality Monitoring Program |

The Contextual Measure (CM) requiring data on acreage and percentage of the coastal zone is nearly impossible to accurately measure. We included acreage in state, county and local parks because it is a measure we could calculate using GIS tools. While these areas represent some of the more extensive holdings and the greatest quality access, they are not complete. Because the Oregon coastal zone is quite extensive (limits of the territorial sea to the crest of the coastal mountain range from Oregon's border with Washington to Oregon's border with California), and because federal ownership is interspersed on upland areas, any figure indicating percentages would be entirely misleading. Access to beaches and the territorial sea would likewise create a misleading impression even though these areas are available for public access. Oregon's recreational use easement for the entire ocean shore as described in the Beach Bill covers an extensive acreage and is legally available for public use. Within this area, the state has considerable opportunity for access along the ocean shore, with approximately 92 identified recreational beaches. However, many more areas are available for public access depending on local conditions. Coastal headlands and rocky shores are more difficult to measure, since tidal conditions and geographic features significantly affect access.

The number of miles of recreational trails and boardwalks in the coastal zone is not possible to measure. There is an extensive network of trails throughout the coastal zone in parks, along the ocean shore and on various categories of public lands. The OPRD has conducted a statewide inventory of public recreational trails and developed a statewide trail plan. Data from the OPRD inventory include public trails in state, local and federal parks and other recreational lands. This inventory does not include information specific to the coastal zone and coastal zone data are not easily obtained from this source. The data for the Northwest and Southwest regions (Includes areas outside the Coastal Zone) indicates that there are 262 trails with 1,345.6 miles of non-motorized trails within these two planning regions. This amounts to 59.5% of the total public trail miles available statewide. We are not aware of any comprehensive survey of recreational walking and hiking opportunities within the coastal zone or any cost/time effective method to address this issue.

The data in the above table on access sites are from a combination of sources. Since some of the data are from different sources and an updated (enhanced) coastal access survey is underway, there is no reliable method to compare data in this assessment with data from previous assessment documents. While access is generally increasing and existing accesses are improving, the state is making reliable progress in this area. Because of the Beach Bill and no loss policies, the state does not identify any significant threats in this management area.

The beach monitoring program has experienced steady improvement and expansion during the past five years. The total number of identified recreational beaches in Oregon has been expanded to 92 (an increase of approximately 33 beaches). However, not all beaches are a high priority for water quality monitoring. Beaches are prioritized based on season, activity level, previous indicators of high bacteria levels etc. During the winter, the program actively monitors approximately 14-18 beaches. During the shoulder season and summer this increases to 20 to 25 beaches.

The Oregon beach monitoring program does not have a closure system for recreational use. The program issues advisories and the information is available through the Coastal Atlas website and

local postings. During 2009, advisories were issued for 26 beaches, and totaled 145 beach days. There were 306 beach mile days under an advisory during 2009.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Statutory, regulatory, or legal system changes that affect public access | Y | N |
| Acquisition programs or policies | Y | N |
| Comprehensive access management planning (including GIS data or database) | Y | Y |
| Operation and maintenance programs | Y | N |
| Alternative funding sources or techniques | Y | N |
| Beach water quality monitoring and pollution source identification and remediation | Y | Y |
| Public access within waterfront redevelopment programs | Y | N |
| Public access education and outreach | Y | N |

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment;
   b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

The OCMP has done extensive field work to refine its information on coastal access. This field work is complete. Staff have conducted field surveys to verify GIS coordinates, describe the type and quality of various access points and taken extensive photographs. This information will be integrated into the Coastal Atlas during the next year. The public will be able to better identify public access and recreational opportunities by using the new information.

Oregon's Beach Water Quality Monitoring Program has expanded to include 59 beaches (Last reporting period it was 20). The monitoring program includes access to data through the Oregon Coastal Atlas website. Data for the 59 beaches is available, showing current conditions and past monitoring results. Each beach monitoring site on the Atlas includes a photo, a location map, and an aerial image depicting the area of the beach subject to monitoring. This effort was not supported by CZM funding. The expanded water quality monitoring efforts will assist the public in understanding beach water quality issues and conditions. The ability to determine conditions in advance may improve the public health and achieve more informed decisions regarding beach activities.

3. Indicate if your state or territory has a printed public access guide or website. How current is the publication and/or how frequently is the website updated? Please list any regional or statewide public access guides or websites.

The Oregon Coastal Atlas includes a public access component. The current Atlas contains the initial baseline information from previous surveys. Coastal program staff has engaged in an effort to improve the information in the baseline survey and to significantly increase the number/percentage of access opportunities that are included in our data base. The new field survey information is nearly complete and will be integrated into the website over the next year. New information significantly increases qualitative access information for sites and includes additional sites not included in the baseline survey previously completed. The new data will include photos in addition to basic information on types of facilities and recreational opportunities at each site.

In addition to the Coastal Atlas, the Oregon Parks and Recreation Department provides public outreach information, publications and website access to information on park and recreational opportunities in the coastal zone. The OPRD website provides information about state park facilities, recreational opportunities. Users can make reservations for campsites and other recreational facilities (e.g. cabins, yurts, group picnic areas and group camping facilities).

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| Gap or need description | Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach) | Level of priority (H,M,L) |
|---|---|---|
| | | |

Because of the extensive public access opportunities in Oregon and the legacy of recreational access through provisions of the Beach Bill, there are no major identified gaps or needs that lead to any listing here. The primary emphasis of the program is maintenance and enhancement of existing opportunities. The OPRD continues to make improvements in the system of state parks within the coastal zone.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** _____
   **Medium** _____
   **Low** __X__

   Briefly explain the level of priority given for this enhancement area.

The OCMP has recently completed its inventory of public access sites and is in the process of adding the new information to the Oregon Coastal Atlas. Oregon has a relatively successful public access framework. Beaches are public due to the state's progressive beach bill. Statewide planning goals require retention or replacement of access points. Oregon has a beach water quality monitoring program that includes online information. Because of the overall quality and success of these components, enhancement is a relatively low priority.

2. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** _____
   **No** __X___

   Briefly explain why a strategy will or will not be developed for this enhancement area.

The existing public access provisions of the OCMP are extensive and successful. Because of the Beach Bill, nearly the entire coast is accessible to the public. There are headlands and rocky shore areas which do not provide good recreational opportunities. The state has an extensive parks system, with camping and recreational opportunities located along the entire coastline. The Coastal Atlas provides both substantive and qualitative data on current access points, scenic vistas and recreational opportunities. The state has an established and successful beach water quality monitoring program, with data available online through the Oregon Coastal Atlas website.

The OPRD regularly updates the Statewide Comprehensive Outdoor Recreation Plan to anticipate and develop facilities to meet future needs. Since the 2003-2007 SCORP, OPRD has

developed a new methodology to respond to expected trends in an effort to achieve a set of objectives driven by demographic and social conditions. While surveys are an essential component of this planning effort, the surveys are targeted at a set of issues based on demographic trends, rather than an attempt to quantify park and recreational deficiencies and needs. The OPRD has a program aimed at adding one state park each year. This is a statewide objective, however, there have been two additional state parks in the coastal zone within each of the past two §309 Assessment periods. Although acquisition is important, the OPRD has considerable opportunities for expansion and improvement of existing facilities. For example, during this assessment period, Fort Stevens State Park was expanded by 440 acres (NOAA CELCP funded Delura Beach Addition). Likewise, the Joaquin Miller property near Florence was added to the state system (22 acres). The Driftwood Beach State Recreational Site, near Waldport, was also expanded by 21 acres. top

## Marine Debris

**Section 309 Enhancement Objective**
Reducing marine debris entering the Nation's coastal and ocean environment by managing uses and activities that contribute to the entry of such debris

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. In the table below, characterize the significance of marine/Great Lakes debris and its impact on the coastal zone.

| **Source of marine debris** | **Extent of source** (H,M,L) | **Type of impact** (aesthetic, resource damage, user conflicts, other) | **Significant changes since last assessment** (Y or N) |
|---|---|---|---|
| Land Based – Beach/Shore Litter | L | Aesthetic/User Conflict/Public Safety | N |
| Land Based – Dumping | L | Aesthetic/Public Safety | N |
| Land Based – Storm Drains and Runoff | L | Aesthetic/Resource Effects | N |
| Land Based – Fishing Related (e.g. fishing line, gear) | L | Aesthetic/Resource Effects | N |
| Ocean Based – Fishing (Derelict Fishing Gear) | M | Aesthetic/Resource Effects | Y |
| Ocean Based – Derelict Vessels | M | Aesthetic/Resource Effects | Y |
| Ocean Based – Vessel Based (cruise ship, cargo ship, general vessel) | L | Aesthetic/Public Safety | N |
| Hurricane/Storm | L | Aesthetic | N |

The above listing for "Ocean Based Derelict Vessels" is listed as a Medium priority because such groundings are relatively rare. However when a vessel is grounded within the Territorial Sea, the consequences are significant. The state worked through the legal system to successfully remove the grounded vessel *New Carissa* from the ocean at a site near Coos Bay during this assessment period.

2. If information is not available to fill in the above table, provide a qualitative description of information requested, based on the best available information.

Marine debris continues to be present on Oregon beaches and in coastal waters. Sources include rivers and streams of the Pacific coast, trans-Pacific currents that carry debris from across the Pacific Ocean basin and ship-generated debris. The Oregon Department of Fish and Wildlife (ODFW) describe the following type of marine debris and their impacts on Oregon's coastal resources.

**Ocean-based debris** includes ship debris such as gloves and containers, fishing gear debris such as nets, lines and floats, cruise line items, and floats and buoys. The impact of these items is mostly aesthetic on the beach, but the extent and degree of impact to ecosystems, marine life and habitats in currently unknown.

Derelict vessels are not a typical problem on the Oregon coast, either on the ocean shore or in estuaries. Derelict fishing gear appears to be a problem on the ocean floor in some areas (e.g. old crab pots and lines), but is not a shore debris issue. Monofilament line and other sport fishing debris (e.g. bait boxes) are locally a problem on some streams and as a component of ocean beach debris, although not a significant problem. Land-based litter is a problem at some coastal stream sites, but is not a prominent component of ocean shore litter. Cruise ship debris does not appear to be an issue on the Oregon coastline. Debris from other vessels is present, but not a significant problem.

In July 2009, the Oregon Department of Fish and Wildlife (ODFW) received nearly $700,000 in grant funds from NOAA under the American Reinvestment and Recovery Act to recover about 4,000 derelict crab pots off the Oregon coast and to develop an ongoing industry-led program to recover derelict crab gear. ODFW and project partners contributed another $135,000 of in kind services to this effort. During the first year of the project, 1,359 crab pots were recovered from Bandon to Astoria. Crab pots and gear weighed an estimated 150,000 pounds (over 67 metric tons). During the first year of this effort approximately $270,000 of the federal funding were spent.

**Land-based debris** includes a wide variety of floatable items washed to sea in rivers and streams. Debris includes medical equipment, beverage containers, personal hygiene items, motor oil and other containers, tires, auto parts, and plastic toys. The impact of this debris to coastal resources, habitat and shorelines is unknown. Impacts on the beach include aesthetic issues, health concerns and public safety depending on the item, its condition and the specific location.

**Plastic debris** is present in significant amounts everywhere in the marine environment and ocean shores world wide. Plastic debris is generated everywhere humans are, on land and at sea. Plastic materials are persistent over time and are easily transported by ocean currents. The range of sizes, shapes and chemical composition of plastic debris is widely varied, from microscopic styrene pellets that are planktonic in size, to plastic water bottles, large blocks of foam, plastic bucket, straps and various types of rope. The environmental and resource impact of these plastic

items, especially large ones, is unknown. Evidence shows that the microscopic items and some plastic bag fragments have serious adverse effects on marine life that ingest these items.

Plastic debris is present on Oregon's beaches, but varies based on season, storm conditions, wind, wave wash and drifting sand. The impacts of this plastic debris are mostly aesthetic, but can have impacts on the quality of marine recreational activities and potential, and relatively unknown and unpredictable effects on public health and safety. Data on marine debris removed from coastal beaches is largely anecdotal and not widely available. Some site data funded by the U.S. Environmental Protection Agency (EPA) are available on the Ocean Conservancy website.

3. Provide a brief description of any significant changes in the above sources or emerging issues.

Since the last §309 Assessment, the state ODFW has received a grant to recover derelict crab pots from the territorial sea. This is an ongoing issue and the state will continue to pursue funding to remove derelict fishing gear. There are no indications that marine debris represents an increasing threat to marine ecosystems or any specific species in the state. Likewise, derelict vessels, although rare, can present a significant threat. The state will continue to apply its requirements for removal of these vessels. Removal of the *New Carissa* was a significant accomplishment, and only occurred after significant successful legal efforts by the state.

4. Do you use beach clean-up data? If so, how do you use this information?

The primary purpose of beach clean-up data is to educate the public and encourage volunteer participation during the state's two annual cleanup events.

The first beach cleanup in the nation was held in 1984 in Oregon, led by the staff at the Oregon Department of Fish and Wildlife. Since then annual beach cleanups have spread to every state in the Union, all U.S. territories and more than 100 countries around the world.

The following summarizes the two most recent beach cleanup events:

- On September 29, 2009, 3,700 volunteers participated in the SOLV sponsored Great Oregon Fall Beach Cleanup. SOLV has been an active and effective interest group in Oregon for many years. The acronym SOLV stands for "Sustaining Oregon's Legacy by Volunteering." The beach cleanup effort, organized by SOLV volunteers, cleaned the entire 362 miles of the Oregon coast. The volunteers removed an estimated 54,460 pounds of trash. The most common items found on the beach included Styrofoam, plastic caps, lids, bottles and cigarette butts.
- On March 20, 2010, nearly 4,200 volunteers cleaned the beach during the spring beach cleanup event. The spring cleanup removed approximately 70,500 pounds of trash. In addition to the typical trash and debris, volunteers found a variety of household items, including aluminum siding, a freezer, a mattress, a cooler and a kitchen sink. There were also large amounts of rope and many glass bottles and glass floats from Asia.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Employed by local governments** (Y, N, Uncertain) | **Significant changes since last assessment** (Y or N) |
|---|---|---|---|
| Recycling requirements | Y | Y | N |
| Littering reduction programs | Y | Y | N |
| Wasteful packaging reduction programs | N | N | N |
| Fishing gear management programs | Y | Y | N |
| Marine debris concerns in harbor, port, marine, & waste management plans | Y | Y | N |
| Post-storm related debris programs or policies | N | N | N |
| Derelict vessel removal programs or policies | Y | Y | N |
| Research and monitoring | Y | Y | N |
| Marine debris education & outreach | Y | Y | N |

Oregon employs effective state programs to address marine debris issues. Oregon's efforts do not rely on §309 funding. Oregon has a Recycling Act (1991) administered through the Oregon Department of Environmental Quality (DEQ). The program includes mandatory recycling requirements coupled with comprehensive public outreach and education efforts. Information about this program is available at the DEQ website covering land quality. DEQ monitors and reports on waste management issues, including recycling programs. The reports are generally available by county.

Oregon also has made "sustainability" an important component of governmental actions. The Oregon Sustainability Act was passed in 2001. While not directly related to marine debris issues, the effort represents a policy with indirect positive effects on marine debris.

The Oregon State Marine Board has adopted requirements implementing 2003 Oregon Laws related to Abandoned Vessels. The board adopted requirements implementing the statutory requirements on April 15, 2004. The provisions of the state policy authorize funds for removal of abandoned vessels by various authorities. Ports are included in the entities with authority to remove abandoned or derelict vessels. The policy includes procedures and requirements for vessel removal and detailed requirements to coordinate with other responsible agencies as

appropriate, including the U.S. Coast Guard, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, NOAA, the Oregon Department of Environmental Quality, the Oregon Department of Fish and Wildlife, the Oregon State Police, the Oregon Department of State Lands, the County Sheriff's Marine Patrol and the Port District.

Oregon also has a Clean Boating program jointly developed by the Oregon State Marine Board and the Oregon Department of Environmental Quality. This program encourages boaters, marina operators and the public to keep litter, fuel and oil from waterways. The Clean Marinas Program was adopted under the national Coastal Nonpoint Control System. Measures for this program also include solid waste management practices and public education.

The OSMB adopted rules implementing the first comprehensive mandatory boater education program in the western United States in October, 2000. This program includes educational requirements on clean boating and environmental stewardship.

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment;
   b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H,M,L) |
|---|---|---|
| | | |

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** _____
   **Medium** _____
   **Low** __X__

   Briefly explain the level of priority given for this enhancement area.

While marine debris is an important issue, the state has relatively effective measures in place to address the issue. There are no major gaps for this enhancement area, either in tracking and monitoring or in management.

2. Will the CMP develop one or more strategies for this enhancement area?

**Yes** _____
**No** __X___

Briefly explain why a strategy will or will not be developed for this enhancement area.

No strategy will be developed for this enhancement area because existing programs and requirements are adequate to deal with problems associated with marine debris. While improvements are possible, the enhancement area is not as significant as other higher priority areas. top

## Cumulative and Secondary Impacts

**Section 309 Enhancement Objective**
Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources.

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI) since the last assessment.

Population growth in Oregon since the last §309 Assessment has been relatively stable and relatively low, averaging 1.2% per year since the year 2000. The recent economic downturn has resulted in relatively low statewide population growth, although coastal population growth is typically lower than other areas of the state. According to the Population Research Center (PRC) at Portland State University, "The rate of population change increased each year during the first half of the decade although not quite reaching rates as high as seen during the early and mid-1990's. Around 2006-2007 the trend reversed itself and population growth decelerated to just under one percent from 2008 to 2009." The PRC also indicates that Oregon's population growth has been more dependent on the net in-migration of people rather than on natural increase, and a drop in net migration has corresponded to a decline in annual population growth rates."

Between 2006 and 2009, State population has increased from 3,690,505 to 3,823,465 an increase of 132,960 or approximately 3.6%. Coastal population growth closely mirrors the state trends, however, the more rural nature of the coastal zone results in slightly less population growth than the state average. More significant population growth is occurring within the state's six Metropolitan Statistical Areas (MSA's). None of these MSA's is in the coastal zone. All of the significant population growth in Oregon is along the Interstate 5 (I-5) corridor or in Deschutes County (Bend-SMA).

Oregon's coastal counties have experienced relatively low population growth over the past decade. The following information is for the 2000-2009 period: Clatsop County-2,210 (6.2%); Coos county-285 (0.5%); Curry County-203 (1%); Lincoln County-221 (0.5%); Tillamook County-1,868 (7.7%). Figures for Douglas County and Lane County are not included because these counties are dominated by non-coastal population. Growth rates for cities tend to be slightly higher than unincorporated areas, although no cities are experiencing significant population growth.

Cities in the state's coastal zone tend to be relatively small in population and area. Coos Bay, in Coos County has the largest population (16,670, while Nehalem, in Tillamook County has the smallest (260).

The following is a list of cities in the Coastal Zone by population size:

- Coos Bay-16,670
- Newport-10,600
- Astoria-10,250
- North Bend-9,855
- Florence-9,580
- Lincoln City-7,930
- Seaside-6,480
- Brookings-6,470
- Warrenton-4,785
- Tillamook-4,710
- Reedsport-4,300
- Coquille-4,205
- Toledo-3,645
- Bandon-3,295
- Myrtle Point-2,550
- Waldport-2,145
- Gold Beach-2,140
- Cannon Beach-1,690
- Lakeside-1,560; Gearhart-1,440
- Depoe Bay-1,420
- Rockaway Beach-1,380
- Dunes City-1,360
- Bay City-1,285
- Port Orford-1,285
- Siletz-1,190
- Garibaldi-895
- Yachats-815
- Powers-755
- Manzanita-735
- Wheeler-460
- Nehalem-260

While population is an indication of city and county growth and development activity, coastal development includes a disproportionate number of second homes and tourist accommodations. Estimates of second homes are difficult to estimate and track. However, the current economic downturn has likely resulted in a comparative slowing of second-home development. There is no information to indicate a significant increase in growth pressure in this area or in any particular coastal locations.

As a general observation, coastal population growth and development have concentrated within cities and their designated urban growth boundaries. This is primarily due to requirements outlined in the state's planning program. The general effect of Oregon's planning program is that farm, forest and coastal resources are protected and conserved by establishment of urban growth boundaries and requirements to accommodate projected population growth in these areas.

Rural development is still authorized, but typically locates in specific areas identified as "physically developed" or "committed" to development. The planning program has done a good job in controlling sprawl and low density development patterns. Linkage between development and needed supportive transportation services and other public facilities further reduces unanticipated effects of unplanned development.

Between 2005 and 2010, Oregon has experienced a significant interest in constructing LNG import terminals and related natural gas pipelines in the coastal zone. There are three proposed terminal/pipeline projects, although some developers indicate that only one will be constructed. These projects represent significant new development with unknown secondary impacts. The resource, public safety and economic impacts are difficult to fully estimate. Since these projects are related to energy siting, they are more fully addressed under that enhancement area topic.

Oregon is experiencing significant interest in developing offshore hydrokinetic energy projects. These projects represent a new technology within a complex marine environment. The ability to predict effects is complicated by the type of project and its location in proximity to various resources. Effects on pelagic species and habitat are difficult to fully understand. State and federal resources managers have been working together to develop monitoring and management protocols to deal with this technology. The ability to monitor and apply adaptive management measures will be a central regulatory requirement for projects that move forward. Since these projects are related to energy siting, they are more fully addressed under that enhancement area topic.

Provide the following information for each area:

| **Geographic area** | **Type of growth or change in land use** | **Rate of growth or change in land use** (% change, average acres converted, H,M,L) | **Types of CSI** |
|---|---|---|---|
| Cities | Population Growth | L | Services/Infrastructure |
| Unincorporated Areas | Population Growth | L | Resource Effects |
| Estuaries | Navigation and Development/Proposed LNG Terminals | L for Navigation H/Unknown outcome of proposed LNG terminal/pipeline projects | Resource Effects |
| Ocean-Territorial Sea | Energy Development (i.e. hydrokinetic and wind) | H/Unknown outcomes for proposed hydrokinetic projects | Resource Effects |

2. Identify sensitive resources in the coastal zone (e.g., wetlands, waterbodies, fish and wildlife habitats, critical habitat for threatened and endangered species) that require a greater degree of protection from the cumulative or secondary impacts of growth and development. If necessary, additional narrative can be provided below to describe threats.

| **Sensitive resources** | **CSI threats description** | **Level of threat** (H,M,L) |
|---|---|---|
| Estuaries | Water Quality-storm water impacts due to increased impervious surfaces and nonpoint pollution. Habitat loss due to development pressure and related activities. | M |
| Coastal Streams | Water Quality-storm water impacts due to increased impervious surfaces and nonpoint pollution.. Habitat loss due to development pressure and related activities. | M |
| Coastal Lakes | Water Quality from storm water runoff and nonpoint pollution | L |
| Wetlands | Water Quantity and Water Quality impacts due to development pressure and related activities. | M |
| Ocean species and habitat | Impacts of proposed hydrokinetic energy projects. | Unknown |
| T & E Species (Green Sturgeon, sea turtles and great whales) | Cumulative and secondary effects of growth and development including ocean energy | H |

Secondary and cumulative impacts do not currently pose significant threats to resources and habitat because state and federal regulatory authorities are in place to avoid, minimize and mitigate for threats. This is particularly important for endangered species and identified essential habitat. One example is the state and federal requirements to protect several species of endangered salmonids.

Oregon's salmon and steelhead populations are sensitive to the cumulative effects of a variety of land and resource management practices. State, federal and local land management efforts aimed at fish, forests, rivers, floodplains, water, gravel, wetlands, transportation, agriculture, urbanization and wildlife all have the potential to reduce potential cumulative and secondary effects on Salmon and their essential habitat. While protection of threatened and endangered species and their essential habitat are important, a regulatory framework is in place to address significant threats.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management Categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Regulations | Y | N |
| Policies | Y | N |
| Guidance | Y | N |
| Management Plans | Y | Y |
| Research, assessment, monitoring | Y | Y |
| Mapping | Y | N |
| Education and Outreach | Y | Y |

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a. Characterize significant changes since the last assessment.
   b. Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts-This was funded by §309 funding.
   c. Characterize the outcomes and effectiveness of the changes.

**State Parks Site Management Plans**

OPRD developed site management plans for: Devils Punchbowl State Natural Area, Seal Rock State Recreation Site, Sunset Bay Management Unit - Rocky Shore Areas, Strawberry Hill State Park, Yachats State Park, and Harris Beach. Through this work new site management plans were drafted and approved by the OPRD Commission, focusing on the protection of significant natural resources and habitats within the rocky intertidal zone. Before the management plans were developed, OPRD did not have specific inventories, plans or regulatory requirements to guide decisions in these areas.

The OPRD developed biological inventories and recreational visitor use studies at each of the areas under evaluation through a contract with the Partnership for the Interdisciplinary Studies of Coastal Oceans – PISCO. The new management plans protect significant natural resources and habitats within the rocky intertidal zone.

**State Parks Snowy Plover Habitat Conservation Plan (HCP)**

This plan will play a significant role in protection of this endangered species. Although controversial, this effort results in a sound basis for resource management and minimizing

conflicts with habitat for this species. This effort did not involve §309 funding and was driven by non CZM efforts. This habit conservation plan will protect habitat and manage conflicts that threaten this species.

**DSL Hydrogeomorphic (HGM) Wetland Assessment Guidebook (August 2006) and Oregon Rapid Wetland Assessment Protocol (ORWAP) (July 2010)**
This HGM guidebook and ORWAP assessment tool will significantly improve the wetland delineation process at DSL. The guidebook and protocol are significant education/outreach tools that will assist applicants and the public in identifying the function and values of wetlands. The HGM effort was state funded. The ORWAP was funded by the USEPA.

**Part Five of the Territorial Sea Plan-Related to Ocean Energy Siting**
Although Part Two of the Territorial Sea Plan provided a general framework for decisions with potential effects, the new Part Five takes the general framework and makes it specific to Ocean Energy projects. The new element of the TSP was developed through a collaborative effort involving stakeholders. This work was accomplished with §309 funds. The new requirements are providing a solid basis for review, approval and adaptive management of ocean energy projects that are currently under review.

**Priority Needs and Information Gaps**
Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H,M,L) |
|---|---|---|
| Ocean Energy Spatial Planning | Regulatory, Policy, Data | H |
| Estuary and Ocean Shore planning update | Data, Policy and Regulatory | H |

Cumulative and secondary effects of climate change and development near estuaries is currently uncertain. As climate change work and estuary plan review progresses, there is a need to consider data in policy and regulatory decisions for these areas. While cumulative and secondary impacts are generally a low priority, this work addresses high priority planning issues.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** _____
   **Medium** _____
   **Low** __X__

Briefly explain the level of priority given for this enhancement area.

Because the existing regulatory framework for the OCMP deals well with cumulative and secondary impacts, this enhancement area is ranked lower than other priority areas. The program relies heavily on the state's comprehensive planning laws to develop long range plans, implemented by specific land use regulations. These plans anticipate a variety of the cumulative and secondary effects of growth and development and minimize significant adverse effects through growth management controls. Likewise, the state's regulatory framework for resource management, particularly for endangered species, water, wetlands and fish and wildlife habitat, provide significant management mechanisms to avoid, minimize and mitigate adverse effects.

2. Will the CMP develop one or more strategies for this enhancement area?

**Yes** __x__
**No** _____

Briefly explain why a strategy will or will not be developed for this enhancement area.

High priority cumulative and secondary effects of Ocean Energy are dealt with under the Ocean Resources Planning enhancement strategy. While cumulative and secondary effects will certainly be included in the ocean energy siting process, the work is more directly dealt with under Ocean Resources planning and Special Area Management planning. The OCMP will focus on other higher priority enhancement areas. The existing program adequately deals with secondary and cumulative effects of growth and development through it long-range planning and natural resource regulatory requirements. (*See* Ocean Resources Planning Strategy, Years 1-5 + PSM in year 3) top

## Special Area Management Planning

**Section 309 Enhancement Objective**
Preparing and implementing special area management plans for important coastal areas

> The Coastal Zone Management Act (CZMA) defines a Special Area Management Plan (SAMP) as "a comprehensive plan providing for natural resource protection and reasonable coastal-dependent 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. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making."

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. Identify geographic areas in the coastal zone subject to use conflicts that can be addressed through special area management plans (SAMP). Also include areas where SAMP have already been developed, but new issues or conflicts have developed that are not addressed through the current plan. If necessary, additional narrative can be provided below.

| Geographic Area | Major conflicts | Is this an emerging or a long-standing conflict? |
|---|---|---|
| Ocean/Territorial Sea (Territorial Sea Plan) | Ocean Energy/Renewable Resources; Marine Reserves/Recreation and Fishing | Both of these issues are emerging. Spatial Planning work is being conducted to address both. |
| Ocean Shore (Goal 17-Coastal Shorelands & Goal 18-Beaches and Dunes) | Hazards Protection-including erosion, ocean undercutting, wave overtopping and applications for ocean armoring subject to Goal 18 | This is a long standing conflict. Current efforts are aimed at improving the underlying data to identify areas subject to ocean flooding-wave overtopping and ocean undercutting. |
| Estuaries (Goal 16-Estuarine Resources) | Outdated Habitat Inventory Data and Outdated Regulatory Framework in Development Estuaries due to changing economic circumstances. | Outdated habitat data is an evolving, issue. Outdated economic inventories and related regulations is an emerging issue. |

| | | |
|---|---|---|
| Estuary Shore (Goals 16-Estuarine Resources & 17-Coastal Shorelands) | Urbanization/development pressure; armoring; increased hazard risks; habitat changes. | This is a long standing conflict; with emerging sea level rise issues. |

The Oregon Coastal Management Program relies on comprehensive planning and special area management planning to achieve coastal management objectives.

Comprehensive plans developed by local government to implement statewide planning goals are regularly updated through amendments to ensure they continue to meet local, state and federal needs and requirements. These plans essentially determine appropriate land uses and provide a regulatory framework to address cumulative and secondary impacts, growth management, economic development, housing, public facilities, resource conservation/protection and other land management issues.

Comprehensive plans and state agency regulatory authorities implementing the coastal goals (Estuarine Resources; Coastal Shorelands; Beaches and Dunes; and Ocean Resources) carry out conservation and development objectives for the Special Management Areas that are specific to each of these goals.

Over time, some of the estuary plans have become somewhat outdated. While the general framework is still sound and planning decisions are still effectively managed to achieve important resource protection and management objectives, the underlying data and regulatory framework could be improved. Data on habitat and estuarine resources within the major deep draft development estuaries (Columbia River, Yaquina Bay and Coos Bay) present the most significant opportunities for improvement. Since development activities are more active within these estuaries, the need for current data is most important. Likewise, the economic forecasts and development assumptions integrated into these estuary plans are outdated. Most of the development management units and related resource management decisions were developed based on local economies that were dependent on resources and port activities, including shipping that are no longer accurate. There is an opportunity to update the economic forecasts that form the basis of development designations and estuarine regulations to more closely align with current economic and resource management conditions.

The ocean shore is an important ecological zone. This area provides a wide range of habitats, both terrestrial and marine, for many species of plants and animals that are specifically adapted to this unique environment. The nearshore ocean has significant ecological connections with the terrestrial area of the shore. Seabirds that forage in the ocean nest on cliffs, bluffs and offshore rocks and islands (which are designated as a National Wildlife Refuge). Marine mammals use beaches, estuaries, rocky shores and offshore rocks for resting, breeding, and pupping. Many species of marine fish, invertebrates, and algae live in habitats ranging from kelp reefs several miles offshore to rocky intertidal areas easily accessible at low tide. Gray whales migrate very close to the Oregon shore and are easily visible from the beach, headlands and boats. Nearshore areas provide significant recreational fisheries. Resource management decisions for the nearshore require data and information on bathymetry, essential and important habitat, littoral sand movement and species abundance.

The Oregon Department of Fish and Wildlife has adopted a Nearshore Strategy (January 2006). The essence of the Nearshore Strategy is a set of priorities and opportunities identified through a collaborative process to provide a blueprint for action for sustainable nearshore resources. The strategy "will guide future management decisions affecting Oregon's nearshore marine resources and direct managers' attention and resources to priority areas where they can have the most positive impact on nearshore fish and wildlife." (Oregon Nearshore Strategy-Executive Summary) "The purpose of the strategy is to promote actions that will conserve ecological functions and nearshore marine resources to provide long-term ecological, economic and social benefits for current and future generations of Oregonians." (Oregon Nearshore Strategy) The primary goals of the effort are improved communications and partnerships; stronger science and information; and better decision-making processes.

Oregon is currently considering the established a limited system of Marine Reserves in the Territorial Sea. Two pilot marine reserves have been established and four other sites are currently being studied and considered for possible future marine reserves. This effort will provide important data and information to assist resource managers in better understanding the effects of such a management regime.

Offshore energy production in the Territorial Sea is a current trend that may present opportunities and threats for the state. While not much empirical information exists on the impacts of these facilities, the state has encouraged development in phases in order to obtain important information and to adaptively manage the developments to avoid and minimize unanticipated adverse effects on resources and uses within the coastal zone. The state has adopted regulatory requirements as an element of the Territorial Sea Plan (Part Five). The state is continuing its work on offshore energy planning in an effort to develop a marine spatial plan that will identify appropriate areas within the Territorial Sea that are appropriate for energy development (hydrokinetic and wind).

The Ocean Shore is subject to Oregon Parks and Recreation Department management and planning. The OPRD is charged with protection of recreational, scenic, natural and other resource values on the Ocean Shore. The OPRD manages the state's recreational area, administers permitting for activities within the ocean shore, issues permits for special activities and events and provides beach access facilities along the ocean shore. The OPRD has recently completed its work on a Habitat Conservation Plan (HCP) for the Western Snowy Plover (Final Adoption-February, 2010).

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. Identify below any special management areas in the coastal zone for which a SAMP is under development or a SAMP has been completed or revised since the last Assessment:

| **SAMP title** | **Status** (new, revised, or in progress) | **Date approved or revised** |
|---|---|---|
| Oregon Nearshore Strategy | Adopted by ODFW | January 2006 |

| **SAMP title** | **Status** (new, revised, or in progress) | **Date approved or revised** |
|---|---|---|
| Territorial Sea Plan Update | Regulatory Framework for Ocean Energy was Adopted (Part Five)<br><br>Marine Spatial Planning | November 5, 2009<br><br>Ongoing |
| Hazard Management (Ocean Shore) | Updated Hazard Model Code<br><br>Revised Ocean Flooding Data<br><br>Revised Ocean Shore Hazards Information | Ongoing<br><br>Ongoing<br><br>Ongoing |
| Habitat Conservation Plan for Western Snowy Plover | Complete | February 2010 |

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment (area covered, issues addressed and major partners);
   b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

**Territorial Sea Plan Update**
The Land Conservation and Development Commission adopted a regulatory framework for ocean energy projects within the state's Territorial Sea. This is the first phase of a broader marine spatial planning effort for these types of projects. The effort involved a broad array of local, state, federal, community and fishing interests. This work was funded by §309 and ongoing work is outlined in this document under the Ocean Resources Planning strategy.

**Hazard Management**
The OCMP continued efforts to map eligible areas for shorefront protective structures under Statewide Planning Goal 18 (Beaches and Dunes). The OCMP staff coordinated ongoing hazard planning with a number of jurisdictions with high risk areas or that faced developments in hazard areas. There is ongoing work to refine the hazard model code and to work with local governments to adopt appropriate model code provisions and to update hazard risk zone maps. This work has been supported by §309 funds. Additional gaps and needs exist and are listed under the Coastal Hazards Planning strategy.

**Habitat Conservation Plan for the Western Snowy Plover**
The OPRD adopted the HCP for the Snow Plover in February of 2010. This work was not funded by §309, but will be an important component in the protection of habitat for this

threatened species. The OCMP reviewed the USFWS incidental take permit associated with this HCP under the federal consistency requirements of the CZMA.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy).

| **Gap or need description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H,M,L) |
|---|---|---|
| Ocean Flood (V-Zone and tsunami Hazard Planning Data | Data | H |
| Ocean Shore Erosion (High-Moderate Hazard Areas) Data | Data | H |
| Nearshore/Territorial Sea Ocean Energy Planning Data | Data, Regulatory | H |
| Deep Draft Estuary Plan Baseline Habitat Mapping Update | Data, Regulatory | H |
| Climate Change Adaptation/Sea Level Rise data, planning and regulations | Data, Regulatory | H |

Ongoing work to refine planning for erosion and ocean flooding hazards, including integration of updated tsunami mapping and enhanced local regulations are important. This hazard planning work was previously outlined under special area management planning, but crosses multiple enhancement categories. We propose a Coastal Hazards Planning strategy to address this need and gap.

Nearshore/Territorial Sea marine spatial planning is still underway. While the LCDC adopted a regulatory framework for ocean energy siting, the work to develop specific marine spatial plans as a component of the state's Territorial Sea Plan is important. This ongoing work is included in this §309 Assessment and Strategy under the Ocean Resources Planning strategy.

The state's estuary and coastal shorelands planning framework is in need of review and update to respond to changes in habitat, coastal economies and the effects of climate change and sea level rise. Estuary planning update work is described in the Estuary/Ocean Shore Planning strategy and the related Climate Change Adaptation Planning strategy.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** __X__
   **Medium** _____
   **Low** _____

Briefly explain the level of priority given for this enhancement area.

Much of Oregon's coastal management program relates to special area management planning. There is considerable overlap between §309 enhancement areas, but most involve special area management planning as provided in the Oregon Coastal Management Program. For example, estuaries, the territorial sea and the ocean shore are each covered by specific management mechanisms that are best characterized as special area management plans. The state will develop §309 strategies for each of these areas as outlined under the specific substantive enhancement area topic even though the work could also be described as special area management planning.

2. Will the CMP develop one or more strategies for this enhancement area?

**Yes** __X___
**No** _____

Briefly explain why a strategy will or will not be developed for this enhancement area.

The state will develop §309 strategies for estuaries; the territorial sea/energy facility siting (pp. 86-94); coastal shorelands/beach and dune hazards (pp. 95-103). These are all high priority areas as outlined under the wetlands; special area management planning; ocean resources; and, coastal hazards enhancement area topics. Given the format for this §309 assessment and strategy, most strategies overlap with more than one CZMA enhancement area. (Ocean Resources Planning Strategy, Years 1-5 + PSM in Year 3; Coastal Hazards Planning Strategy, Years 1-5; Estuary/Ocean Shore Planning Strategy, Years 2-5 + PSM in Years 2 and 4; Climate Change Adaptation Planning PSM in Years 3 and 5) top

## Ocean Resources

**Section 309 Enhancement Objective**
Planning for the use of ocean resources

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. In the table below characterize ocean and/or Great Lakes resources and uses of state concern, and specify existing and future threats or use conflicts.

| Resource or Use | Threat or Conflict | Degree of Threat | Anticipated Threat or Conflict Risk |
|---|---|---|---|
| Nearshore Rockfish Complex | Overfishing<br>Climate Change | Moderate<br>Low-High | Increasing<br>Increasing |
| Nearshore Ecosystem Integrity | Loss of species & linkages<br>Climate Change | Unknown<br>Unknown | Increasing<br>Increasing |
| Estuaries | Water Quality<br>Invasive Species<br>Climate Change | Moderate<br>Appears to be High<br>Unknown | Increasing<br>Increasing<br>Increasing |
| Kelp Reefs | Loss of the Sea Otter (keystone predator) | Unknown | Static |
| Port Viability/Economies | Changing economic base and demand | Medium to High (for some ports) | Static |
| Rocky Shores | Overuse, collection, trampling<br>Climate Change | Medium to High (for some sites)<br>Unknown | Increasing<br>Increasing |
| Littoral Cell Integrity | Loss of sediment | Medium to High (for some areas) | Increasing |
| Nearshore Water Quality | Hypoxia<br>Ocean Acidification<br>Bacterial pollution<br>Harmful algal blooms | High<br>High<br>Medium to High (for some beaches) | Increasing<br>Increasing<br>Increasing<br>Increasing |
| Ocean Energy Development | Use Conflicts | High | Increasing |
| Seabird/Mammal Habitat (sensitive) | Human interference<br>Climate change | Low to Medium<br>Medium to High | Increasing<br>Increasing |
| Shellfish | Harmful Algal Blooms<br>Ocean Acidification | Medium to High<br>Low to High | Increasing<br>Increasing |
| ESA listed species Green Sturgeon Whales | Energy Development | Unknown | Increasing |

2. Describe any changes in the resources or relative threat to the resources since the last assessment.

**Recent Changes in Oregon's Ocean Resources**
As shown in the above table, some of Oregon's key ocean resources are threatened across a wide geographic scope and others are at risk in specific places or situations. The status of threat is unknown for others (e.g., kelp reefs), primarily due to lack of information about the resource and its condition over time. Climate change, especially, poses a threat to the integrity of nearshore and estuarine ecosystems although the degree of threat is unknown. It is assumed that this threat is increasing. Oregon's nearshore rockfish complex remains a major resource concern due to potential for over harvesting particularly for species with high site fidelity to specific reef areas. Nearshore habitats and estuaries are essential fish habitat for groundfish, as was shown in a recent Environmental Impact Statement (EIS) on Essential Fish Habitat (EFH) completed by the National Marine Fisheries Service (NMFS 2005 PFMC Groundfish EFH Designation). Estuary food webs are seriously threatened by non-indigenous invasive species and other human induced changes at the ecosystem scale. These changes are briefly discussed below.

**Fishery Resources:** In 1982 the Pacific Fishery Management Council's (PFMC) approved management plans for more than 80 species, including over 60 species of rockfish, seven species of groundfish, 12 species of flatfish, and other sharks and bottom-dwelling marine fish (NMFS 2005 PFMC Groundfish EFH Designation). However, by 2004, NOAA NMFS declared eight of these species as over fished under the Magnuson-Stevens Fisheries Conservation Act and therefore subject to severe regulations under rebuilding plans: bocaccio, cowcod, canary rockfish, dark blotched rockfish , Pacific ocean perch, widow rockfish, yellow eye rockfish, and lingcod. A 2005 stock assessment of lingcod determined the stock had rebuilt faster than anticipated, to a level above that required for delisting as an overfished species, thereby removing lingcod from the list of concern. While many of these species are present primarily in deep federal waters of the continental slope, the closures and other restrictions on fisheries have had impacts on fisheries management in state waters.

**Overfishing:** Groundfish and rockfish species are declared overfished and regulated under the PFMC process in the same way as in federal waters. Thus, management measures instituted by the PFMC to protect the overfished species resulted in a 44% overall catch reduction between 1998 and 2002. Area closures, gear restrictions, and other changes in the groundfish industry, including a buyback of nearly 50% of the bottom trawl fleet capacity, have had economic effects on Oregon's fishing ports. The threat of overfishing in federal waters has decreased because of PFMC measures to protect the rockfish complex and enable stocks to rebuild. But the threat in Oregon's territorial sea remains, especially in specific habitat areas. The overfishing threat is not really a regulatory or fishing capacity issue, but an issue of not enough data to ensure that we are applying the regulations correctly (i.e., limiting catch to the appropriate level). With new efforts of mapping and data collection, the state is working towards a better understanding of the extent and magnitude of the pressure on the nearshore habitats, as well as the extent of the resources available.

**Estuarine Resources:** Many of Oregon's marine species depend on estuaries for feeding and nursery habitat. Salmonids and other fish species use estuarine habitat for during various life-history stages, and many invertebrate species spend their entire lives in estuaries. Additionally, Oregon's major aquaculture industry, oyster culture, is entirely dependent upon estuary health. Increased capacity for water quality monitoring has led to short duration closures of these

industries due to estuarine water contamination. More work is needed to determine the cause of the contamination, as well as the persistence of the impacts. Invasive species of both plants and animals pose a serious threat to food web relationships that support these important resources (*See* http://seagrant.oregonstate.edu/hot/exotics.html). The threat of invasive species to Oregon's marine resources is thought to be increasing, partly due to a lack of funding and a complete assessment of vectors (see Coastal Wetlands assessment). Ocean acidification has been negatively impacting the non native oyster industry in recent years. By extension, it would be reasonably to hypothesize that there may be significant effects to native shellfish in Oregon (e.g. native oysters and littleneck clams). However, this is speculative at this point in time, but is an area of active research.

**Nearshore Kelp Reefs:** One of the most important habitats in Oregon's ocean, acting as nurseries and rearing areas for many of the marine fish species that do not have estuarine life stages (ODFW, 2002 Nearshore Marine Resources Management Strategy). Unlike California's large forests of giant kelp (*Macrocystis pyrifera*), a perennial, Oregon's dominant kelp species, bull kelp (*Nereocytis luetkeana*), is an annual, whose distribution and abundance is subject to wide interannual fluctuations in ocean conditions. Sea otters, a keystone predator, were hunted to extinction in Oregon in the early twentieth century (possibly 1906) (*See* http://biology.usgs.gov/s+t/SNTnoframe/pn175.htm). While there is strong evidence that sea otters are considered a keystone species in some regions (e.g. SW Alaska), there is not incontrovertible evidence to support a keystone species designation throughout the species' range (i.e. AK to Baja California). However, this state of knowledge is probably limited in large part due to the ethical limitations of experimentally manipulating sea otter populations, and their very low distribution and abundance relative to historical (pre-European) standards. Although there is some circumstantial evidence to support the keystone species designation in central California (the only significant sea otter population outside of Alaska), namely the complete absence of sea urchin barrens, it is somewhat speculative to assume that sea otters would serve as a keystone species in Oregon's nearshore environment. Also, we should not diminish the importance of nearshore rocky reefs that don't have kelp. Qualitatively, these areas appear to have fish populations that are just as abundant as reefs with kelp. It is hypothesized that the removal of otters, which prey on sea urchins, has resulted in an overpopulation of urchins that graze on emergent marine algae including kelp, and thus prevent kelp forests from developing widely, thus affecting the ecology of kelp reef habitats in Oregon today. A community-based fisheries organization in Port Orford is conducting extensive research into patterns of fisheries on Orford, McKenzies, and other nearby kelp reefs to better document the historic patterns of fisheries, fish distribution and abundance, and economic value of these reefs. The ODFW Marine Habitat Project also conducted important assessments of small kelp reef habitats and associated fish assemblages near Cape Blanco and central Oregon coast supported by 309 funds from the OCMP. (*See* http://www.dfw.state.or.us/MRP/publications/)

**Nearshore Ocean Water Quality:** One of the gravest concerns for Oregon's nearshore environment is the effect of water on the health of nearshore rocky reef ecosystems. Concerns about water quality are primarily focused on two issues: hypoxia and ocean acidification. Hypoxia is a condition of low oxygen concentrations in the ocean bottom water, while ocean acidification is the decrease in ocean water pH. Hypoxia is a regional scale phenomenon that is caused by large-scale atmospheric and oceanographic forcing (hypothesized to be an indirect

effect of climate change), not anthropogenic water pollution (e.g., nutrient loading). Therefore the hypoxic events off of Oregon are fundamentally different than most other hypoxic areas in the world, and are beyond the influence of state policies and regulations. Both conditions are stressors to the environment which could have catastrophic negative effects on our nearshore ocean ecosystems.

**Hypoxia Research Programs:** Since 2002, seasonal oxygen levels in the water near the Oregon coast have plunged so low that fishes, crabs, and other marine organisms have been forced to flee seafloor environments or suffocate and die. This phenomenon, termed hypoxia, has been detected every year since 2002, although at different levels of intensity and duration – the summer of 2006 being the most sever and longest lasting event to-date. The PISCO program has established a seasonal monitoring system to measure the hypoxic zone during the summer months, thereby helping to understand the hypoxia drivers and effects. (*See* http://www.piscoweb.org/research/science-by-discipline/coastal-oceanography/hypoxia)

**Harmful Algal Bloom Monitoring**: Oregon initiated a harmful algal bloom monitoring project in June of 2005 after a coast wide shellfish harvesting closer due to Domoic Acid (DA). The program is supported by NOAA's MERHAB-CSCOR (Monitoring and Event Response Harmful Algal Blooms-Center for Sponsored Coastal Ocean Research) emergency funding. In 2006, ODFW, OSU, UO, and NOAA Northwest Fisheries Science Center were awarded a 5 year ($2,300,000) grant to develop an integrated harmful algal bloom monitoring and event response program. The program began data collection efforts in 2007. ODFW and ODA are currently monitoring 10 sites along the coast for potential signs of the phytoplankton that cause Domoic Acid and Paralytic Shellfish Poisoning. The goals of this program are to mitigate impacts of harmful algal bloom events on local economies; reduce human health impacts; provide an early warning system; further knowledge of ocean health; fill a data gap in the transition zone in west coast oceanography and the Ocean Observing System; and to combine data from oceanographic research and ongoing plankton and shellfish monitoring programs.

**Ocean Acidification:** According to numerous researchers and the IPCC, a changing climate and anthropogenic carbon emissions are leading to an increase in atmospheric levels of carbon dioxide. The ocean, which has served as a buffer to such change, absorbs much of that increase in carbon dioxide, thereby dissolving it in the ocean through an interaction with the components of seawater to decrease the pH levels. Recent research on the coast has shown the presence of corrosive seawater in the nearshore regions of the Pacific Northwest. While the effects of this change are still uncertain, they have potentially far reaching effects, as organisms that use the calcium in seawater to produce their skeletons and shells will be negatively impacted (*See* http://www.piscoweb.org/topics/climate-change/ocean-acidification). As noted above, this issue may have a significant effect on a variety native shellfish species and the oyster industry.

**Littoral Cell Integrity:** Sand, the currency of littoral systems, is a valuable ocean resource and is particularly threatened on beaches and in the nearshore environment in the vicinity of the mouth of the Columbia River. The construction of the jetties at the mouth of the Columbia River was intended to create a jet that would move sediment out of the entrance, which it did. Consequently, during the ensuing six or seven decades a virtual "wave" of sand from the Columbia River delta moved away from the river mouth, both north and south (USGS Southwest

Washington Coastal Erosion Workshop Report 1998., Guy Gelfenbaum and George Kaminsky). Subsequent construction of the Columbia's mainstream dams then cut off the source of sediments moving down the river, and the littoral cell became starved for sand. Recent erosive deepening of the Clatsop Plains to the south and west of the South Jetty has allowed wave energy to begin to impinge directly on the jetty, with resulting damage. Thus, the imminent threat is an incremental risk of breaching of the South Jetty of some 20% per year, as estimated by the U.S. Army Corps of Engineers (Corps).

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Comprehensive ocean management plan or system of Marine Protected Areas | Y | Y – The Territorial Sea Plan revisions, the state legislature approved "Pilot Marine Reserve Areas", based on the recommendations of OPAC. |
| Regional comprehensive ocean management program | Y | Y – The West Coast Governor's Agreement on Ocean Health is a new Regional approach to planning and management. |
| Regional sediment or dredge material management plan | N | Y – The effort to come up with a regional sediment management strategy for the Lower Columbia River is a major change from the last assessment period. |
| Intra-governmental coordination mechanisms for Ocean management | Y | Y – The new Part 5 of the Territorial Sea Plan is a significant improvement in coordination. The new process includes provisions for a joint agency review team (JART). |
| Single-purpose statutes related to ocean resources | Y | Yes – OARs were adopted by ODFW, OPRD, and DSL for the implementation of Marine Reserves within the Territorial Sea. OARs were developed by DSL and OWRD for permitting ocean renewable energy development. |
| Comprehensive ocean management statute | Y | N |

| Management categories | Employed by state/territory (Y or N) | Significant changes since last assessment (Y or N) |
|---|---|---|
| Ocean resource mapping or information system | Y | Y – The work we did for MR's was a significant improvement to our ocean database. We also have a new mapping system planned – the Oregon Marine Map project will provide an online visualization system for viewing and reporting on the information present within our database of information. |
| Ocean habitat research, assessment, or monitoring programs | Y | Y – Oregon has increased the capacity for research, monitoring, and assessment during the last period (e.g. MRs, NANOOS, ODFW Nearshore Strategy, shellfish monitoring). The state legislature created the Nearshore Research Task Force to develop comprehensive research program to support management. |
| Public education and outreach efforts | Y | Y – OregonMarinereserves.net, OregonOcean.info, Sea Grant Outreach, ODFW outreach, Local Community Teams for Marine Reserves |

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment;
   b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

**Territorial Sea Plan Amendment Process:** This section describes work completed during the assessment period for the category of comprehensive management plan for ocean resources.

The Department of Land Conservation and Development, in response to the Governor's March 26, 2008 Executive Order No. 08-07, Directing State Agencies to Protect Coastal Communities in Siting Marine Reserves and Wave Energy Projects. That order directs the department to "seek recommendations from the Ocean Policy Advisory Council (OPAC) concerning appropriate amendments to Oregon's Territorial Sea Plan," reflecting comprehensive plan provisions on wave energy projects. On that same date, the State of Oregon and Federal Energy Regulatory Commission (FERC) signed a Memorandum of Understanding to "coordinate the schedules and procedures for review of wave energy projects in the Territorial Sea and to ensure coordinated review of proposed wave energy projects that is responsive to environmental, economic, and cultural concerns while providing a timely, stable, and predictable means for developers of such projects to seek necessary approvals." The MOU provides that FERC will, in issuing a permit or

license, "consider the extent to which the proposed project is consistent with the Oregon plan." In addition, FERC will also "consider any terms and conditions that are recommended by Oregon under section (10)(a)(3) or the Federal Power Act (FPA) to ensure consistency with the Oregon Plan".

**Phase I: Development of a Policy Framework:** Based on these two actions, and the requests and recommendations of fishing and environmental interests, the department initiated the process for amending the state's Territorial Sea Plan through a phased approach. The initial phase was to development a new chapter for the plan that contained policies, review and evaluation standards, coordination process, and operational plan requirements for ocean renewable energy development. That was completed in November 2009 when the Land Conservation and Development Commission (LCDC) adopted Part Five of the Territorial Sea Plan for the Development of Renewable Energy Facilities or Other Related Structures, Equipment or Facilities based on the recommendation of OPAC and the Commission's Territorial Sea Plan Advisory Committee.

**Changes in Oregon Administrative Rules**: The state agencies responsible for managing, leasing and permitting activities associated with renewable energy development in the Territorial Sea, the Department of State Lands and the Water Resources Department, both completed administrative rule making processes in 2009, to make implement new rules to address wave energy development. These were significant changes to the administrative rules of each agency as they represented new requirements to specifically address the introduction of wave energy development to the territorial sea.

**Phase II: The Marine Spatial Planning Process:** The second phase of the amendment process is to conduct a spatial analysis, or mapping, of ocean uses and ecological resources to identify and allocate areas within the territorial sea that are appropriate for renewable energy development. This process is becoming more commonly known as coastal and marine spatial planning, and it relies on the use of digital data that can be used to create map overlays for different types of spatial information. To conduct that analysis it is first necessary to locate and map the resources and uses that are to be protected under the policies and implementation requirements of Goal 19 Ocean Resources and the Territorial Sea Plan. Those resources and uses include areas that are; important to the biological diversity and functional integrity of the marine ecosystem, important marine habitat, and important to fisheries, both recreational and commercial. In addition, existing beneficial uses such as navigation, food production, recreation, aesthetic enjoyment and other uses of the seafloor need to be mapped and considered. That data will be used by OPAC and the department to make recommendations to the LCDC regarding specific areas that are determined to be appropriate for renewable energy development. The process for arriving at those recommendations will involve the efforts of the OPAC Territorial Sea Plan Working Group and the DLCD Territorial Sea Plan Advisory Committee, which will both be conducting a series of public meetings and workshops to review and analyze the data and maps and consider various alternatives. Information about those events will be posted on the department's website, the OPAC website, and at http://www.OregonOcean.info.

There are a series of survey, data collection and research projects currently underway that are designed to obtain the data and information needed for the spatial planning effort. Those projects include:

**Fishing Effort Maps:** The Territorial Sea Plan and Goal 19 Ocean Resources require state agencies to protect areas important to fisheries, including commercial, charter and recreational for different sectors and ports. To apply this protection through the planning process, the state must be able to identify and locate these areas spatially using data derived and contributed by the fishing communities. This is being achieved through a series of projects currently being conducted by Ecotrust, a non-profit research and consulting organization, working with local coastal port fisheries groups. This effort was initiated by DLCD with grant funding from the federal National Oceanic and Atmospheric Administration (NOAA-§309 funding). The work was successfully completed in December 2009 through a contract for a pilot project conducted by the Southern Oregon Ocean Resources Coalition (SOORC). This contract was administered by the Oregon Coastal Zone Management Association (OCZMA). The Oregon Wave Energy Trust (OWET) and Packard Foundation have also contributed significant funding for this effort. All the work is being conducted using the methodology and protocols prescribed by the department for the SOORC project. That methodology and processes for collecting and managing the information provided by the individual fishermen are specifically designed to protect the data of the individual fishers, whose data is compiled into aggregate map overlays representing their combined level of effort.

**Marine Ecosystem Maps:** The department is working with Oregon Department of Fish and Wildlife (ODFW) to inventory and acquire the data layers of areas important for the protection of marine ecosystem function, diversity and marine habitat. The types of data being collected include identification of areas:

- important to the biological viability of commercially or recreationally caught species or that support important food or prey species for commercially or recreationally caught species;
- needed to assure the survival of threatened or endangered species; or ecologically significant to maintaining ecosystem structure, biological productivity, and biological diversity;
- essential to the life-history or behaviors of marine organisms;
- especially vulnerable because of size, composition, or location in relation to chemical or other pollutants, noise, physical disturbance, alteration or harvest;
- unique or of limited range within the state.

This work is being funded by the department's NOAA §309 grant. ODFW will compile the relevant data from state and federal resource agencies and other sources such as regional research programs and universities.

**Seafloor Mapping:** In 2009, the state legislature appropriated $1M to the Department of State Lands to conduct seafloor mapping. That investment was matched by an additional $4M from NOAA for this project, that is being conducted through a collaborative effort with Oregon State University. The seafloor mapping will provide detailed data on the basic bathymetry of the nearshore ocean as well as the substrate type. Approximately 50% of the state's territorial sea

will be mapped with the current funds, and additional federal funds are being sought to complete the mapping.

**Marine Reserves**: This description will cover significant changes since the last assessment within the following categories: changes related to a system of marine protected areas, changes to single-purpose statutes related to ocean resource management, changes to public education and outreach efforts, and changes to the ocean habitat research and assessment and or monitoring programs.

The State of Oregon is engaged in an ongoing process to designate marine reserves in Oregon's Territorial Sea. This has been a community-driven process, with community groups and individuals submitting twenty proposals for marine reserve sites in the fall of 2008. Out of those twenty proposals, the state's Ocean Policy Advisory Council (OPAC) recommended six areas to move forward in the process. In a unanimous vote on the Oregon House floor, and a near unanimous vote on the Senate floor, the Oregon Legislature codified OPAC's recommendations by passing House Bill 3013 (HB 3013), a bill relating to the study, establishment and management of marine reserves.

HB 3013 paved the way for the state to establish two pilot reserves: one at Otter Rock, south of Depoe Bay, and one at Redfish Rocks, just south of Port Orford.

In addition to establishing the two pilot reserves, HB 3013 directs state agencies to study and evaluate potential marine reserves at Cape Falcon, south of Cannon Beach; Cascade Head, near Lincoln City; and Cape Perpetua, near Yachats. Community teams are working in these areas to provide recommendations to the Oregon Department of Fish and Wildlife. The bill also directs the agencies to support a reserve proposal process for the Cape Arago-Seven Devils area, south of Coos Bay. The International Port of Coos Bay is leading this process.

**Changes in Oregon Administrative Rules**: The state agencies responsible for managing the land and waters present with the proposed marine reserves; the Dept. of State Lands, Parks and Recreation Dept., and the Dept. of Fish and Wildlife, all completed a public rule making process in the fall of 2009 to adopt new administrative rules that apply to the pilot marine reserves that were enacted under HB 3013. These were significant changes to the administrative rules of each agency with the responsibility for governing ocean management, as they are the first of this kind for Oregon.

**Public education and outreach efforts:** The State of Oregon has made a concerted effort since January of 2008 related to the dissemination of information regarding the science and rationale for the establishment of a system of marine reserves in Oregon. This effort was a multi-agency effort coordinated by our department, and held in conjunction with Oregon Sea Grant, and the Oregon Dept. of Fish and Wildlife. As a part of this effort, many public community meetings were held to discuss the topic of marine reserves, educational materials were produced related to the scientific rationale for testing marine reserves effectiveness here in Oregon, and a website to facilitate the public process was created (http://OregonMarineReserves.net – no longer available). The website served as a single location to direct the public attention in relation to the ongoing process. The website served as a place to post documents related to the process, and as

a platform for conducting the public nomination process, and a means to dispel misinformation and rumors about the ongoing process.

**Oregon's database of Ocean Information:** One of the strengths of Oregon's efforts related to supporting the public nomination of marine reserves was the increase in capacity related to a recently completed inventory of ocean GIS information. The Oregon Marine and Coastal Mapping Group, a group of agency staff (both federal and state), academic researchers, and non-profit staff, completed an inventory and compiled a database of information available to support the planning effort. This information was used (by a NOAA Coastal Services Center fellow) to generate a series of educational thematic map products, a suite of nomination maps, and to generate informational reports once the nominations were submitted. That inventory served as a gap analysis for information still needing to be collected, and will be the basis for analyzing alternative planning scenarios during the territorial sea plan revision process. All of that information was made available to the public through the marinereserves.net website, as GIS shapefiles.

**Oregon MarineMap (OMM)**: In 2009, the Oregon Legislature passed HB 3633, establishing the Marine Renewable Energy Resources Research Fund to collect money for a study on how best to develop commercially viable small scale marine renewable energy resources in coastal communities. Based on the research objectives detailed in the bill, and in consultation with stakeholders and experts from the public and private sectors, the department will contract to develop the Oregon MarineMap (OMM) project. The OMM project will collect information on the spatial extent of human uses of the state's marine resources that provide economic and socio-cultural benefits. In the near term, the resulting data sets form the basis for informing siting decisions for energy projects in ways that minimize potential impacts to the marine ecosystem and human uses. Longer term, these data are also useful for other marine spatial planning processes, notably the designation of marine reserves off Oregon, and to establish a baseline for subsequent monitoring and evaluation research of management measures. At present, the data sets for relevant ecological, economic, social and cultural considerations are not available from a single source. This makes it difficult for decision-makers and community groups to access, visualize, and conduct potential impact and use conflict analyses in a meaningful and expedited way. The OMM project will develop an online system that compiles the relevant data sets and creates tools allowing users to visualize and analyze that data for various sites and uses.

**The Oregon Nearshore Research Task Force (NRTF)**: The Oregon NRTF was developed by the state Legislature with the passage of House Bill 3106, at the end of the 2007-2009 legislative session. The purpose of the Task Force is to "make recommendations to ensure the protection and utilization of Oregon's nearshore resources." More specifically, the bill charges the NRTC to develop recommendations on a long-term funding and coordination strategy to meet the state's nearshore priorities and provides guidance on how the task force will implement the intent of the bill. Using key documents that outline nearshore priorities, HB3106 identifies four objectives to guide development of the recommended strategy:

1. Review, consolidate and anticipate nearshore priorities for supporting research, monitoring, management, policy, education, and outreach.
2. Identify the funding needs of current and anticipated nearshore programs.

3. Determine transparent procedures and oversight mechanisms for pursuing, securing, and administering public and private funds.
4. Identify mechanisms for data sharing among state agencies, institutions and other stakeholders.

**The Oregon Ocean Information Website:** This method of coordination (mentioned above) proved to be so effective for coordinating a broad, interagency issue of state importance, that the idea was expanded to cover a broader range of topics related to ocean management issues. The original website, OregonMarineReserves.net, has since been folded into a new website covering several thematic topic areas, which is currently the central location for organizing the State of Oregon around the marine policy issues (http://www.OregonOcean.info). The website currently in use, allows a distributed network of publishers and content authors (within the other state agencies) to generate online content and information related to the ongoing processes, thereby allowing and facilitating a much wider array of outreach and educational materials to be presented in the public arena.

Very limited 309 funding was devoted to this effort, in the allocation of staff time to participate in the public process, and assist the OPAC in making their recommendations. At this point it is premature to characterize the outcomes of this effort from a biological assessment perspective. From a management perspective, there has been a marked increase in the capacity of the ODFW to manage and oversee a system of marine protected areas, with the establishment and hiring of a marine reserves team of staff within ODFW (5 FTE's). From that perspective, the change in the capacity of the program has been significant, although that change is dependent upon further support from the state legislature, as all positions were created on a temporary basis.

The OMM project, described above in the section on data base and ocean information, is also a web based application that will serve a similar function. This system, which will be developed and operational by December 2010, is funded by OWET and ODFW, and will be constructed by Ecotrust.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need Description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H, M, L) |
|---|---|---|
| Spatial designations for renewable energy development areas that complies with Goal 19 and the Territorial Sea Plan (Part Five). | Regulatory-Adopt rule to amend the Territorial Sea Plan (Part Five) to incorporate map designations. | H |

| **Gap or need Description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H, M, L) |
|---|---|---|
| Spatial designations for marine reserves, consistent with Goal 19 and the Territorial Sea Plan. | Regulatory-Adopt rule to amend Territorial Sea Plan to incorporate map designations. | H |
| Develop and incorporate ecological inventory index for nearshore resources. | Regulatory-Adopt rule to amend TSP and incorporate the inventory of spatial marine resource data. | H |

The state is currently working with foundations and others to develop necessary data to support marine spatial planning (e.g. map designations) for ocean energy projects. Likewise, ODFW is facilitating collaborative efforts to review state planning for marine reserves.

Each of the above high priority gaps and needs is addressed in the Ocean Resources Planning strategy described on pp 86-94.

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** __X__
   **Medium** _____
   **Low** _____

   Briefly explain the level of priority given for this enhancement area.

The state is committed to amend the Territorial Sea Plan to satisfy the memorandum of agreement between the State of Oregon and Federal Energy Regulatory Commission, the Governor's Executive Order 08-07, and legislative mandate of HB 3013.

2. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** __X__
   **No** _____

   Briefly explain why a strategy will or will not be developed for this enhancement area.

The strategy for this enhancement area will be developed to continue and complete the process that has been initiated pursuant to the Governor's Executive Order 08-07, the State of Oregon and FERC MOU, HB 3013, and the recommendations of the Ocean Policy Advisory Council, to develop a plan for renewable energy development and to establish a marine reserves system. (Ocean Resources Planning Strategy, Years 1-5 + PSM in year 3) top

## Energy & Government Facility Siting

**Section 309 Enhancement Objectives**
Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and Government facilities and energy-related activities and Government activities which may be of greater than local significance

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. In the table below, characterize the types of energy facilities in your coastal zone (e.g., oil and gas, Liquefied Natural Gas (LNG), wind, wave, Ocean Thermal Energy Conversion (OTEC), etc.) based on best available data. If available, identify the approximate number of facilities by type.

| **Type of Energy Facility** | **Exists in CZ** (# or Y/N) | **Proposed in CZ** (# or Y/N) | **Interest in CZ** (# or Y/N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|---|---|
| Oil and gas facilities | N | N | N | Y |
| Pipelines | Y | Y | Y | Y |
| Electric transmission cables | Y | Y | Y | Y |
| LNG | N | Y | Y | Y |
| Wind | N | Y | Y | Y |
| Wave | N | Y | Y | Y |
| Tidal | N | N | Y | Y |
| Current (ocean, lake, river) | N | N | N | N |
| OTEC | N | N | N | N |
| Solar | N | N | N | N |

2. Please describe any significant changes in the types or number of energy facilities sited, or proposed to be sited, in the coastal zone since the previous assessment.

Oil and Gas-There is not any significant interest in developing offshore oil and gas facilities in the Territorial Sea or within the Exclusive Economic Zone (EEZ). The federal government continues to investigate the potential for oil and gas development within the outer continental shelf. There has been one significant change in state regulatory framework since the last assessment. The 2010 State Legislature renewed a ban on oil and gas exploration and development and production within the Territorial Sea (HB 3613).

Pipelines-There is some interest in pipeline development, but only associated with proposed LNG import terminals. These pipelines link proposed terminals with existing distribution

pipelines in the Willamette Valley and Eastern Oregon. The pipelines generally cross significant habitat areas and challenging terrain. Resource issues include water quality, wetland impacts, endangered species impacts, farm and forest impacts and stream/estuary crossing impacts.

Electric Transmission lines-Transmission lines are an important component of proposed ocean renewable energy projects. While connected to renewable ocean energy production activities, these transmission lines are considered as separate projects with potential coastal effects. Impacts are dealt with through existing provisions of the coastal program (statewide planning goals; local plans/regulations; state agency regulatory authorities).

LNG-Three LNG import terminals are currently under review in Oregon. Bradwood Landing is proposed on the Columbia River east of Astoria (This project is currently suspended due to a bankruptcy filing and DLCD has issued a federal consistency "objection" based on insufficient information). Oregon LNG is proposed on the Skipanon Peninsula in Warrenton. Jordan Cove is proposed on the North Spit of Coos Bay. All of these terminals involve significant siting and planning issues at the local government and state agency level.

Wind, Wave and Tidal generated energy are currently being considered for various areas of the state's coastal zone. The most active projects are wind and wave energy. A tidal energy project proposed for the Mouth of the Columbia River area has not moved forward at the federal level. One energy developer is conducting a feasibility study for potential tidal energy in Oregon. These projects have the potential to create significant resource effects. While the state supports the development of renewable energy, projects must not create unacceptable adverse resource effects. The state policy is to protect renewable marine resources. While energy development may be a renewable resource itself, the structures necessary to produce energy are not and as a result may have effects that conflict with protection of renewable marine resources.

3. Does the state have estimates of existing in-state capacity and demand for natural gas and electric generation? Does the state have projections of future capacity? Please discuss.

The state does not have significant natural gas resources, either on uplands or in the Territorial Sea. The Oregon Department of Energy has projections for both demand and an analysis of various sources, including LNG. The conclusions of the Department of Energy study indicates that long term needs can best be met by currently available Canadian gas supplies and expected new sources in the Rocky Mountain Basin. (Note: The ODOE evaluation was completed at the request of the Governor based on public concerns regarding the need for three proposed LNG import terminals and the related natural gas pipelines.)

The Pacific Northwest has significant existing hydroelectric generation facilities located outside the coastal zone. This source meets significant portions of the regional electricity demand. New sources of wind and solar are playing a significant role in adding electric generation capacity. Again, these facilities are primarily being sited in central and eastern Oregon, outside the coastal zone. Energy conservation is a significant element of the state's energy strategy.

4. Does the state have any specific programs for alternative energy development? If yes, please describe including any numerical objectives for the development of alternative energy sources. Please also specify any offshore or coastal components of these programs.

The state promotes renewable energy development through tax credits and incentives. The state's regulatory process has resulted in the siting of significant new wind and solar facilities. While these new sources are small compared to the existing hydroelectric capacity in the region, the renewable sources can supply a significant portion of increasing demand. Conservation is also a significant state policy. The state promotes sustainability and development of renewable energy.

5. If there have been any significant changes in the types or number of government facilities sited in the coastal zone since the previous assessment, please describe.

The most significant new governmental facility within the state's coastal zone is the NOAA research fleet moving to Newport. Newport is located on Yaquina Bay, one of the state's three deep draft development estuaries. This new facility will be located within a planned water dependent development site located on the south shore of the bay, near the Hatfield Marine Science Center.

**Management Characterization**

*Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.*

1. Does the state have enforceable policies specifically related to energy facilities? If yes, please provide a brief summary, including a summary of any energy policies that are applicable to only a certain type of energy facility.

The state has a well developed energy siting process which is highly regarded by the regulated community, environmental interests and the public (*See* ORS Chapter 469). This process provides the state's primary enforceable policies for energy development. For significant projects (except where pre-empted by the federal Energy Policy Act of 2005) the state relies on the state's energy siting process governed by the Energy Facility Siting Council (EFSC). The process and coordination mechanisms outlined in state statutes and administrative rules provide a clear and consolidated review that has proven to be effective and efficient. The process and requirements are well understood by the regulated community and other interests that actively participate. This process covers a variety of electric generation and transmission projects.

Projects located in the state's Territorial Sea are not governed by the EFSC process. The primary enforceable policies for energy development in the Territorial Sea are provided by the state's Territorial Sea Plan and Statewide Planning Goal 19 (Ocean Resources). The Department of State Lands and the Oregon Water Resources Department maintain regulatory authority over these projects, and provide the mechanism to apply state enforceable policies.

In cases where energy facilities are not EFSC jurisdictional, the state's planning program and state agency regulatory authorities provides the regulatory framework. The comprehensive plans

and land use regulations adopted by local government to carry out the statewide planning goals provide the enforceable policies for these types of energy projects. Where such projects are sited in areas subject to other state agency regulatory authorities that are OCMP enforceable policies (e.g. the state's removal fill program, water quality program, air quality program, wildlife mitigation policy) other agencies must also approve the project. LNG projects that were formerly subject to the exclusive jurisdiction in the EFSC review process are now subject to the local planning and state agency review process. This is due to the pre-emption effects of the Energy Policy Act of 2005. While somewhat more complex, this process has worked well to provide appropriate state level review and application of enforceable policies.

2. Please indicate if the following management categories are employed by the State or Territory and if there have been significant changes since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Statutes or regulations | Y | Y |
| Policies | Y | Y |
| Program guidance | Y | Y |
| Comprehensive siting plan (including SAMPs) | Y | Y |
| Mapping or GIS | Y | Y |
| Research, assessment or monitoring | Y | Y |
| Education and outreach | Y | Y |

3. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment;
   b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

Because of the interest in offshore energy development, the state has recently adopted a new Part 5 of the Territorial Sea Plan. Prior to the adoption of Part 5, the Territorial Sea Plan review for these projects was through Part 2. Part 2 provided a generic resource inventory and effects analysis requirement coupled with the use and priority requirements of Statewide Planning Goal 19 (Ocean Resources). The new requirements are much more specific to ocean energy projects and were developed in close coordination with all stakeholders with an interest in these types of projects. The new Part 5 contains a clear set of policies and regulatory requirements that will be submitted to NOAA as enforceable policies. These will eventually be coupled with a marine spatial planning effort that will provide more specificity on acceptable project locations within the state's Territorial Sea.

In addition to these changes to the TSP, the Oregon Department of State Lands has adopted a new rule (OAR 141-0140-0010) governing the placement of Ocean Energy Conversion Devices

on, in or over state-owned land within the territorial sea. The Oregon Legislature also passed Senate Bill 195 during the 2009 session that addressed the application of the Oregon Water Resources Department fish passage regulatory requirements under ORS 543.014 for hydrokinetic energy facilities. This bill applied an exemption to fish passage requirements for the pilot project under development near Reedsport by Ocean Power Technology. The exemption to fish passage requirements expired on January 1, 2010.

In addition to the regulatory improvements to the OCMP, the state has used previous §309 funding to advance research and mapping of resources within the Territorial Sea and Nearshore Ocean. In addition, the state has adopted an initial system of marine reserves. This effort will provide significant information for assessment, monitoring and education efforts.

DLCD, in conjunction with ODFW and DSL is engaged in collecting data sets for a wide range of ecological and human uses that will be instrumental to the ongoing effort to amend the TSP. Those data sets will include the seafloor mapping, which was funded by the state and NOAA. The effort was conducted during the summer of 2010 and is currently undergoing data compilation, formatting, and conversion to mapped overlays. Nearly 50% of the territorial sea has now been mapped, including all high priority areas (e.g. areas of ecological significance; areas near ports and estuaries; and areas identified as potential marine reserves).

The fisheries mapping effort being conducted by independent local groups with foundation and Oregon Wave Energy Trust (OWET) funding, has progressed to include all of the major ports and fishery sectors. The survey effort is currently coming to its conclusion and maps are now under development by those groups that will be used as overlays of areas important to fisheries in the TSP spatial planning effort. The number of fishermen who have participated, and the percentage of total catch that they represent, is very high and well beyond that needed to achieve a statistically valid survey sample.

The Surfrider Foundation project to survey non-fishing recreational uses of the territorial sea will be concluded in the fall of 2010. The data collection phase is near completion. Both the online and person-to-person survey data is being compiled. The map overlay and data compilation products should be available by the end of 2010.

DLCD is developing overlays of the existing uses of the territorial sea. These overlays include: areas that are managed and owned by state and federal agencies; offshore dredge material disposal sites; cable and pipeline corridors; navigational structures; buoys; vessel traffic channels; scientific research facilities and apparatus; etc.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H,M,L) |
|---|---|---|
| Marine Spatial Plan for Ocean Energy Projects | Policy/regulatory | H |
| Continued research on effects of various types of ocean energy facilities. | Data | H |

The work on a marine spatial plan for ocean energy projects will necessarily require a considerable effort to determine baseline ocean conditions for a number of potential impacts/effects that can be expected from these projects. Research will be further dictated by the type of device and its location. Research is needed on:

- Cetaceans
- Pinnipeds
- Avian species
- Sediment transport
- Terrestrial and cultural resources
- Electromagnetic fields
- Biofouling
- Navigation and vessel traffic
- Scientific research equipment, apparatus and transect corridors
- Fish and Invertebrates, including salmon; Dungeness crab; Green sturgeon; flatfish and epibenthic invertebrates; pelagic fish and invertebrates; and benthic infauna

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** __H__
   **Medium** _____
   **Low** _____

   Briefly explain the level of priority given for this enhancement area.

Because of the significant interest in offshore renewable energy development and state efforts to advance these new technologies, there is a need to complete the marine spatial planning connected to the revised Part 5 of the Territorial Sea Plan.

2. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** __Y___
   **No** _____

   Briefly explain why a strategy will or will not be developed for this enhancement area.

The state has included a strategy to complete marine spatial planning to implement the requirements contained in Part 5 of the state's Territorial Sea Plan. This work will include both research and policy. (Ocean Resources Planning Strategy, Years 1 and 2) top

## Aquaculture

**Section 309 Enhancement Objective**
Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable States to formulate, administer, and implement strategic plans for marine aquaculture

**Resource Characterization**
*Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.*

1. Generally characterize the private and public aquaculture facilities currently operating in your state or territory.

| **Type of existing aquaculture facility** | **Describe recent trends** | **Describe associated impacts or use conflicts** |
|---|---|---|
| Oyster culture | Stable Commercial Aquaculture<br><br>Potential for long-term instability | Potential for monoculture<br>Competes with other uses<br>Competes with native species<br>Water quality impacts (including ocean acidification) |
| Ocean Aquaculture | Not currently proposed | Unknown |
| Select Area Fisheries (Salmon) | Insignificant ongoing efforts | Competes with native species<br>Water quality impacts |
| Salmon and Trout Hatcheries | Continued stable operations | Competes with native species<br>Raises ESA issues |

**Management Characterization**
Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment:

| **Management categories** | **Employed by state/territory** (Y or N) | **Significant changes since last assessment** (Y or N) |
|---|---|---|
| Aquaculture regulations | Y | N |
| Aquaculture policies | Y | N |
| Aquaculture program guidance | Y | N |
| Research, assessment, monitoring | Y | N |
| Mapping | N | N |
| Aquaculture education & outreach | N | N |

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
   a) Characterize significant changes since the last assessment;
   b) Specify if it was a 309 or other CZM driven change (specify funding source) or if it was driven by non-CZM efforts; and
   c) Characterize the outcomes and effectiveness of the changes.

**Priority Needs and Information Gaps**

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners (not limited to those items to be addressed through the Section 309 Strategy). If necessary, additional narrative can be provided below to describe major gaps or needs.

| **Gap or need description** | **Type of gap or need** (regulatory, policy, data, training, capacity, communication & outreach) | **Level of priority** (H,M,L) |
|---|---|---|
| | | |

**Enhancement Area Prioritization**

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

   **High** _____
   **Medium** _____
   **Low** __X__

   Briefly explain the level of priority given for this enhancement area.

Aquaculture is a low priority for improvement because there are no major gaps or threats to resources that are not sufficiently managed through existing planning and management measures.

2. Will the CMP develop one or more strategies for this enhancement area?

   **Yes** _____
   **No** ___X__

   Briefly explain why a strategy will or will not be developed for this enhancement area.

Existing estuary and shorelands management measures adequately consider the potential threats and adverse effects of aquaculture. These procedures include guidance and substantive requirements to manage this use in a manner that protects coastal resources and uses. The state monitors Oyster culture through an interagency Oyster Leasing/Estuarine Impacts Working Group. The OCMP (ODFW and ODA) will continue with current efforts to assess and manage potential impacts of a relatively stable aquaculture industry. top

# IV. Strategy

## Coastal Zone Management Act
## §309 Strategy
## 2011–2015

**Oregon Coastal Management Program**



top

# Ocean Resources Planning

**I. Issue Area(s)**

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☒ Energy & Government Facility Siting
- ☐ Coastal Hazards
- ☒ Ocean/Great Lakes Resources
- ☒ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**II. Program Change Description**

**A.** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☐ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☒ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B.** Describe the proposed program change(s) or activities to implement a previously achieved program change. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

<u>Energy Siting</u>

The proposed program change is a marine spatial plan, including amendments to the Oregon Territorial Sea Plan to identify and zone areas suitable for renewable energy development. In November of 2009, the Land Conservation and Development Commission completed the first phase of this change when it adopted a regulatory framework for ocean energy siting as Part Five of the Territorial Sea Plan (TSP), <u>Use of the Territorial Sea for the Development of Renewable Energy Facilities or Other Related Structures, Equipment or Facilities.</u> The requirements of Part Five protect areas important to renewable marine resources (*i.e.* living marine organisms), ecosystem integrity, marine habitat and areas important to fisheries from the potential adverse effects of renewable energy facility siting, development, operation, and decommissioning and to identify the appropriate locations for that development which

minimize the potential adverse impacts to existing ocean resource users and coastal communities.

The proposed program change identifying specific areas suitable for renewable energy development will be reviewed and adopted through the Territorial Sea Plan amendment process. The amendment will rely on data from various sources, including information from the NOAA Coastal Services Center incorporated within the Oregon Coastal Atlas.

In addition to the spatial planning component of the TSP, the OCMP will continue to work with its agency partners and other stakeholders to develop additional guidance materials to implement specific resource management requirements outlined in Part Five of the TSP. Those guidance documents will provide specific protocols and standards for conducting mandatory elements of the TSP such as the monitoring plan, adaptive management plan and other operational plan requirements. Once developed these guidance documents will be added to the TSP as appendices through the amendment process.

Marine Reserves

The program change for this strategy will include adoption of management plans based on the research and monitoring work for designated marine reserves. Based on monitoring and ongoing public review, existing marine reserves may be modified. Additional marine reserves may also be designated. Management plans will be developed and adopted for each (existing and newly designated) marine reserve. Management Plans for each Marine Reserve site will include: (1) biological and human dimension monitoring plans, (2) strategies for education and outreach, and (3) strategies for compliance and enforcement.

## III. Need(s) and Gap(s) Addressed

Identify what priority need the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority need. This discussion should reference the key findings of the Assessment and explain how the strategy addresses those findings.

This strategy primarily responds to the needs and gaps identified in on pp. 56, 62, 74-75 and 81 of the Assessment and responds to those gaps as follows:

Energy Siting

The strategy will enhance the state's Ocean Resources Planning by identifying areas and sites that are appropriate for renewable energy facility development. This effort links marine spatial planning and zoning to the regulatory framework adopted by LCDC in 2009. This work is identified as a high priority enhancement to the OCMP (pp. 76-82) and addresses a gap/need identified in the assessment (p. 81). Since marine renewable energy facilities that are regulated under the Federal Power Act are not subject to the state's Energy Facility Siting Council process, the state is not able to adequately control the siting of those projects within the Territorial Sea as it would other hydroelectric projects elsewhere in the state. Consequently, on March 26, 2008, the State of Oregon entered into a Memorandum of Understanding with FERC by which that federal agency has agreed to adhere to a state comprehensive plan for siting wave energy facilities in its permitting and licensing processes.

In the absence of traditional state regulatory mechanisms to address Marine Renewable Energy Conversion (MREC) development, the state's TSP is the proper planning and regulatory mechanism for the application of policies, process and regulatory requirements to the siting and development of MREC facilities in the territorial sea. State agencies are statutorily required to apply the TSP requirements uniformly, and to coordinate their activities, thereby making the TSP the proper regulatory vehicle for addressing this high priority need.

The new TSP Part Five (Phase I) provides policies, evaluation and review standards and criteria, and operational plan requirements for marine renewable energy facilities. However, the new policies have yet to be invoked or applied to any new projects, and the process requirements for the Joint Agency Review Team are yet to be initiated. This will occur when a project requires state permits.

In addition, Oregon is the location for the new Northwest National Marine Renewable Energy Research Center (NNMRERC). Siting of marine renewable research facilities is potentially complicated, since the technologies presently under development may be deployed in water depths that straddle the three-mile demarcation of the state's Territorial Sea, thus involving both state and federal leasing processes. The NNMRERC site has yet to be chosen, and the process for siting the test berth facility and incorporating it into the TSP must be completed as part of this strategy. The TSP Part Five provides for the location of the test berth as a separate and distinct site within the TSP.

Marine Reserves

Designating marine reserves is controversial. The costs and benefits are difficult to predict and there is considerable speculation about their value. In order to determine actual positive and adverse effects on ecosystem values, marine fisheries and the coastal economy, we need to develop and conduct baseline research, monitor and evaluate the actual effects of these areas over time. Management will require development of an adaptive management system connected to ongoing monitoring and research activities.

## IV. Benefit(s) to Coastal Management

Discuss the anticipated effect of the program change or implementation activities including a clear articulation of the scope and value in improved coastal management and resource protection.

Energy Siting

The implementation of the program changes will enable the state to control the siting and implementation of MREC development in Oregon's Territorial Sea, and will also provide it with substantial leverage for activities on the continental shelf that are controlled by the U.S. Minerals Management Service. There are currently several existing FERC permits that continue to progress toward commercial licenses and several other potential developers are conducting pre-application feasibility studies to determine whether and where to apply for permits. The process currently being conducted by FERC under the MOU provides that FERC will consider if newly proposed projects are consistent with the plan adopted by the state that identified areas that are appropriate for that development. The state must complete its process for amending the TSP in order to ensure that the new enforceable policies and siting requirements are appropriately integrated into the FERC process.

The maps that will be incorporated into the TSP will address MREC development siting for all state marine waters. The maps will, as required under Goal 19 and the TSP, identify areas that are to be protected from the adverse effects of MREC development. These include areas that are important for biological diversity; function and the integrity of the marine ecosystem; marine habitat; important commercial and recreational fisheries; and' existing beneficial uses. The TSP requirements are used as review criteria by state agencies in the implementation of their individual regulatory programs. As such, decisions for state permits and leases must comply with the evaluation standards and the "zones" that are incorporated into the TSP. The maps will necessarily provide certainty to the protection of protected resources and uses, as required under existing mandates, and also provide clear direction and certainty for the development of MREC facilities as new compatible uses of the state's territorial sea.

Marine Reserves

Baseline monitoring information on marine reserves can be used to determine an appropriate number of reserves and the spatial characteristics of a successful marine reserve system. Once established, marine reserves should be monitored and adaptively managed to achieve their stated purposes. This strategy focuses on obtaining scientific information to inform policy makers. The benefit will be enhanced marine reserve management efforts supporting local, state and federal policy objectives.

## V. Likelihood of Success

Discuss the likelihood of attaining the proposed program change and implementation activities. The state or territory should address: 1) the nature and degree of support for pursuing the strategy and the proposed change; and, 2) the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

Energy Siting

The TSP amendment process is governed by statutes that require Ocean Policy Advisory Council (OPAC) review and broad stakeholder involvement. That process was used successfully in the adoption of TSP Part Five in 2009, and will be followed to develop, review and adopt the marine spatial planning amendments to the TSP. The process will require public meetings of the OPAC TSP workgroup and the DLCD TSP Advisory Committee, leading to the adoption by the Land Conservation and Development Commission.

The TSP amendment process is underway, and has the participation and cooperation of all the stakeholder groups including the state legislature, governor, commercial and recreational fishing interests, ports and local governments, environmental, recreation and conservation groups, state and federal agencies, MREC developers and their association, supporting industry and state and local electrical utilities. Various foundations, the Oregon Wave Energy Trust, and state agencies are providing funding and other forms of support for the TSP process.

Once adopted, the changes are required regulatory criteria for state agencies with decision-making authority. Information about the TSP and the maps will be disseminated through the

online Oregon Ocean Information system and the Oregon Marine Map system. All the various stakeholder entities that comprise OPAC, as well as the Oregon Wave Energy Trust, and the growing number of local coastal advisory groups will also serve as outlets for information and education about the TSP and its application to MREC facility development.

Marine Reserves

This effort relies on scientific expertise and research capabilities of the Oregon Department of Fish and Wildlife, collaborative researchers, contractors, and the experiential knowledge of community groups and the fishing community. The initial effort to establish a limited system of marine reserves, including some pilot reserve sites was done in a collaborative forum, with the support of a wide range of stakeholders. This research and monitoring effort tied to marine reserve implementation and management will provide important information for use by decision makers. The widespread support for the initial marine reserve designations will likely apply to this effort. The resulting monitoring and management information will be used to make refinements to designated marine reserves to ensure they achieve the policy objectives that resulted in designation. Any adjustments to the boundaries or regulatory framework will be through a collaborative agency/stakeholder involvement process.

## VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps necessary for achieving the program change and/or implementing a previously achieved program change. The plan should identify significant projected milestones/outcomes, a schedule for completing the strategy, and budget estimates. If an activity spans two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual outcomes are a useful guide to ensure the strategy remains on track, OCRM recognizes that these benchmarks may change some over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. Further detailing of annual tasks, budgets, benchmarks, and work products will be determined through the annual award negotiation process.

**Total Years: 5**
**Total Budget: $405,000**
**Final Outcome(s) and Products:**
**The final outcome of this task includes:**
**Territorial Sea Plan amendment to incorporate maps that spatially delineate areas to be protected for their resource and use values, and areas of opportunity for the development of marine renewable energy facilities. In addition, we propose to develop specific guidance documents that implement mandatory operational plan requirements of Part Five of the TSP, such as adaptive management and monitoring programs.**

**Conduct baseline monitoring and research for marine reserves. Develop an adaptive management system, including AM measures. This work may enhance the state's initial system of marine reserves through expansion of designated marine reserves and/or designation of additional marine reserves.**

**Year: 1**
**Description of activities:**

- **Use available baseline research related to marine renewable energy siting to move toward completion of marine spatial planning related to ocean energy development. This will include the proposed areas that appear to be suitable for ocean energy development.**
- **Determine site suitability; marine habitat and resource values; projected project impact areas; proximity to upland support infrastructure; and existing and potential marine reserve areas.**
- **Conduct habitat and ecosystem monitoring research on existing marine reserve sites. Researchers will conduct data analysis and publish research findings. (This information is needed to inform decision makers before any refinement or changes to designated marine reserves can be considered.)**
- **Identify any data or regulatory gaps.**
- **Provide collaborative public involvement activities with local, state and federal partners as well as developers and experts on resources and marine renewable energy projects.**
- **Hold public hearings on proposed amendments to the state's Territorial Sea Plan.**
- **The OCMP staff will maintain a publicly accessible website containing procedural and substantive information throughout the process.**

**Outcome(s):**

- **Proposed marine spatial planning component that integrates ocean energy development within the state's Territorial Sea Plan. This update is the second phase of TSP amendments. The general requirements for ocean energy development have already been integrated as Part Five of the TSP.**
- **Guidance documents containing protocols and standards for implementing the operational plan requirements of Part Five of the TSP.**
- **Baseline monitoring, research and scientific findings for the state's designated marine reserves.**
- **Agency rulemaking adopting resource management requirements (e.g. management plans) for any areas that come out of the marine reserves process evaluating Cape Perpetua, Cape Falcon, and Cascade head sites, and developing a proposal for the Cape Arago/Seven Devils site.**

**Budget: $162,000**

**Year: 2**
**Description of activities:**

- **Based on the research, conducted during year 1, local, state and federal agencies and the Territorial Sea Plan Advisory Committee (TSPAC) will develop specific marine spatial planning designations and requirements for marine renewable energy facilities in the state's Territorial Sea.**
- **The Ocean Policy Advisory Council (OPAC) will review and make recommendations to the Land Conservation and Development Commission**

**(LCDC) on amendments to the Territorial Sea Plan.**

- **The LCDC will review and adopt appropriate amendments to the Territorial Sea Plan to complete the work on this strategy element.**
- **Conduct habitat and ecosystem monitoring research on existing marine reserves. Researchers will conduct data analysis and publish research findings. (This information is needed to inform decision makers before any refinement or changes to designated marine reserves can be considered.)**
- **Data gaps and further needs will be identified in the initial two years of this work task.**
- **The data needs and gaps will provide a foundation for a Project of Special Merit application in Year 3.**

**Outcome(s):**

- **Completion of remaining work related to marine spatial planning for ocean energy development, including guidance documents, protocols and standards for implementing the operational requirements of Part Five of the TSP.**
- **Ongoing evaluation of baseline monitoring and research and scientific findings on the state's designated marine reserves.**

**Budget: $97,200**

**Year: 3**
**Description of activities:**

- **Based on the research conducted in years 1 and 2, the state will prepare a report and recommendations for adaptive management provisions or needed changes to designated marine reserves.**

**(*PSM) Based on the needs and data gaps identified in years 1 and 2, the state will develop a potential larger research/monitoring project for year 3 in order to support the additional policy work identified for year 4. This may include an additional assessment of candidate marine reserves.**

**Outcome(s):**

- **Evaluate baseline monitoring, research and scientific findings on the state's designated marine reserves.**
- **Develop recommendations for any needed adaptive management or changes in response to data and information.**

**Budget: $48,600 (+*PSM)**

**Year: 4**
**Description of activities:**

- **Recommendations (adaptive management and marine reserve system adjustments) developed in year 3 will be considered by the public, stakeholders and agencies through the OPAC and LCDC review process.**

**Outcome(s):**

- **Evaluation of baseline monitoring, research and scientific findings on the state's designated marine reserves.**
- **Development of recommendations for any needed adaptive management or changes in response to data and information.**

**Budget: $48,600**

**Year: 5**
**Description of activities:**

- **Evaluate baseline monitoring, research and scientific findings on the state's designated marine reserves, with potential for adaptive management or changes in response to data and information. Based on the results of survey work, the state may make regulatory and/or spatial adjustments to its system of marine reserves. Data gaps and further needs will be identified in this final year of the 2011-2015 §309 strategy. The data needs and gaps may provide a foundation for future §309 work or Projects of Special Merit.**

**Outcome(s):**

- **Potential adaptive management measures and amendments to the state's system of marine reserves.**
- **Develop a work plan in preparation for next §309 assessment and strategy cycle.**

**Budget: $48,600**

## VII. Fiscal and Technical Needs

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the applying agency has made, if any, to secure additional state funds from the legislature and/or other sources to support this strategy. For the 2009-2011 biennium, ODFW sought and received $1M in state "other funds" (one time funds left over from the *New Carissa* salvage operation) and $338k in grants and donations. For the 2011-2013 biennium, ODFW is requesting a combined nearshore and marine reserves program budget of $2,635,425. Federal and private foundation funds are also being sought to fund this program.

The state is currently experiencing significant budget shortfalls. While funding is uncertain, the state Legislature may provide funding for the 2011-2013 biennium. Additional §309 funding will enhance and support this strategy.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out the proposed strategy, identify these needs. Provide a brief description of what efforts the applying agency has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

The state has technical resources to support some of this work and to manage the process resulting in identified program changes. Data collection and evaluation is a necessary

component of the marine spatial planning for ocean renewable energy resources. Monitoring data collection and data analysis are essential to the successful implementation, refinement and possible expansion/modification of the state's initial system of marine reserves.

**VIII. Projects of Special Merit (Optional)**

If desired, briefly indicate what PSMs the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank PSMs and is simply meant to provide the CMPs the option to provide additional information if they choose. PSM descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not do provide detailed project descriptions that would be needed for the PSM competition.

**(*PSM) Based on the needs and data gaps identified in years 1 and 2, the state will develop a potential larger research/monitoring project for year 3 in order to support the additional policy work identified for year 4. This may include an additional assessment of candidate marine reserve sites. However, without this PSM, the strategy and work plan still includes program amendments that enhance Oregon's ocean management efforts.** top

# Coastal Hazards Planning

**I. Issue Area(s)**

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☒ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☐ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**II. Program Change Description**

**A.** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☒ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☒ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B.** Describe the proposed program change(s) or activities to implement a previously achieved program change. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

This strategy component includes two types of program changes. The first type of program change is updated hazard mapping that is the key to applying local hazard regulations. Up to date hazard maps are directly tied to local hazard review and other regulatory requirements that protect life and property from the identified hazards. The second type of program change is updated regulations to protect life and property from known hazards.

This strategy will address both chronic coastal erosion and flooding hazards and tsunami inundation. The Department of Geology and Mineral Industries will take the lead in producing updated chronic hazard maps (Second Generation Hazard Maps) and updated tsunami inundation maps. The state coastal program will provide technical assistance to local government in order to integrate these updated hazard maps into local comprehensive

plans and land use regulations (i.e. ordinances and codes). The coastal program will also refine its existing model code to enhance regulation for local governments that have only first generation chronic hazard maps and develop a second model code that is suitable for those local governments that integrate second generation hazard and updated tsunami inundation zone maps. All of this work enhances implementation of Goal 18 (Beaches and Dunes) hazard protection requirements. (Chronic erosion can be shoreline retreat, dune erosion or bluff erosion and requires both setback and geologic review types of regulations. Development that is subject to velocity flooding and tsunami inundation hazards requires different review and regulatory approaches than chronic erosion.)

The first component of this strategy is to integrate updated tsunami inundation mapping into local planning documents. The mapping effort will be completed by DOGAMI and is well underway (the work will be completed for different coastal areas at different times based on DOGAMI staff resources). The work is not funded by §309. Once the maps are available, this enhancement task is to integrate the new maps into local comprehensive plans and to develop appropriate adaptation measures to deal with tsunami hazards.

DOGAMI will complete its work on updated tsunami inundation zone mapping for vulnerable communities along the Oregon coast without §309 funding. The integration of this updated hazard data will require funding support and technical assistance in order to appropriately integrate the new inventories into local comprehensive plans and land use regulations. This effort will only be successful if there are refinements to local hazard requirements to respond to the new hazard data. Planning approaches at the local level will require an assessment of the risk to people and property; the frequency, severity and location of the hazard; the effects on existing and future development; the potential for development in hazard areas to increase the severity of the hazard and appropriate types and intensities of development in hazard areas.

It is possible that the OCMP will work with selected communities on adaptation and recovery planning to respond to potential catastrophic hazard events such as a tsunami or Cascadia subduction zone earthquake. This work and resulting program changes may be an element of the year 3-5 work plan, depending on staffing and local government partner interest. There are several communities in the coastal zone with high vulnerability to such events (e.g. Seaside, Rockaway Beach, Cannon Beach, and Waldport). Some additional hazard planning work that responds to Climate Change or Sea Level Rise is identified separately as a PSM in years 3 and 5 of this strategy.

## III. Need(s) and Gap(s) Addressed

Identify what priority need the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority need. This discussion should reference the key findings of the Assessment and explain how the strategy addresses those findings.

This strategy primarily responds to the needs and gaps identified in on pp. 33, 56 and 62 of the Assessment and responds to those gaps as follows:

Update local government inventories (GIS maps) of areas along the ocean shore that are eligible for Shoreline Protective Structures (SPS) as outlined in Statewide Planning Goal 18. This is a continuing task that addresses a previously identified §309 needs and gaps. The work is for remaining properties in Lane, Douglas and Coos counties. Previous §309 funding provided similar GIS mapping for Lincoln, Tillamook, Clatsop and Curry counties.

Analyze data related to sediment loss and transport in significant "pilot" littoral cells. The result will be a sand budget analysis for the littoral cells that are of highest priority. Conduct coastal erosion risk studies in order to develop more detailed risk probability lines. This will support refinements to local government hazard regulations to improve and clarify regulatory protections in these hazard areas.

Continue to refine the state's model hazard code. The state will refine the current model code for use with the existing (first generation) chronic (i.e. erosion and ocean flooding) hazard maps and develop an updated model code that will enhance regulatory certainty and protections for updated (second generation) chronic (i.e. erosion and ocean flooding) hazard maps. This effort will provide improved hazard requirements and certainty for the public and local governments dealing with development in beach and dune hazard areas.

Most hazard elements of local comprehensive plans are based on inaccurate information related to the severity of inundation resulting from a tsunami event. The jurisdictions along the ocean shore and in other areas potentially impacted by tsunami events need to update their risk maps to accurately identify the areas subject to inundation once more reliable DOGAMI maps are available.

The integration of updated hazard data requires funding support and technical assistance from the DLCD/OCMP in order to appropriately integrate the new inventories into local comprehensive plans and land use regulations. This effort will only be successful if there are refinements to local hazard requirements to respond to the new hazards data. Planning approaches at the local level will require an assessment of the risk to people and property; the frequency, severity and location of the hazard; the effects on existing and future development; the potential for development in hazard areas to increase the severity of the hazard and appropriate types and intensities of development in hazard areas.

Tsunami/Cascadia subduction zone quake adaptation and recovery planning for vulnerable communities will also be valuable. A pilot project to integrate adaptation and recovery planning within one or two vulnerable communities in years 3-5 could provide a model process and template for use in other communities.

**IV. Benefit(s) to Coastal Management**

Discuss the anticipated effect of the program change or implementation activities including a clear articulation of the scope and value in improved coastal management and resource protection.

This work will enhance the state's hazard protection requirements and provide additional data on coastal erosion, coastal velocity flooding, tsunami inundation and sediment

transport within littoral cells. These improvements are both qualitative and quantitative, increasing the scope of identified hazardous areas subject to enhanced hazard review and protection. Erosion and littoral transport information will provide essential information to decision makers and the public dealing with development along the ocean shore. Recovery and adaptation planning for major catastrophic events will provide models for use by vulnerable communities. PSM work on climate change and sea level rise issues will provide a framework for enhanced estuarine/coastal shoreland planning efforts and hazard review and protection requirements.

**V. Likelihood of Success**

Discuss the likelihood of attaining the proposed program change and implementation activities. The state or territory should address: 1) the nature and degree of support for pursuing the strategy and the proposed change; and, 2) the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The additional hazard information will be particularly helpful when combined with the work on an updated hazards model code. There is substantial interest at the local government level in clarifying hazard risks and improving regulatory certainty.

**VI. Strategy Work Plan**

Using the template below, provide a general work plan that includes the major steps necessary for achieving the program change and/or implementing a previously achieved program change. The plan should identify significant projected milestones/outcomes, a schedule for completing the strategy, and budget estimates. If an activity spans two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual outcomes are a useful guide to ensure the strategy remains on track, OCRM recognizes that these benchmarks may change some over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. Further detailing of annual tasks, budgets, benchmarks, and work products will be determined through the annual award negotiation process.

**Total Years: 5**
**Total Budget: $394,200**
**Final Outcome(s) and Products: Updated chronic coastal hazard, velocity flooding and tsunami inundation zone inventory data. Develop an updated model hazards code for use with first generation hazard maps; and a new model hazards code for use with second generation hazard maps. Work with selected cities to develop pilot program adaptation planning strategies that respond to tsunami events (*See also* PSM for Climate Change Adaptation Planning scheduled in years 3 and 5 of this strategy). Work with selected communities to develop tsunami adaptation and recovery plans. We expect approximately 2-5 communities per year will update some of their hazard requirements (e.g. updated hazard inventories or revised regulations). Some jurisdictions will make relatively minor revisions to existing code requirements while others will consider a more significant effort to adopt one of the DLCD model codes.**

**Year: 1**
**Description of activities:**

- **Complete refinements to the state's model hazards code for use with existing first generation hazard data/mapping. This code will be available on the agency website and provided to specific jurisdictions as technical assistance.**
- **Work with DOGAMI to provide update erosion risk probability mapping for specific jurisdictions.**
- **Work with selected local governments to integrate up to date hazard inventory data and to adopt provisions of the appropriate version of the hazards model code.**
- **Create a GIS inventory of ocean shore segments eligible for shoreline protective structures (year 1 focus on Coos County).**

**Outcome(s):**

- **Refinements to hazard review requirements and regulations contained in local comprehensive plans and land use regulations.**
- **Refinements to ocean shore erosion mapping to be integrated into local planning documents (for areas where new information is available).**
- **Integration of GIS maps of areas eligible for shoreline protective structures into local plan inventories (for counties where the inventory update is complete).**

**Budget: $54,000**

**Year: 2**
**Description of activities:**

- **Work with DOGAMI to update erosion risk probability mapping for specific selected jurisdictions.**
- **Work with selected local government to integrate up to date hazard inventory data and to adopt provisions of the hazards model code that fit available hazard mapping.**
- **Create a GIS inventory of ocean shore segments eligible for shoreline protective structures (year 2 focus on Coos and Lane County).**
- **Work with FEMA to obtain expected updates to velocity zone maps for vulnerable ocean shore and estuarine areas.**
- **Provide technical assistance to selected local governments to integrate new FEMA maps and related hazard protection requirements into the comprehensive plan/land use regulation framework.**

**Outcome(s):**

- **Refinements to hazard review requirements and regulations contained in local comprehensive plans and land use regulations.**
- **Refinements to ocean shore erosion mapping to be integrated into local planning documents (for areas where new information is available).**
- **Integration of GIS maps of areas eligible for shoreline protective structures into local plan inventories (for counties where the inventory update is complete).**

**Budget: $48,600**

**Year: 3**
**Description of activities:**

- **Work with DOGAMI to update erosion risk probability mapping for specific selected jurisdictions.**
- **Continue activities to update ocean shore and littoral cell monitoring.**
- **Work with local government to integrate up to date hazard inventory data and to adopt provisions of the hazards model code.**
- **Create a GIS inventory of ocean shore segments eligible for shoreline protective structures (year 3 focus on Lane and Douglas County).**
- **Work with FEMA to obtain expected updates to velocity zone maps for vulnerable ocean shore and estuarine areas.**
- **Provide technical assistance to selected local governments to integrate new FEMA maps and related requirements into the comprehensive plan/land use regulation framework.**
- **Work with DOGAMI and local governments to integrate updated tsunami inundation zone mapping into comprehensive plans and land use regulations.**
- **Refine provisions of the hazards model code to include updated tsunami hazard requirements.**
- **Work with local governments to adopt appropriate hazard protection requirements based on the updated tsunami maps and hazards model code.**
- **Work with DOGAMI and local government partners to develop appropriate adaptation planning responses to a major tsunami event.**

**Outcome(s):**

- **Refinements to hazard review requirements and regulations contained in local comprehensive plans and land use regulations.**
- **Refinements to ocean shore erosion mapping to be integrated into local planning documents (for areas where new information is available).**
- **Integration of GIS maps of areas eligible for shoreline protective structures into local plan inventories (for counties where inventory update is complete).**
- **Updated local hazard inventories.**
- **Updated local hazard codes.**
- **Adaptation strategies for consideration by local government in response to potential major tsunami and/or Cascadia subduction zone earthquake events.**

**Budget: $97,200**

**Year: 4**
**Description of activities:**

- **Work with DOGAMI to update erosion risk probability mapping for specific selected jurisdictions.**
- **Work with DOGAMI to develop data on sediment loss and transport in a significant "pilot" littoral cell.**

- **Work with local government to integrate up to date hazard inventory data and to adopt provisions of the hazards model code.**
- **Create a GIS inventory of ocean shore segments eligible for shoreline protective structures (year 4 focus on Douglas County).**
- **Work with FEMA to obtain expected updates to velocity zone maps for vulnerable ocean shore and estuarine areas.**
- **Provide technical assistance to selected local governments to integrate new FEMA maps and related requirements within their comprehensive plan/land use regulation framework.**
- **Work with DOGAMI and local governments to integrate updated tsunami inundation zone mapping into comprehensive plans and land use regulations.**
- **Refine provisions of the hazards model code to include updated tsunami hazard requirements.**
- **Work with selected local governments to adopt appropriate hazard protection requirements based on the updated tsunami maps and hazards model code.**
- **Work with DOGAMI and local government partners to develop appropriate adaptation planning responses to a major tsunami event.**

**Outcome(s):**
- **Refinements to hazard review requirements and regulations contained in local comprehensive plans and land use regulations.**
- **Refinements to ocean shore erosion mapping to be integrated into local planning documents (for areas where new information is available).**
- **Integration of GIS maps of areas eligible for shoreline protective structures into local plan inventories (for counties where inventory update is complete).**
- **Updated local hazard inventories.**
- **Updated local hazard codes.**
- **Adaptation strategies for consideration by local government in response to potential major tsunami and/or Cascadia subduction zone earthquake events.**

**Budget: $97,200**

**Year: 5**
**Description of activities:**
- **Work with DOGAMI to update erosion risk probability mapping for specific selected jurisdictions.**
- **Continue activities to update ocean shore and littoral cell monitoring.**
- **Work with local government to integrate up to date hazard inventory data and to adopt provisions of the hazards model code.**
- **Work with FEMA to obtain expected updates to velocity zone maps for vulnerable ocean shore and estuarine areas.**
- **Provide technical assistance to selected local governments to integrate new FEMA maps and regulations within their comprehensive plan/land use regulation framework.**
- **Work with DOGAMI and local governments to integrate updated tsunami**

**inundation zone mapping into comprehensive plans and land use regulations.**

- **Refine provisions of the hazards model code to include updated tsunami hazard requirements.**
- **Work with selected local governments to adopt appropriate hazard protection requirements based on the updated tsunami maps and hazards model code.**
- **Work with DOGAMI and local government partners to develop appropriate adaptation planning responses to a major tsunami event.**

**Outcome(s):**

- **Refinements to hazard review requirements and regulations contained in local comprehensive plans and land use regulations.**
- **Refinements to ocean shore erosion mapping to be integrated into local planning documents (for areas where new information is available).**
- **Integration of GIS maps of areas eligible for shoreline protective structures into local plan inventories (for counties where inventory update is complete).**
- **Updated local hazard inventories.**
- **Updated local hazard codes.**
- **Adaptation strategies for consideration by local government in response to potential tsunami and/or Cascadia subduction zone earthquake events.**

**Budget: $97,200**

**VII. Fiscal and Technical Needs**

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the applying agency has made, if any, to secure additional state funds from the legislature and/or other sources to support this strategy.

The state will continue to work on the hazard model code, but can not provide sufficient funding for the risk mapping and individual local government adoption efforts without §309 funding. Additional monitoring of erosion and littoral cell transport/erosion is not supported by state general funds or local funding sources. The GIS mapping effort will not be undertaken without §309 funds. In general, the state will continue to rely on older inventories and somewhat dated hazard regulations and can maintain the status quo. However, enhancements and refinements to keep hazards data up to date and to improve the local regulatory framework requires §309 funding.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out the proposed strategy, identify these needs. Provide a brief description of what efforts the applying agency has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

The state relies heavily on DOGAMI to provide ongoing monitoring and technical resources for coastal hazards issues. The staff at DOGAMI provides ongoing services and technical assistance on hazards, however, §309 funds significantly improve the level of service continued enhancement of local plan and regulatory requirements. Without §309 funding, the

state would not be able to complete the GIS mapping for areas eligible for shoreline protective structures. This work has been temporarily stalled following the death of a key staff member who developed the protocol and completed this work. While the position has been filled, there has been some delay in reinitiating this program.

DOGAMI and DLCD staff has technical capabilities to assist local government in this effort. However, limited resources and competing priorities will require funding support. Additional resources will enable the agencies to develop model codes and strategic planning approaches to these issues.

**VIII. Projects of Special Merit (Optional)**

If desired, briefly indicate what PSMs the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank PSMs and is simply meant to provide the CMPs the option to provide additional information if they choose. PSM descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not do provide detailed project descriptions that would be needed for the PSM competition.

**NOTE: A separate PSM is included for Climate Change Adaptation Planning in Years 3 and 5 of this strategy and responds to the needs and gaps identified on page 33 and 62 of the Assessment. This PSM is listed separately because it covers two strategies (i.e. Hazards Planning and Estuary Ocean Shore Planning). Although the PSM will result in additional enhancement of the OCMP, the basic we note that the strategy will achieve important enhancement objectives without the PSM.** top

# Estuary/Ocean Shore Planning

**I. Issue Area(s)**

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☒ Ocean/Great Lakes Resources
- ☒ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☒ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**II. Program Change Description**

**A.** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☒ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☒ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B.** Describe the proposed program change(s) or activities to implement a previously achieved program change. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

Updated estuary/shoreland management plans for one or two of the state's deep draft development estuaries. The program change will include revised habitat and bottom type inventories; revised economic projections and revised estuary and shoreland management unit designations. Estuary and related shoreland plan updates will include both spatial and regulatory changes. Current estuary plans focus on a management system that divides estuaries into classifications (Natural, Conservation and Development). Individual estuaries are regulated through a parallel classification system that ensures diversity and protection of ecosystem functions by designating areas within the estuary as natural, conservation and development management units. A natural estuary only has natural management units. A conservation estuary has both conservation and natural management units. A development has development, conservation and natural management units.

This strategy will also include a program change that includes enhanced linkages between coastal estuaries and the connected shoreland areas. The state anticipates developing an enhanced classification system for the estuary/shoreland interface that will focus on environmentally valuable resources and functions. This work will necessarily include various development classifications for residential, commercial and industrial uses in both rural and urban contexts. This information will be integrated into local comprehensive plans and will inform both estuary plan updates and coastal shoreland conservation and development planning. Local comprehensive plans and land use regulations will be updated to incorporate the new information within its Goal 16 (Estuarine Resources) and 17 (Coastal Shorelands) plan elements.

If total funding is adequate to complete the DSL wetland mapping identified in the Wetland assessment, this strategy may also include updated wetland mapping for upland areas near the ocean and estuarine shoreline. DSL has partially completed this work and can improve its defined regulatory authority by completing this inventory/mapping project. The cost of the entire project may exceed available §309 funding.

**III. Need(s) and Gap(s) Addressed**

Identify what priority need the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority need. This discussion should reference the key findings of the Assessment and explain how the strategy addresses those findings.

This strategy primarily responds to the needs and gaps identified in on pp. 24, 56, and 62 of the Assessment and responds to those gaps as follows:

After 25 years, most of the state's estuary management plans are somewhat dated. These plans are implemented through local government estuary plans and implementing land use regulations (i.e. estuary zoning). The lack of updated estuary plans is particularly a problem for the deep draft development estuaries (i.e. Columbia River; Yaquina Bay; Coos Bay). To a lesser extent this is also an issue in shallow draft development estuaries. Plans were developed based on policy and regulatory guidance contained in Statewide Planning Goals 16 (Estuarine Resources); 17 (Coastal Shorelands); and OAR 660-Division 17 (Estuary Classification Rule).

Because of the costs of this effort, it is unlikely that formula based §309 funding can fully support comprehensive estuary plan updates for many estuaries. Formula based §309 funding can adequately fund a more basic estuary plan update for one or two estuaries (e.g. updated policy and regulations, without significant economic or resource inventory work). This strategy will be more comprehensive in scope if additional PSM funding is obtained in year 2 of this strategy time frame. We will work with the local governments in the three deep draft development estuaries to identify a candidate pilot project. Based on the effort in year 2, we hope to apply for additional PSM funding in year 4 to either continue the effort begun in year 2 or to add a second estuary to the effort.

Completion of DSL wetland mapping is identified in the Wetlands assessment chapter. This work will clarify DSL authority for wetlands along estuarine and ocean shorelines. Cost of this task is likely to exceed §309 funding, but the task is listed in the event DSL obtains some other funding and that only a small amount of §309 funding would result in completion of the work.

**IV. Benefit(s) to Coastal Management**

Discuss the anticipated effect of the program change or implementation activities including a clear articulation of the scope and value in improved coastal management and resource protection.

The primary benefit will be improved estuary planning and updated land use regulations that are tied to current resource inventories and updated economic projections. As individual development proposals are considered, the outdated resource inventories and land use designations (that are based on outdated resource data and economic development assumptions/projections) can pose barriers to effective and efficient coastal management and land use decision making. Updated estuary plans will facilitate and promote appropriate development and conservation actions within these important natural and economic resource areas.

Coastal shorelands within estuaries are generally designated for conservation and development values that link upland uses with estuarine ecosystem values. However, Goal 17 (Coastal Shorelands) inventories are outdated and not necessarily linked to the current resource/ecosystem functions and values of these sensitive areas. A consistent classification system, coupled with existing Goal 17 requirements will enhance the effectiveness of local plans in achieving enhanced coordination to achieve land use and resource management objectives.

**V. Likelihood of Success**

Discuss the likelihood of attaining the proposed program change and implementation activities. The state or territory should address: 1) the nature and degree of support for pursuing the strategy and the proposed change; and, 2) the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The estuary plans are complex and balance a variety of competing uses to achieve both conservation and development objectives. Updated plans will strike a balance based on updated environmental/natural resource information and economic projections that are consistent with current economic trends and opportunities. The revision of the economic development portions of estuary and related shoreland planning requirements based on an up to date economic opportunities analysis will result in improved decision making and efficiency. Because this effort will involve work with key stakeholders and willing partners, the effort has a high likelihood of success. We expect to solicit interest by working with local and state partners to identify a pilot project to undertake this effort.

Because the resulting estuary and shoreland planning update will improve local conservation

and development decisions, the opportunity is likely to be popular and competitive. Depending on funding, we may also consider one deep draft development estuary update and one shallow draft development estuary update. Each PSM will provide important and valuable information on the costs and procedures involved.

It will be important to convene a representative stakeholder group in the first phase of the process in order to build diverse support for the shoreland classification system. Once in place, inventories will be conducted and local governments will use these two products to update their comprehensive plans and land use regulations. The success of the effort is dependent on the work of the stakeholder group; the availability of funding to conduct inventories; and the willingness of some pilot projects to apply the new system and develop an appropriate planning framework. While funding is somewhat limited, the framework and some pilot program efforts are possible. We anticipate a competitive award process in order to select communities that can benefit from the new framework and show a commitment to applying the requirements.

## VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps necessary for achieving the program change and/or implementing a previously achieved program change. The plan should identify significant projected milestones/outcomes, a schedule for completing the strategy, and budget estimates. If an activity spans two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual outcomes are a useful guide to ensure the strategy remains on track, OCRM recognizes that these benchmarks may change some over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. Further detailing of annual tasks, budgets, benchmarks, and work products will be determined through the annual award negotiation process.

**Total Years: 4**
**Total Budget: $194,400 + *PSM ($200,000-$400,000)**
**Final Outcome(s) and Products: Updated estuary and shorelands plan for one or two deep draft development estuaries or a combination of one deep draft development estuary and one shallow draft development estuary. Formula based §309 funding can support a basic estuary plan update, including policy and regulatory revisions. A more comprehensive update, including economic and resource inventory work requires the additional PSM funding. The primary focus will be on deep draft development estuaries, but based on funding, we may include an update pilot for a shallow draft development estuary. Based on funding, we hope to develop an updated estuarine shoreline classification system and baseline inventories required to support decisions. The system will include procedures that link planning decisions to shoreland functions and values. Pilot program jurisdictions will apply the new system through a plan and land use regulation update process. The results of this effort will be shared with other local governments and used to assess outcomes. Some outcomes of this task will likely address data and information on climate change and sea level rise depending on the timing of the work and availability of supporting data and information (*See also* PSM**

**for Climate Change Adaptation Planning scheduled in years 3 and 5 of this strategy).**

**Year: 2**
**Description of activities:**

- **Conduct/contract for updated habitat, ecosystem and seafloor inventory data for one deep draft development estuary.**
- **Conduct/contract for an updated economic opportunities analysis.**
- **Based on the updated resource and economic data, review plan and land use regulation requirements, including the estuarine and shoreland management units to make appropriate adjustments representing a proper balance between conservation and development, consistent with statewide planning goal requirements. The primary focus will be on statewide planning goals 9 (Economic Development); 16 (Estuarine Resources); and 17 (Coastal Shorelands).**
- **Potential work with DSL to complete its tidal wetland mapping project (depending on adequate other funding to complete the project).**

**Outcome(s):**

- **Updated estuary and shoreland planning framework based on an up to date resource/environmental inventory and an up to date economic opportunity analysis.**
- **If the DSL wetland mapping project is included, the outcome is enhanced regulatory certainty for mapped wetlands.**

**Budget: $48,600 + *PSM ($200,000)**

**Year: 3**
**Description of activities:**

- **Convene a diverse group of stakeholders with experience and expertise in planning, wetland conservation, resource management, fish and wildlife resources, and development. Work with these stakeholders to develop a shoreline classification system that can be integrated within the existing framework of Statewide Planning Goal 17 (Coastal Shorelands). The classification system/planning program will include inventory requirements and substantive criteria for land use decisions impacting key shoreland functions and values.**

**Outcome(s):**

- **During this first year of this strategy, the work will focus on creating the proposed classification system and substantive criteria.**

**Budget: $48,600**

**Year: 4**
**Description of activities:**

- **Conduct/contract for updated habitat, ecosystem and seafloor inventory data for one deep draft or shallow draft development estuary.**
- **Additional work on the estuary selected in year 2.**

- **Begin work on a second pilot (with more limited funds) including the potential to select a shallow draft development estuary update that may be less complex and costly.**
- **Conduct/contract for an updated economic opportunities analysis.**
- **Based on the updated resource and economic data, review plan and land use regulation requirements, including the estuarine and shoreland management units to make appropriate adjustments representing a proper balance between conservation and development, consistent with statewide planning goal requirements. The primary focus will be on statewide planning goals 9 (Economic Development); 16 (Estuarine Resources); and 17 (Coastal Shorelands)**

**Outcome(s):**
- **An estuary and shoreland planning framework based on an updated resource and environmental inventory and an updated economic opportunity analysis.**

**Budget: $48,600 + *PSM ($200,000)**

**Year: 5**
**Description of activities:**
- **Solicit interest in applying the new shoreline classification system in two to four communities of various sizes representing differing estuarine environments (Natural, Conservation and Development Estuaries).**

**Outcome(s):**
- **Inventories; comprehensive plan policies; and implementing land use regulations for all or portions of the two to four selected communities.**

**Budget: $48,600**

## VII. Fiscal and Technical Needs

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the applying agency has made, if any, to secure additional state funds from the legislature and/or other sources to support this strategy.

Because of the state's limited budget, this update is not likely to be funded by general fund money. The state can not use §309 funding because of the cost of the effort. An estuary plan update is complex and requires important resource and economic data. The costs will more appropriately be tied to the PSM program. Without substantial PSM support, this effort is not likely to be undertaken locally or to be funded by limited state budget resources.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out the proposed strategy, identify these needs. Provide a brief description of what efforts the applying agency has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

Local government lacks the technical needs to support a major estuary plan update. However the local and state agencies with an interest in the effort are likely to be active stakeholders and technical advisors. The funding will support contracts for the updated environmental/resource inventories and the economic opportunities analysis that are precursors to updated planning and regulatory documents.

**VIII. Projects of Special Merit (Optional)**

If desired, briefly indicate what PSMs the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank PSMs and is simply meant to provide the CMPs the option to provide additional information if they choose. PSM descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not do provide detailed project descriptions that would be needed for the PSM competition.

**(*PSM) There is a need for a more comprehensive update estuary plans that exceeds the formula based §309 funding. Only a more basic update of one or two estuary plans can be accomplished with formula based §309 funding. This effort will include basic revisions and valuable experience that will provide a helpful model for other jurisdictions considering an estuary planning update effort. A more comprehensive effort can be undertaken with additional PSM funding. As noted above, most estuary plans are more than 25 years old and do not accurately reflect current ecosystem, resource and economic conditions. The transition from resource based economies that relied heavily on timber and fishing, means substantial areas have dramatically changed since the initial estuary and shoreland plans were adopted. Likewise, estuaries evolve over time in response to various environmental conditions. Eel grass beds form and move. Shorelines and seafloor conditions evolve. Species adjust to different environmental factors and may become threatened or endangered. All of these changing conditions have had some effects on the adequacy of estuary plans. While all estuaries may be impacted to some extent by these changing conditions, the deep draft development estuaries are more susceptible to effects of changes. Development pressures and economic roles of these more significant economic communities warrant an initial high priority for these estuaries. Shallow draft development estuaries are similarly impacted by changing environmental and economic conditions. While they may be a slightly lower priority, they may also deserve consideration for pilot funding.**

**NOTE: A separate PSM is included for Climate Change Adaptation Planning in Years 3 and 5 of this strategy. This PSM is listed separately because it covers two strategies (Hazards Planning and Estuary Ocean Shore Planning).** top

# Climate Change Adaptation Planning

**I. Issue Area(s)**

The proposed strategy or implementation activities will support the following priority (high or medium) enhancement area(s) *(check all that apply)*:

- ☐ Aquaculture
- ☐ Energy & Government Facility Siting
- ☒ Coastal Hazards
- ☐ Ocean/Great Lakes Resources
- ☒ Special Area Management Planning
- ☒ Cumulative and Secondary Impacts
- ☒ Wetlands
- ☐ Marine Debris
- ☐ Public Access

**II. Program Change Description**

**A.** The proposed strategy will result in, or implement, the following type(s) of program changes *(check all that apply):*

- ☐ A change to coastal zone boundaries;
- ☒ New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- ☒ New or revised local coastal programs and implementing ordinances;
- ☐ New or revised coastal land acquisition, management, and restoration programs;
- ☒ New or revised Special Area Management Plans (SAMP) or plans for Areas of Particular Concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- ☒ New or revised guidelines, procedures and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government and other agencies that will result in meaningful improvements in coastal resource management.

**B.** Describe the proposed program change(s) or activities to implement a previously achieved program change. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

This strategy is proposed as a Project of Special Merit. Although it is described here as a separate strategy, the work is directly linked to the §309 enhancements outlined above under the separate strategies for Coastal Hazards Planning and Estuary/Ocean Shore Planning. We understand that the PSM activities must include program changes related to other identified §309 enhancement activities. Because of the linkage to these two strategies and the difficulty in integrating this task into those enhancements, we choose to describe it separately as a PSM.

Oregon is currently developing a state-level climate change adaptation framework. A draft framework was released in December 2010. The framework identifies gaps in state capacity to address the likely effects of future climate conditions on resources, communities, infrastructure, and public health and safety. The framework includes short-term actions,

information needs, and a process and criteria to select long-term actions and investments that reduce the adverse effects of future climate conditions. In addition to community and infrastructure impacts, climate change will likely have significant natural resource, habitat and species effects, requiring responsive resource management actions. Specific program changes to be made under this strategy element will either be identified through the process of implementing the state Adaptation Framework, or through collaborative planning and coordination at the ecoregional scale.

**III. Need(s) and Gap(s) Addressed**

Identify what priority need the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority need. This discussion should reference the key findings of the Assessment and explain how the strategy addresses those findings.

This strategy primarily responds to the needs and gaps identified in on pp. 24, 33, 56, and 62 of the Assessment and responds to those gaps as follows:

This is an emerging area, with high levels of uncertainty and a need to prepare adaptive measures in response to projected, but uncertain effects. The spatial extent and severity of climate change, including potential for sea level rise, is the subject of a great amount of uncertainty. While the uncertainty may actually encourage inaction, there are measures that can be taken to anticipate effects and prepare to adapt based on actual experience as uncertainty diminishes. There is a need to conduct research, identify community and resource effects and consider responsive planning and resource management strategies. While this strategy is listed separately as a potential PSM, the work is directly related to the strategies on Coastal Hazards Planning and Estuary/Ocean Shore Planning described above. Rather than try and integrate this PSM into two separate enhancement categories, we decided it was clearer to describe it as a separate enhancement strategy. The need and gap addressed by this strategy is outlined in the wetlands (p. 24), hazards (p. 33), cumulative and secondary effects (p. 56) and special area management planning (p. 62) sections of the assessment. This strategy also responds to Oregon's interim strategy for climate change completed in 2009 (*See* p. 28) the impact of sea level rise/ocean acidification poses to the integrity of near shore and estuarine systems (*See* pp 57-58); and the Oregon Climate Change Adaptation Framework (December 2010).

**IV. Benefit(s) to Coastal Management**

Discuss the anticipated effect of the program change or implementation activities including a clear articulation of the scope and value in improved coastal management and resource protection.

A robust and flexible adaptation strategy can avoid or minimize risks and vulnerability of communities and help to avoid decisions and actions that increase vulnerability to future climate conditions. It is important to prepare an action plan and flexible response measures to climate effects that are predictable based on data and trends. The key is to identify vulnerabilities; assess risks and create strategies to respond.

The development of adaptation plans can minimize adverse effects on property, infrastructure, habitat and resource values. Existing comprehensive plans do not anticipate climate change impacts and therefore planning and land use decisions and the existing regulatory framework may actually exacerbate potential problems. The identification of vulnerabilities at the ecoregional scale and on a community by community basis is central to developing appropriate strategies in response to threats/risks.

**V. Likelihood of Success**

Discuss the likelihood of attaining the proposed program change and implementation activities. The state or territory should address: 1) the nature and degree of support for pursuing the strategy and the proposed change; and, 2) the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

The state and many local governments are committed to learning more about vulnerabilities and risks. Despite skeptics, there is general support for climate change adaptation planning. This effort is anticipated as a PSM in years 3 and 5. Adaptation planning will work with communities that are willing to conduct risk and vulnerability assessments and then develop and implement integrated strategies to reduce community vulnerability to the entire range of likely future climate conditions.

**VI. Strategy Work Plan**

Using the template below, provide a general work plan that includes the major steps necessary for achieving the program change and/or implementing a previously achieved program change. The plan should identify significant projected milestones/outcomes, a schedule for completing the strategy, and budget estimates. If an activity spans two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual outcomes are a useful guide to ensure the strategy remains on track, OCRM recognizes that these benchmarks may change some over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. Further detailing of annual tasks, budgets, benchmarks, and work products will be determined through the annual award negotiation process.

**Total Years: 2**
**Total Budget: (*PSM)**
**Final Outcome(s) and Products: For communities that choose to participate in this process, we anticipate proceeding through a series of adaptation planning steps. Step one is the assessment of vulnerability. Step two is to assess threats and risks. Step three is to adopt adaptation strategies to minimize and mitigate for vulnerabilities. In some circumstances, plan and land use regulations will require significant policy changes in order to avoid previously unanticipated adverse effects.**

**Year: 3**
**Description of activities:**

- **Work with local government to solicit interest in climate change adaptation**

**planning. Based on interest, prioritize communities based on anticipated higher vulnerability and risk.**

- **Work in selected communities to conduct a comprehensive review of comprehensive planning policy decisions which may be contrary to sound management decisions. A focus will be on effects on property, infrastructure habitats and resources.**
- **Assess vulnerability to hazards and impact on shoreline/estuarine resource values.**
- **Assess degree threats and risks.**
- **Develop and adopt adaptation strategies to minimize and mitigate for hazard and natural resource vulnerabilities.**

**Outcome(s):**

- **Updated comprehensive plans and land use regulation provisions to address hazard and shoreline/estuarine resource values. Updates will include both spatial planning decisions (e.g. urban growth boundary location; plan and zone designations; infrastructure and transportation plans) and regulatory requirements (e.g. hazard mitigation; building standards; infrastructure standards, shoreline resiliency and estuarine recovery/protection measures).**

**Budget: *PSM ($200,000) Work will focus on the highest priority communities up to the amount of the PSM award.**

**Year: 5**
**Description of activities:**

- **This task will carry over from the same PSM task identified in year 3, but may be modified to reflect the experience and learning from the year 3 PSM.**
- **Work with local government to solicit interest in climate change adaptation planning. Based on interest, prioritize communities based on anticipated higher vulnerability and risk.**
- **Work in selected communities to conduct a comprehensive review of comprehensive planning policy decisions which may be contrary to sound management decisions. A focus will be on effects on property, infrastructure habitats and resources.**
- **Assess vulnerability to hazards and impact on shoreline/estuarine resource values.**
- **Assess degree threats and risks.**
- **Develop and adopt adaptation strategies to minimize and mitigate for hazard and natural resource vulnerabilities.**

**Outcome(s):**

- **Updated comprehensive plans and land use regulation provisions to address hazard and shoreline/estuarine resource values. Updates will include both spatial planning decisions (e.g. urban growth boundary location; plan and zone designations; infrastructure and transportation plans) and regulatory requirements (e.g. hazard mitigation; building standards; infrastructure standards, shoreline resiliency and estuarine recovery/protection measures).**

**Budget: *PSM ($200,000) Work will focus on the highest priority communities up to the amount of the PSM award.**

**VII. Fiscal and Technical Needs**

**A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the applying agency has made, if any, to secure additional state funds from the legislature and/or other sources to support this strategy.

There is no general fund support available for these efforts, despite the importance. In addition, the cost of these efforts is beyond the scope of §309 formula based funding. The state has decided to include this work as a PSM task for years 3 and 5.

**B. Technical Needs**: If the state does not possess the technical knowledge, skills, or equipment to carry out the proposed strategy, identify these needs. Provide a brief description of what efforts the applying agency has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

This is an emerging area, with substantial opportunity for rapid progress as we learn more about climate change and potential adaptation strategies. Much could change between the time this §309 Assessment and Strategy is submitted and years 3 and 5 of the strategy period. We anticipate that there will be some growth in our technical capacity to manage the work on this strategy. Much of the expertise is expected to reside in state government. For that reason, the state need is primarily funding to accomplish the work and apply the technical knowledge that is emerging.

**VIII. Projects of Special Merit (Optional)**

If desired, briefly indicate what PSMs the CMP may wish to pursue to augment this strategy. Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above. The information in this section will not be used to evaluate or rank PSMs and is simply meant to provide the CMPs the option to provide additional information if they choose. PSM descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not do provide detailed project descriptions that would be needed for the PSM competition.

**(*PSM) This PSM is an enhancement to the §309 Strategies for Coastal Hazard Planning and Estuary/Ocean Shore Planning. Because of the cost and complexity of this strategy component it is being listed as a separate PSM strategy in years 3 and 5 of this §309 Assessment and Strategy. The work will be further developed over time and submitted through the competitive PSM process. Completion of this strategy will follow significant efforts by the state to anticipate and plan for climate change. We note that some of our baseline work on Climate Change is also being funded under CZMA §306.** top

# *5-Year Budget Summary by Strategy*

| **Strategy Title** | **Year 1 Funding** | **Year 2 Funding**** | **Year 3 Funding**** | **Year 4 Funding**** | **Year 5 Funding**** | **Total Funding** |
|---|---|---|---|---|---|---|
| Ocean Resources Planning<br>-Energy siting<br>-Marine reserves | $162,000 | $97,200 | $48,600 (+*PSM) | $48,600 | $48,600 | $405,000 |
| Coastal Hazards Planning<br>-Second generation mapping and enhanced regulation<br>-Tsunami inundation and recovery planning | $54,000 | $48,600 | $97,200 | $97,200 | $97,200 | $394,200 |
| Estuary/Ocean Shore Planning<br>-Update estuary plans<br>-Enhance shoreline planning | | $48,600 (+*PSM) | $48,600 | $48,600 (+*PSM) | $48,600 | $194,400 |
| Climate Change Adaptation Planning*** | | | ***PSM | | ***PSM | |
| **Total Funding** | $216,000 | $194,400 | $194,400 | $194,400 | $194,400 | $993,600 |

* The state anticipates applying for additional funding through NOAA's competitive Project of Special Merit (PSM) funding beginning in 2012. This additional funding will support specific pilot projects or enhanced special area management planning related to the strategy.

** The amount of §309 funding is reduced by 10% beginning in year 2 in order for NOAA to fund Projects of Special Merit (PSM).

***The Climate Change Adaptation Planning listed as a separate PSM funded activity in years 3 and 5 is an enhancement of the §309 tasks outlined under the Coastal Hazards Planning Strategy and the Estuary/Ocean Shore Planning Strategy. We understand that the PSM activities must include program changes related to other §309 enhancement activities. However, because of the PSM is intended to enhance two other strategies, we describe this enhancement work separately.

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