

**The Oregon Ocean Resources
Management Task Force**

**INTERIM REPORT
to the
JOINT LEGISLATIVE COMMITTEE
on
LAND USE**

July 1, 1988

**MANAGING OREGON'S
OCEAN RESOURCES**



Published July 1988 by

The State of Oregon, Neil Goldschmidt, Governor
and
The Oregon Department of Land Conservation and Development,
James F. Ross, Director

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Interim Report

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The Oregon Ocean Resources Management Task Force

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Public Member Neal Maine Seaside, Oregon	Coastal Counties Deborah Boone Clatsop County Board of Commissioners
Public Member Ellen Lowe Portland, Oregon	Department of Energy Nancy Rockwell, Deputy Director
Commercial Fisheries Ralph Brown Brookings, Oregon	Department of Environmental Quality Fred Hansen, Director
Charter and Sport Fisheries Bob Pullen Charleston, Oregon	Department of Fish and Wildlife Rollie Rousseau, Deputy Director
Ocean Navigation and Transportation Paul Vogel Port of Coos Bay	Department of Geology and Mineral Industries John Beaulieu, Deputy State Geologist
Ocean Minerals Jim Wenzel Marine Development Associates Saratoga, California	Department of Land Conservation and Development Jim Ross, Director
	Division of State Lands Martha Pagel, Director
	Department of Transportation Parks and Recreation Division Pete Bond, Ocean Shores Coordinator



**ONE
THE
OCEAN
PLANNING
BACKGROUND**

1. THE OCEAN PLANNING BACKGROUND

1.1. THE OREGON OCEAN PLANNING AREA

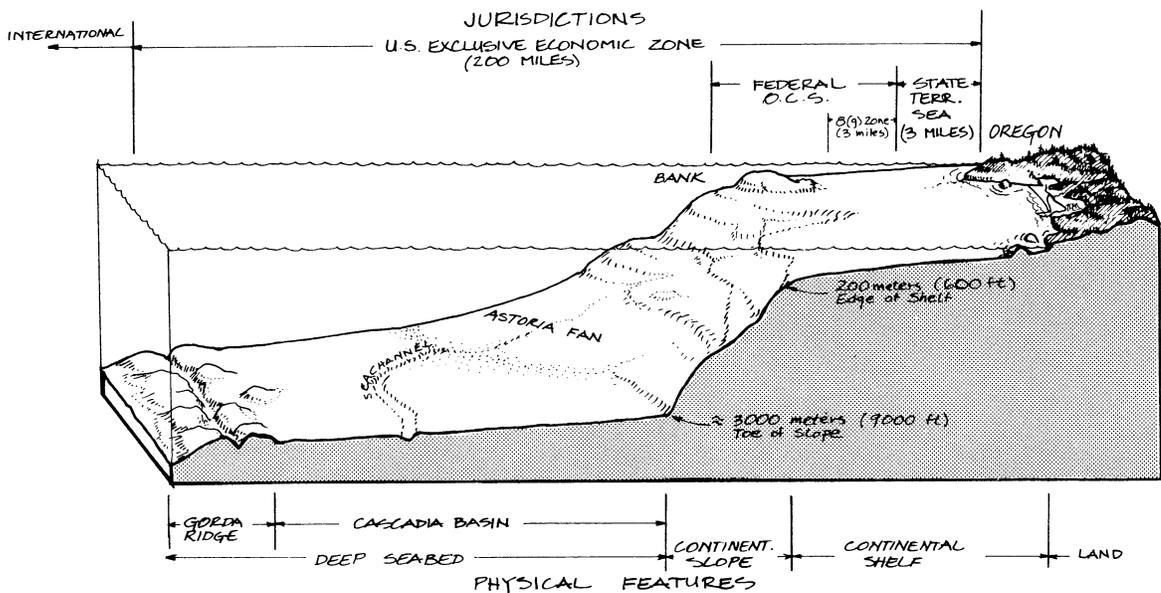
1.1.1 Jurisdictions

Oregon's ocean planning area extends from the Washington border in the Columbia River to the California border and westward to the extent of the United States Exclusive Economic Zone (EEZ) 200 miles at sea. Planning for this area must take into consideration the larger context of global ocean conditions and dynamics within which offshore Oregon is but a minute part.

The 1953 Submerged Lands Act established coastal states' statutory authority over offshore lands within three miles of their coastlines. This three-mile-wide strip is known as the territorial sea. In 1983, the United States asserted jurisdiction over resources and uses of the ocean within 200 miles of its coastline, an area known as the U.S. Exclusive Economic Zone (EEZ). Coastal states control the first three miles, and the federal government the remaining 197 miles, of the EEZ.

There is some practical difficulty establishing the exact line from which the western boundary of Oregon's territorial sea should be measured. However, its delineation is crucial to establishing Oregon's proprietary interests in seabed development activities.

Since Oregon owns the seabed within the territorial sea, state agencies have clear regulatory authority over activities that occur there. Coastal county boundaries extend to the western boundary of the state three miles at sea. However, Oregon's ocean planning law (SB 630) requires that planning for ocean resources and for submerged and submersible lands of the territorial sea be carried out under the Ocean Resources Management Task Force under SB 630.



1.1.2 Oceanographic Conditions and Resources

Three regions fall within Oregon's ocean planning area:

- The coastline and adjacent offshore rocks and islands.
- The continental margin, made up of the continental shelf and slope.
- The deep ocean beyond the continental margin, which includes several features such as Cascadia Basin, Gorda Ridge, and the Blanco Fracture Zone.

Oregon's coastline is composed of several unique regions defined by headlands and capes. Its continental shelf is only 43 miles at its widest, off of Newport, and only ten miles wide off Cape Blanco. Consequently, marine resources and ocean uses are restricted to a fairly narrow belt adjacent to the coastline. It is a highly dynamic environment, however, and is biologically quite productive. In fact, the most recent Minerals Management Service Five-Year OCS Program rates the Washington-Oregon Planning Area as the most biologically productive offshore area in the continental United States.

The physical and oceanographic setting of the Oregon ocean planning area has been described in detail in *The Oregon Ocean Book* published by the Department of Land Conservation and Development.

1.2. OCEAN PLANNING IN OREGON

1.2.1 The 1987 Oregon Ocean Resources Management Act (SB 630)

The 1987 Oregon Legislature enacted the Oregon Ocean Resources Management Act (SB 630), which directed the state to develop the means to manage the use of its offshore resources. Specific means required to be developed are summarized below.

Management Plans

The directions in SB 630 will result in a two-tiered plan to guide state and federal authorities and decisions concerning offshore activities.

- The Oregon Ocean Resources Management Plan

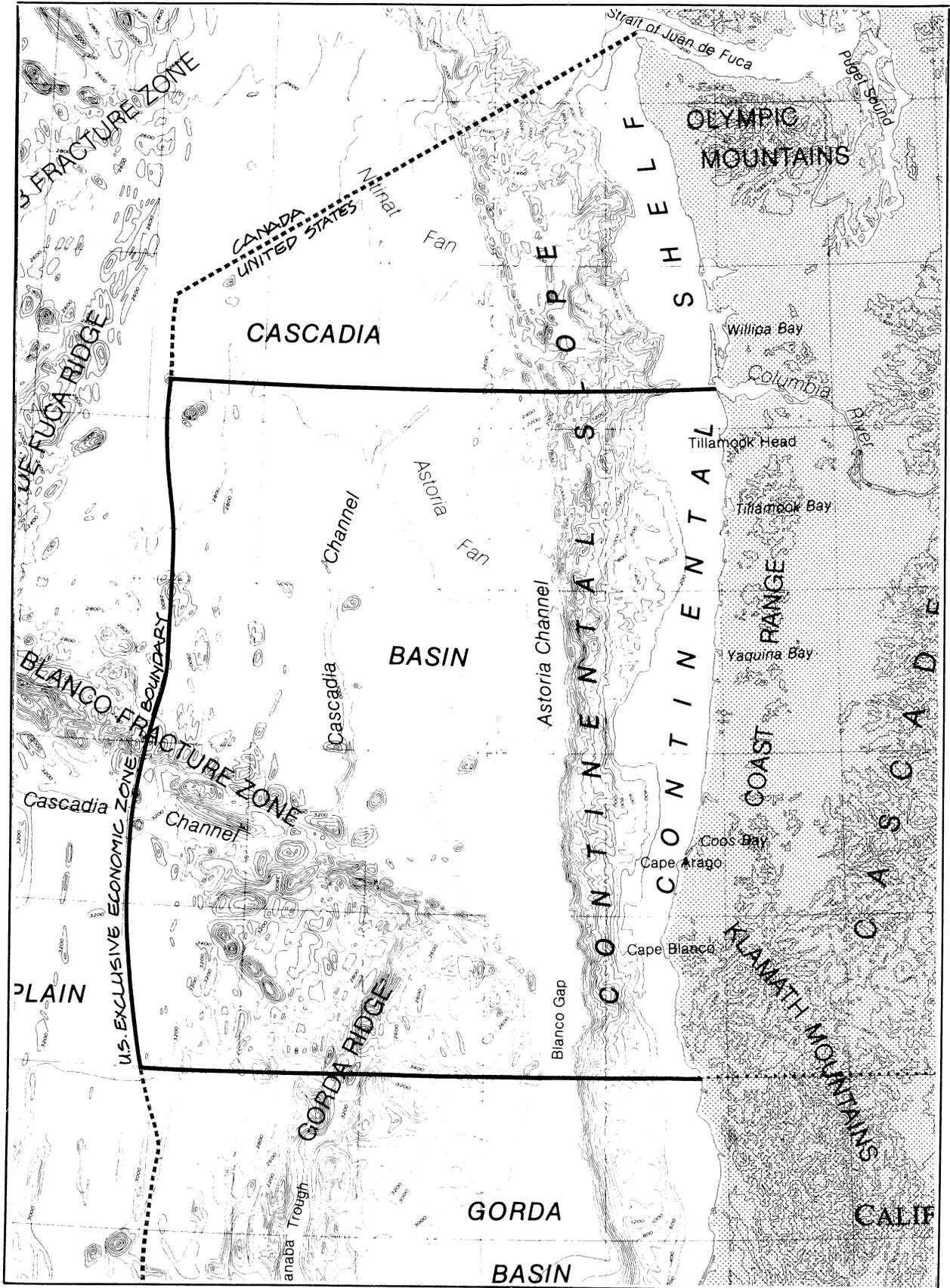
An overall management plan for ocean resources and uses within the 200-mile U.S. Exclusive Economic Zone, including the Oregon Territorial Sea, must be completed by June, 1990 and approved by the Land Conservation and Development Commission by December 1, 1990.

- The Territorial Sea Management Plan

A more detailed management plan for Oregon's Territorial Sea must be completed by July, 1991, and adopted by the State Land Board.

Management Program

The Oregon Ocean Resources Management Act requires more than simply drawing up plans for the use of Oregon's offshore resources. It first extends the responsibilities of the state's coastal management program, which is part of its statewide land use planning program, to include the ocean off Oregon. It then establishes a program for ocean resource management wherein agencies can accomplish the



Oregon's Ocean Planning Area

state's objectives through day-to-day management of offshore resources and activities.

This emphasis on a program reflects the realization that federal government or industry initiatives will eventually compel Oregon agencies to utilize scarce resources to respond to ocean development proposals. Unless agencies and the legislature have a clear idea of how agency programs interrelate, it will be nearly impossible to link them together into a functioning team to accomplish the state's objectives. Thus the analysis of existing agency programs and authorities that constitutes part of the Appendix is an important background document.

An overall plan and program will guide both Oregon's use of scarce agency resources and the strategic addition of personnel. In short, the management plan and program will ensure both efficiency and credibility.

1.2.2 Preliminary Ocean Planning 1977-1986

Oregon's present ocean resource planning efforts are based on substantial work completed by the state over the past ten years. These previous efforts are valuable. Their results provide an information base and policy foundation for the larger framework required under SB 630. The results of these earlier efforts are summarized below.

- 1977: The Oregon Coastal Management Program.

The Oregon Coastal Management Program (OCMP) has been approved by the Office of Ocean and Coastal Resource Management, U.S. Department of Commerce, pursuant to the Coastal Zone Management Act of 1972. This approval came after a nearly five-year process of program development and public review. The OCMP is based on three separate but coordinated sets of planning and regulatory authorities:

- Statewide planning goals adopted by LCDC;
- Local comprehensive plans acknowledged by LCDC as complying with the statewide planning goals; and
- Specific statutory authorities of several state agencies.

The OCMP includes Statewide Planning Goal 19, Ocean Resources, which provides much of Oregon's policy framework for the use of ocean resources.

- 1978: *Oregon and Offshore Oil*

Written for the interested layman, *Oregon and Offshore Oil* reviews the role that oil and gas plays in the Nation's energy supply. It describes how petroleum is formed, and then how industry finds and develops oil and gas resources. It then describes how offshore exploration and development may affect Oregon, and concludes with thoughts on improving Oregon's ability to manage offshore development. It is a far-sighted book that still provides solid information and perspectives for OCS planning.

- 1978: *Concerns and Recommendations: Oregon and Offshore Oil*

This draft report, prepared by Oregon State University to support the work of the Governor's OCS Oil and Gas Task Force, summarizes information available to state agencies on living marine resources and ocean conditions and uses. It identifies information gaps and the data needed by the state before leasing or production begins. The report contains a variety of recommendations related to OCS activities.

- 1979: *Final Report of the Outer Continental Shelf Oil and Gas Task Force*

Governor Straub created the interagency OCS Oil and Gas Task Force by Executive Order EO-77-1. Its 1979 *Final Report* to Governor Atiyeh contains detailed information on OCS oil and gas activities and numerous recommendations for improving Oregon's participation in OCS planning and development.

The provisions of SB 630 and the activities of the Ocean Resources Management Task Force are direct results of the vital work of the OCS Oil and Gas Task Force.

- 1985: *The Oregon Ocean Book*

Prepared and published by the Department of Land Conservation and Development, *The Oregon Ocean Book* is a comprehensive review of the resources and dynamic conditions of the Pacific Ocean off Oregon. Written for the layman and extensively illustrated, the *Ocean Book* provides a framework for policy and planning decisions about Oregon's ocean resources. The book was extensively reviewed for accuracy by several marine scientists.

- 1987: *Oregon Territorial Sea Management Study*

The *Territorial Sea Management Study* is an exhaustive compilation and analysis of Oregon's management authority for ocean resource use and the existing and potential uses of the ocean and its resources. It constitutes a comprehensive evaluation of Oregon's management capability for offshore uses, resources, and activities. Begun in 1984, the *Study* was prepared jointly by OSU's Marine Resource Management Program and the Ocean and Coastal Law Program of the University of Oregon Law School.

The *Study* is a basic reference for the Task Force's evaluation of Oregon's ocean management capability and its recommendations for program improvements.

- 1987: *Management of Living Marine Resources: A Research Plan for the Washington and Oregon Continental Margin*

This *Research Plan*, prepared by the Oregon Department of Fish and Wildlife, reviews the potential impacts from development of non-renewable resources off the Oregon coast. It identifies the information required for sound management of renewable resources and establishes a framework for determining research priorities. The report then lists currently-identified research needs within that overall context.

Although the *Research Plan* is primarily limited to research needs for living marine resources, it nonetheless provided the Task Force with the basis for its recommendations for research required by SB 630.

- 1984-86: Governor's Letters

In September 1984, May 1985, and May 1986, the Governor of Oregon sent letters to the Secretary of the Interior concerning OCS development. They express Oregon's policies on OCS development based on the comments, analyses, and recommendations of state agencies and public comments received at public hearings. The letters are discussed in section 2.1.2, which summarizes Oregon's participation in the development of the current 5-year leasing program.

- 1985-86: *Recent and Current Studies of the Oregon Continental Margin*

The Department of Geology and Mineral Industries has prepared a series of reports and maps that summarize information on the geology and mineral resources in offshore Oregon. The following maps and reports are included in the series.

- *Survey of Oregon Offshore Mapping (Open File 85-3)*
- *Offshore Mineral Resources Map (GMS-37)*
- *Offshore Geologic Bibliography and Index Maps (GMS-39)*
- *Offshore Geologic Map (GMS-42)*
- *Inventory of Heavy Minerals and Metals (Open File 86-10)*

Together, these studies, maps and reports provide the data base of geologic conditions and mineral resources information required by SB 630.

- Other Major Reference Works

In addition to these state-generated documents, Oregon's ocean resources planning efforts have relied upon several other studies and data compilations, including:

1977: *A Summary of Knowledge of the Oregon and Washington Coastal Zone and Offshore Areas* by the Oceanographic Institute of Washington.

1980: *An Ecological Characterization of the Pacific Northwest Coastal Region* by the U.S. Fish and Wildlife Service Office of Research and Development.

1981: *Pacific Coast Ecological Inventory* by the U.S. Fish and Wildlife Service.

1987: *Marine Minerals: Exploring Our New Ocean Frontier* by the Congressional Office of Technology Assessment.

1.3. PLANNING PARTICIPANTS

1.3.1 The Oregon Ocean Resources Management Task Force

SB 630 established an 18-member Task Force of state agency directors, ocean users, local government representatives, and citizens. A Scientific and Technical Advisory Committee includes nearly thirty members. Information and advice have come from many groups and individuals and have not been limited to the two "official" groups established by SB 630.

Table 1 - 1 Ocean Resources Management Task Force

<p>Governor's Designee: Chair Gail Achterman, Governor's Assistant for Natural Resources</p>	<p>Offshore Oil and Gas Dee Chamberlain, PhD. ARCO, Los Angeles, California</p>
<p>Public Member Jayne Fraese Florence, Oregon</p>	<p>Oregon Coastal Zone Management Association Jay Rasmussen, Director Newport, Oregon</p>
<p>Public Member Neal Maine Seaside, Oregon</p>	<p>Coastal Counties Deborah Boone Clatsop County Board of Commissioners Astoria, Oregon</p>
<p>Public Member Ellen Lowe Portland, Oregon</p>	<p>Department of Energy Nancy Rockwell, Deputy Director</p>
<p>Commercial Fisheries Ralph Brown Brookings, Oregon</p>	<p>Department of Environmental Quality Fred Hansen, Director</p>
<p>Charter and Sport Fisheries Bob Pullen Charleston, Oregon</p>	<p>Department of Fish and Wildlife Rollie Rousseau, Deputy Director</p>
<p>Ocean Navigation and Transporta- tion Paul Vogel Port of Coos Bay Coos Bay, Oregon</p>	<p>Department of Geology and Mineral Industries John Beaulieu, Deputy State Geologist</p>
<p>Ocean Minerals Jim Wenzel Marine Development Associates Saratoga, California</p>	<p>Department of Land Conservation and Development Jim Ross, Director</p>
	<p>Division of State Lands Martha Pagel, Director</p>
	<p>Department of Transportation Parks and Recreation Division Pete Bond, Ocean Shores Coordinator</p>

Table 1 - 2 Technical Advisory Committee Members

Richard Hildreth Ocean and Coastal Law Center University of Oregon	Robin Brown Oregon Dept. of Fish and Wildlife	Bob Jacobson Marine Extension Agent Newport, Oregon
Jim Good OSU Sea Grant/Extension	Krystyna Wolniakowski Oregon Dept. of Environmental Quality	Paul Heikkila Marine Extension Agent Coquille, Oregon
Paul Rudy, Director Oregon Institute of Marine Biology	Bruce Sutherland Oregon Dept. of Environmental Quality	Earle Buckley National Coastal Resources Institute Newport, Oregon
Douglas Caldwell Dean of Oceanography Oregon State University	Jeff Kroft Oregon Division of State Lands	Don Oswalt Oregon Dept. of Land Conserva- tion and Development
Onno Husing U of O Ocean and Coastal Law Center	Dennis Olmstead Oregon Dept. of Geology and Mineral Industries	Patty Snow Oregon Dept. of Land Conserva- tion and Development
Dan Varoujean Oregon Institute of Marine Biology	Greg McMurray Oregon Dept. of Geology and Mineral Industries	Howard and Marguerite Watkins Oregon Shores Conservation Coalition, Coos Bay, Oregon
LaVerne Kulm OSU College of Oceanography	Rey Ramsey Oregon Economic Development Dept.	Fran Recht Port of Newport
William Pearcy OSU College of Oceanography	Matt Spangler, Director Lincoln County Planning Depart- ment	Fred Smith OSU Dept. of Agricultural Resource Economics
Hans Radtke, Economist Yachats, Oregon	Mark Barnes CREST Astoria, Oregon	Courtland Smith OSU Dept. of Agricultural Resource Economics
Carol Alexander Oregon Natural Resources Coun- cil Corvallis, Oregon	Dave Fox CREST	Bruce Rettig OSU Dept. of Agricultural Resource Economics
Bob Rose Corvallis, Oregon	Joe Edney Coos-Curry Council of Govern- ments	Richard Gale University of Oregon
Scott Smith Oregon Dept. of Energy	Roy Lowe U.S. Fish and Wildlife Service	Chief Edgar Bowen Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Myrtle Point, Oregon
Neal Coenen Oregon Dept. of Fish and Wildlife	Elizabeth Holmes National Marine Fisheries Service	Sue Hanna Legislative Counsel
Dan Bottom Oregon Dept. of Fish and Wildlife	Steve Chesser US Army Corps of Engineers	
Rick Starr Oregon Dept. of Fish and Wildlife		

1.3.2 Scientific and Technical Advisory Committee

The Task Force has been substantially supported in its work by a Scientific and Technical Advisory Committee. The Committee was established by SB 630, but its membership was left up to the Task Force. Several Technical Committee members have attended most or all of the Task Force meetings, and all of them have been ready to provide the Task Force with their insights and recommendations. Committee members are listed in Table 1-2.

1.3.3 Citizen Participation

Senate Bill 630 directs that the citizens of Oregon participate in ocean management planning. Three members of the public-at-large are designated as members of the Task Force.

During this initial phase of the program, the Task Force has taken modest steps to include Oregon's citizens in planning. Chief among these is *Oregon Ocean*, a newsletter containing reports of Task Force activities, issues, and schedules. It is mailed to over 450 individuals. All meetings are open to the public, and time is set aside at each meeting for public comments. The Task Force has attempted to make its meetings accessible to coastal residents. Four of eight Task Force meetings have been held on the coast. As a Task Force policy, citizen participation in Task Force meetings is welcome.

The Task Force has approved an extensive but common-sense citizen participation and awareness program to be carried out during the development of the Ocean Resources Management Plan. Goals of this program are to:

- Provide information to interested parties and the public about the Oregon Ocean Resources Management Planning process, its enabling legislation, and the Task Force work plan.
- Explain issues outlined in the Ocean Management Plan draft documents and working papers.
- Provide opportunities for public involvement in all phases of the development of the Ocean Resources Management Plan.

The complete Citizen Involvement Program is contained in Chapter 4.

1.3.4 Federal Agency Participation in Oregon Ocean Planning

Staff from several federal agencies with ocean resource management interests and authorities have participated in Task Force meetings and the preparation of this Interim Report. They are included in the list in Table 1.2 on page 10. In addition, staff from the U.S. Department of the Interior Minerals Management Service reviewed sections of this Interim Report and commented by mail.

SB 630 requires that federal agencies be invited to participate in the preparation of the Ocean Resources Management Plan. The Task Force and state agencies need to clearly identify federal agency staff with both policy and technical expertise, and cooperatively develop a framework for co-management policies and activities. In particular, the Task Force needs to work with the following agencies and issues:

U.S. Department of the Interior, Minerals Management Service

OCS oil and gas environmental studies and lease sale planning; development of a co-management regime for marine minerals.

U.S. Department of the Interior, Fish and Wildlife Service

Seabird and mammal resources of the Oregon coast, with emphasis on coordination with the Oregon Islands National Wildlife Refuge, and oil spill response planning.

U.S. Army, Corps of Engineers

Marine mining management, dredged material disposal, ocean shoreline erosion and hazards, and harbor maintenance.

U.S. Environmental Protection Agency

Oil spill response planning, establishing marine water quality and air quality standards, hazardous and toxic waste management, and ocean outfalls of municipal and industrial waste.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service

Ocean resources information and assessment, oil spill response planning, fisheries management, and marine mammals.

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service

Fisheries management, oil spill response planning, marine mammals, and marine habitat protection.

U.S. Coast Guard

Navigation and vessel safety and oil spill response planning.

1.3.5 Local Government Participation in Ocean Planning

Local governments on the Oregon coast have direct interests in ocean resource management and use. The 1987 Legislature recognized this interest in SB 630. It requires that local governments be represented on the Task Force by both a coastal county commissioner and by the Oregon Coastal Zone Management Association, Inc., an organization of coastal local governments.

Representatives of other local government planning bodies served on the Scientific and Technical Advisory Committee and contributed valuable information and advice to the Task Force Subcommittee on Onshore Impacts.

The Act also requires that the Ocean Resource Management Plan include study and recommendations of how local governments may be affected by offshore development. The Subcommittee on Onshore Impacts prepared a report on the role of local governments, impacts on port facilities, other socio-economic impacts, and research needs. This report will serve as a sound basis for continued Task Force work; it is contained in the Appendix.

1.3.6 Tribal Participation

Historically, native peoples of the Oregon coast relied on the resources of estuaries, rivers, and the ocean for subsistence and ceremony. Today, both coastal tribes and those inland with fishery links to the ocean have an interest in ocean resources planning.

SB 630 did not include tribal participation on the Task Force. However, Task Force staff met with the Oregon Indian Services Commission to discuss ocean planning.

Chief Edgar Bowen of the Confederated Tribes of Coos, Lower Umpqua and Siuslaw was appointed to the Scientific and Technical Advisory Committee. A "legislative concept" has been submitted to the Governor that would result in the appointment of a Tribal representative to the Task Force.

In addition, the Oregon Department of Justice has been requested to provide background information and analysis of tribal treaty rights pertaining to ocean resources management.

1.3.7 Industry Participation

The Task Force has been keenly aware its task is driven by real-world use of ocean resources by several ocean industries, and that these industries play a major role in the future of Oregon's coastal economy. Senate Bill 630 specifically designated Task Force membership for representatives of several ocean industries, including:

- Commercial fisheries
- Ocean sport and recreational fisheries
- Marine mineral mining
- Oil and gas
- Ocean navigation and transportation

The Task Force devoted several meetings to information from several ocean industries. The Charleston workshop focused on commercial and recreation fishing industries. A panel discussion among the various fisheries interests provided good background material to the Task Force. At that meeting the Task Force also heard a short presentation on mariculture opportunities on the south coast. The Astoria meeting hosted detailed presentations from both the offshore oil and gas industry and the marine mining industry.

A Task Force subcommittee on User Conflicts provided a basis for representatives from the various fishing interests, offshore oil and gas, and marine minerals industries to begin to identify and resolve potential conflicts between ocean users.

Ocean Program staff met with a special working group of the Western Oil and Gas Association to discuss Oregon's ocean planning program and find ways of obtaining and using industry information in developing Oregon's offshore oil and gas management regime.

1.3.8 Schedule of Task Force Meetings

The Task Force met nine times from the fall of 1987 through summer, 1988. Each scheduled meeting was recorded for future reference by staff, Technical Advisory Committee members, and interested citizens. The topics discussed at the meetings included the resource use issues addressed in this Report, and included presentations by experts from both industry and neighboring states. Up to 60 people attended some of the Task Force meetings. The schedule is listed below, along with the issues discussed at each meeting.

September 29, 1987: Oregon State University, Corvallis. Territorial Sea Management Workshop. (Not a scheduled Task Force meeting.)

November 12, 1987: State Capitol, Salem. Initial Task Force meeting and orientation.

December 14, 1987: Portland State University, Portland. OCS oil and gas and off-shore minerals.

January 28 and 29, 1988: University of Oregon Institute of Marine Biology, Charleston. Workshop on OCS oil and gas issues, research needs, fisheries, and marine mineral management; task force subcommittees established.

March 7, 1988: Hotel Newport, Newport. Subcommittee work sessions and reports.

April 11, 1988: Columbia River Maritime Museum, Astoria. Oil and gas and minerals industry presentations; Interim Report Table of Contents adopted; Citizen Involvement Plan adopted; subcommittee reports.

May 9, 1988: Hotel Newport, Newport. Local government and onshore impacts; California perspectives; subcommittee reports and recommendations.

June 10, 1988: Portland State University, Portland. Interim Report Draft, subcommittee reports and recommendations.

June 27, 1988: Bonneville Power Administration, Portland. Review of the Interim Report Final Draft.

1.3.9 Task Force Subcommittees

The Task Force formed six subcommittees to assist in its investigation of various off-shore resource development issues. They prepared reports and recommendations to the Task Force, all of which are attached to this report. The reports provide a basis for work on several issues during the development of the Ocean Resources Management Plan. The Committees are:

Management Systems: Ellen Lowe, Chair

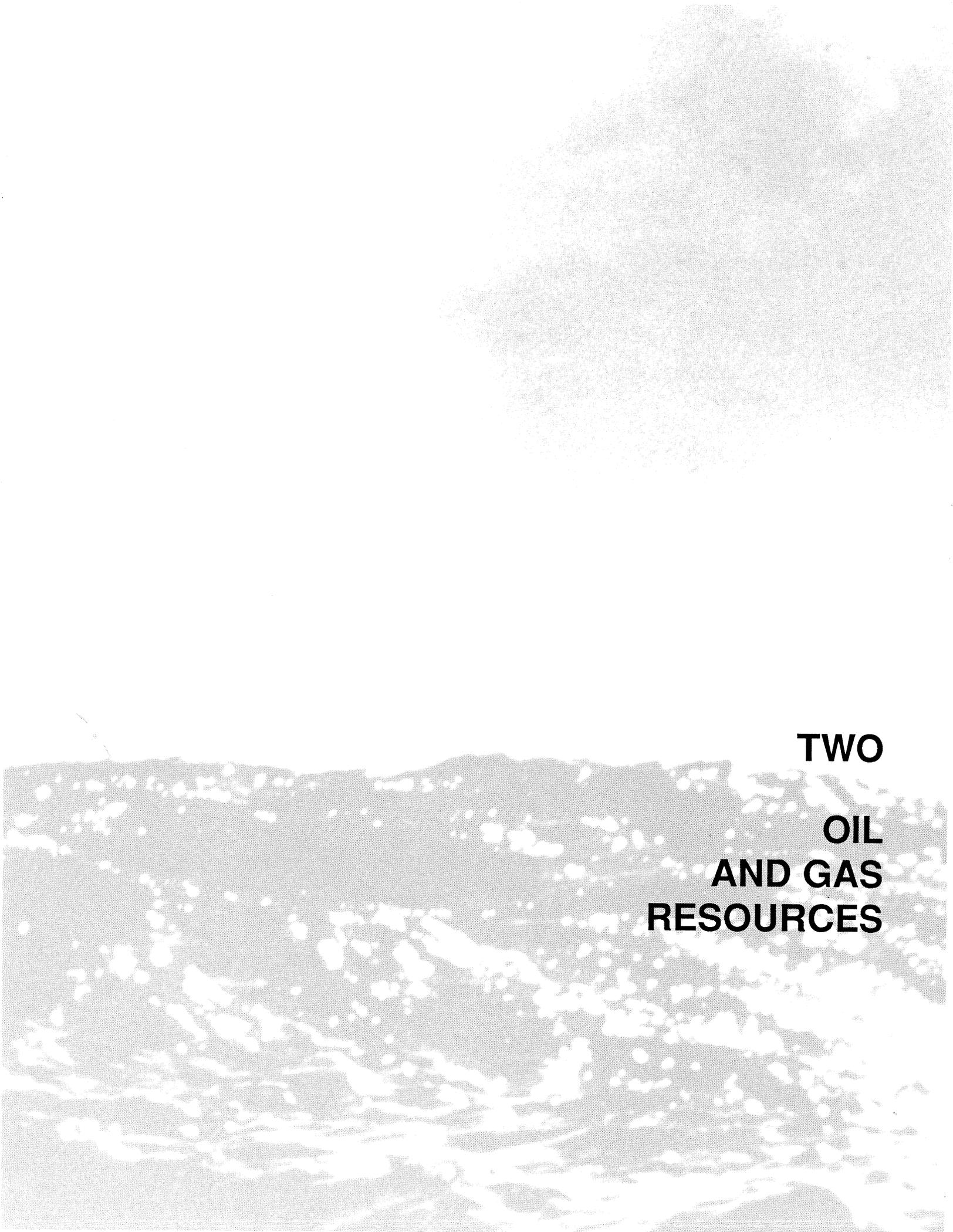
Special Management Areas: Jim Ross, Chair

Research Needs: Neil Maine, Rollie Rousseau, Co-Chairs

User Conflicts: Bob Pullen and Dee Chamberlain, Co-Chairs

Onshore Impacts: Jay Rasmussen, Chair

Coastal Economics: Martha Pagel, Hans Radtke, Co-Chairs



TWO
OIL
AND GAS
RESOURCES

2. OIL AND GAS RESOURCES

A 1987 U.S. Department of Energy report projects that oil will continue to be "a vital component of our energy mix well beyond the year 2000." Thus the nation's offshore leasing program is driven by the need to locate and develop domestic oil reserves to contribute to the nation's total energy supply.

Total estimated "undiscovered, economically recoverable resources" on the U.S. Outer Continental Shelf (OCS) are about 12.2 billion barrels of oil and 90.5 trillion cubic feet of natural gas. OCS sources currently constitute about a quarter of the domestic natural gas and an eighth of the domestic oil supply.

The Outer Continental Shelf Lands Act (OCSLA) established a program with the specific purpose of making offshore lands available for exploration and development of new energy supplies. The law is not intended to generate energy supplies by encouraging energy conservation. The Department of the Interior is responsible for implementing the OCSLA. As such, Interior is an advocate for OCS development; it calculates the benefits derived from OCS development in national terms.

However, state and local governments bear the costs of OCS development within their general purpose responsibilities. So questions are being increasingly asked about the need to risk sensitive marine environments and coastal communities for OCS development when energy supply alternatives are available.

2.1. THE FIVE-YEAR PROGRAM

Congress amended the OCSLA in 1978 to require that Interior schedule OCS leases in five year programs. The most recent, the 1987-1992 Five-Year OCS Oil and Gas Leasing Program, was prepared by Interior's Minerals Management Service (MMS) between 1984 and 1987. It includes 38 lease sales in 21 OCS planning areas nationwide (shown in the map below), and involves a total of about 750 million acres.

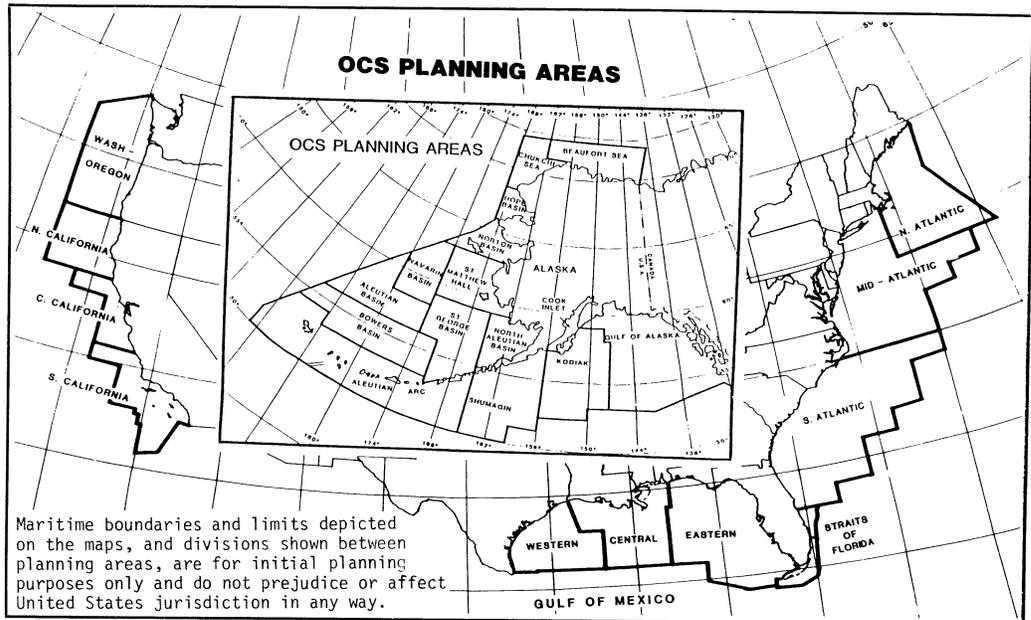


Figure 2-1: Federal OCS Planning Areas, 1987-1992

USING FEDERAL LAWS TO INFLUENCE OFFSHORE LEASING

Coastal states rely on three federal statutes to participate in the OCS leasing process. A variety of other federal statutes governing specific resources or uses of the ocean are listed in the Appendix.

OCS Lands Act (OCSLA): OCSLA is the primary federal law governing the process and content of the OCS oil and gas leasing program. It specifically recognizes state interests in OCS activities. It requires that the Secretary of the Interior coordinate and consult with affected coastal states; it also requires that the Secretary balance oil and gas development with coastal zone management and environmental considerations.

OCSLA governs the distribution of revenues from OCS leasing. Section 8(g) provides that states are entitled to a share of revenues from oil and gas recovered within three miles of a state's territorial sea. In 1986, Congress determined that 27 percent of such revenues would go to the adjacent state. All other revenues go to the U.S. Treasury.

Coastal Zone Management Act (CZMA): This 1972 law includes a key provision for coastal states. The concept of "federal consistency" developed as an incentive to coastal states for developing and implementing coastal zone management programs that met federal standards. The consistency provisions require that federal actions which "directly affect" a state's coastal zone be "consistent" with that state's coastal management program. Although a 1984 Supreme Court decision severely limited the application of consistency provisions at the lease sale stage, all subsequent exploration and development permits must withstand the state's consistency review.

Consistency requirements provide Oregon with the ability to impose specific standards on exploration, development, and production activities, and to require mitigation and contingency planning. This means that Oregon must be prepared to spell out these standards and requirements at the lease sale stage.

National Environmental Policy Act (NEPA): NEPA requires that "major Federal actions significantly affecting the quality of the human environment" be preceded by the preparation and consideration of an environmental impact statement (EIS). The EIS must include a discussion and consideration of alternatives to the proposed action. The Five-Year OCS Program itself requires an Environmental Impact Statement (EIS). Each lease sale then requires a more detailed EIS, which involves public review and comment.

Interior Secretary Hodel, in submitting the new program to Congress, said both the "easy availability of foreign oil imports" and low prices create a false impression of oil supply security. He noted that domestic production dropped about 800,000 barrels per day at a time when demand rose over 1 million barrels per day.

Planning areas are nominated by the oil industry to be included in a lease sale schedule; although industry interest in the Oregon-Washington planning area was moderate, it was enough to be included in the 1987-1992 program as Lease Sale # 132. It is one of 11 "frontier areas" in the program. The schedule for the 1987-1992 program is shown below. It specifies when each step in the leasing process is to take place.

U.S. DEPARTMENT OF THE INTERIOR
PROPOSED FINAL
5-YEAR OCS OIL AND GAS LEASING PROGRAM

APRIL 1987

SALE	DATE	1987		1988		1989		1990		1991		1992	
		AM	JASOND	JFMAM	JASOND								
112 W. GULF OF MEXICO	8/87												
97 BEAUFORT SEA	1/88			F	P	G	N						
113 C. GULF OF MEXICO	3/88			EH									
109 CHUKCHI SEA	5/88			H									
115 W. GULF OF MEXICO	8/88			EH									
107 NAVARIN BASIN	10/88			EH	E	H							
116 E. GULF OF MEXICO	11/88												
91 N. CALIFORNIA	2/89					F	P	G	N				
96 N. ATLANTIC	2/89					EH							
118 C. GULF OF MEXICO	3/89			CD	A								
122 W. GULF OF MEXICO	8/89			CD	A								
95 S. CALIFORNIA	9/89					EH							
SU1 SUPPLEMENTAL	9/89												
*121 MID-ATLANTIC	10/89			R									
*120 NORTON BASIN	12/89			R	CD	A							
*101 ST. GEORGE BASIN	2/90			R	CD								
123 C. GULF OF MEXICO	3/90					CD	A						
117 N. ALEUTIAN BASIN	5/90					CD	A						
125 W. GULF OF MEXICO	8/90					CD	A						
*114 GOA/COOK INLET	9/90			R									
SU2 SUPPLEMENTAL	9/90												
*108 S. ATLANTIC	10/90					R	CD	A					
119 C. CALIFORNIA	11/90					CD	A						
124 BEAUFORT SEA	2/91							CD	A				
131 C. GULF OF MEXICO	3/91							CD	A				
126 CHUKCHI SEA	5/91							CD	A				
135 W. GULF OF MEXICO	8/91							CD	A				
*130 NAVARIN BASIN	9/91					R							
SU3 SUPPLEMENTAL	9/91												
137 E. GULF OF MEXICO	11/91							CD	A				
*129 SHUMAGIN	1/92							R	CD	A			
*134 N. ATLANTIC	2/92							R					
128 N. CALIFORNIA	2/92							CD	A				
139 C. GULF OF MEXICO	3/92							CD	A				
*132 WASHINGTON-OREGON	4/92							R					
*133 HOPE BASIN	5/92							R					
138 S. CALIFORNIA	6/92							CD	A				
*140 STRAITS OF FLORIDA	6/92							R	CD	A			

*Frontier Exploration Sale. Request for Interest will be issued if necessary.

R - Request for Interest C - Call for Information & Nominations D - Comments on Call Due
A - Area Identification E - Draft EIS H - Public Hearing F - Final EIS
I - Issue Environmental Assessment for Supplemental Sale P - Proposed Notice of Sale
G - Governor's Comments Due N - Notice of Sale S - Sale

Figure 2-2: Proposed 1987-1992 OCS Leasing Schedule

2.1.1 Alternatives to OCS Leasing

Given the OCSLA mandate to lease offshore lands, Interior's program is not given to the full consideration of alternatives to leasing. The program states that "the most practicable alternatives to additional oil and gas production—coal and nuclear energy—have not proven to be preferable for the uses now served by oil and gas." The program notes that transportation is 95 per cent dependent on oil-based fuels. In its one paragraph on energy conservation, the program notes that declining oil prices have reduced economic incentives for conservation.

Although the OCSLA does not specifically provide for the consideration of alternatives, the leasing program itself constitutes a federal action affecting the quality of the environment. Consequently, an environmental impact statement (EIS), which contains a consideration of alternatives to the proposed action, must be completed for the program.

The Final EIS for the 1987-1992 Five-Year Program does discuss alternatives to OCS leasing. But they differ, for the most part, only according to lease sale schedules. Thus the set of alternatives only describes the effects of an "all or nothing" leasing program. Alternatives to either area-wide leasing or leasing of highly biologically productive or environmentally sensitive offshore areas are simply not considered.

Using a variety of available means, Oregon has attempted to get Interior to consider a number of alternatives to a blanket lease sale in offshore Oregon. Such alternatives, which are discussed in greater detail in later sections, include:

- **Environmental Assessment Prior to Lease Sale**

Both Governors Atiyeh and Goldschmidt have requested that Interior delay consideration of leasing offshore Oregon until studies could be conducted to obtain information necessary for lease sale planning analyses.

- **Focus Lease Sale Planning on Geologic Basins**

Oregon and Washington have both requested that Interior consider focusing on areas of hydrocarbon potential, rather than an area-wide lease, in pre-sale planning and analysis, and that important marine habitat or ocean use areas be deleted from leasing consideration.

- **Conservation in Lieu of Leasing of Sensitive Areas**

Oregon joined three other states and several interest groups to legally challenge the Five-Year OCS Program (see section 2.1.3). The parties argue that the Final EIS should have considered alternatives to leasing sensitive ocean areas. Their brief asserts that Interior was obligated to compare energy savings from readily available conservation measures with the estimated energy reserves available in sensitive ocean areas considered for leasing. Only then could Interior determine how conservation, coupled with deletion of those areas, compared with the preferred alternative of leasing.

2.1.2 Governor's Comments During Preparation of the Program

In amending the OCSLA to encourage offshore oil and gas production, Congress recognized that states would be affected by such development. Consequently, it required that the Secretary of the Interior prepare each five-year program with the full involvement of coastal states.

Oregon participated extensively in the preparation of the 1987-1992 Program, and provided official comments from the Governor in September 1984, May 1985, May 1986, and April 1987. The Governor's comments reflected state agency concerns and those expressed during public hearings on the program. They also reflect a cautious approach to OCS development and the absence of an overall ocean resources management program which would provide for a more "fine-tuned" response.

The policies expressed by the governor include:

- **Federal Consistency With Oregon Coastal Management Program**

OCS oil and gas exploration and development activities must be consistent with the requirements of Oregon's Coastal Management Program, including Goal 19, Ocean Resources.

- **Goal 19, Ocean Resources**

The policy framework for review and approval of OCS activities requires, first, that priority be given to the use of renewable marine resources over non-renewable ones; and second, that decisions be based on scientific information sufficient to analyze and evaluate the impacts of the proposed activities.

- **Needed Information Base for Decisions**

While there is a range of information from other regions on oil and gas development, there is inadequate scientific information specific to the northwest to determine potential environmental impacts of oil and gas development in offshore Oregon. Environmental studies are needed and must be conducted to meet the overall study objectives in the region.

- **Lease Sale Planning Areas**

Lease sales should focus on areas of geologic potential rather than on administrative planning areas.

- **Interstate Coordination**

Conditions in the Oregon-Washington planning area differ from other planning areas enough to require a special state-tribal-federal working group for planning coordination. The objective of the group would be to avoid the problems experienced in other regions caused by lack of consultation and coordination.

- **Lease Sale Planning Area Deletions**

For a variety of reasons mostly concerned with existing ocean uses, the governor stated that Oregon would not support leasing within several areas, which should therefore be deleted from lease sale consideration:

- areas deeper than 600 feet (200 meters), which is the edge of the continental shelf;
- the Heceta, Stonewall, Perpetua, and Coquille Banks;
- six-mile buffers around the rocks and islands of the Oregon Island National Wildlife Refuge, the mouth of the Salmon River, and Cascade Head Natural Research Area; and
- six-mile buffers around the mouths of Coos Bay, Yaquina Bay, and the Columbia River.

The Task Force will use these deletions as a basis to further refine the concept of buffers and area deletions. Subsequent Task Force work may result in changes to the sizes recommended by the Governor.

2.1.3 Litigating the Program

In August 1987, Oregon joined three other states and a number of environmental organizations to challenge 1987-1992 Five-Year OCS Lease Sale Program. Governor Goldschmidt, in approving the state's involvement in the lawsuit, said that while he prefers "negotiation and cooperation to litigation" on OCS issues, the information base for the 1987-1992 program was inadequate. In particular, review of the Draft EIS in 1985 and the Final EIS in 1987 showed key information to be missing and the analyses to be poorly done.

In March 1988, briefs were filed in the U.S. Court of Appeals in Washington, D.C. The principle brief, filed jointly by the plaintiffs, challenges the program on five points.

- First, that the Final EIS fails to consider alternatives to OCS leasing, such as a national energy policy that includes conservation, that would meet the nation's energy needs.
- Second, that the program contains no criteria to determine which areas to exclude from lease sale consideration.

- Third, that the program fails to base OCS leasing regions on geographic and geologic criteria, as required by the Outer Continental Shelf Lands Act (OCSLA), and therefore fails the OCSLA "balancing" test.
- Fourth, that the program fails to meet cost-benefit analysis requirements by either ignoring certain analyses or undervaluing certain costs in 10 of 22 areas in the program.
- Fifth, that it was illegal for either the Secretary of the Interior or the President to lower the minimum bid from \$150 to \$25 per acre, rather than assuring fair market value for tracts in the upcoming lease sale.

Oregon and Washington filed their own joint brief. In it, the states argue that the decision to include the Washington-Oregon "frontier area" was based solely upon oil and gas potential and ignored other lawfully protected values. The brief argues that since the EIS lacks adequate data about environmental risks in the region, the Secretary could not lawfully determine the environmental risks posed by development.

2.1.4 Advising the Department of the Interior

The Department of the Interior established three formal groups to provide for consultation and coordination with states, industry, and the public. Their roles are summarized below. When Oregon's involvement in such official groups has little or no effect on Interior's policies, Congress provides a "court of last resort".

- **National OCS Policy Advisory Committee**

Oregon is a member of the National OCS Policy Advisory Committee. It was established to advise the Department on OCS oil and gas leasing policy matters. Although the Committee listens more than it advises, it is still a valuable consultation mechanism for the state. The Governor's Assistant for Natural Resources is the traditional member from Oregon.

- **Pacific Regional Technical Working Group (RTWG)**

The RTWG advises MMS on technical issues of the OCS program. Oregon participates on the Pacific Regional Technical Working Group, which is one of six nationwide. Group members include Oregon, Washington, California, various federal agencies, industry, and the public. The Pacific RTWG has focused almost exclusively on Southern and Central California leasing issues. Only recently have issues pertaining to the Pacific Northwest been discussed. Participation in the PRTWG has allowed Oregon a first-hand look at oil and gas issues in California and elsewhere.

- **Scientific Advisory Committee (SAC):**

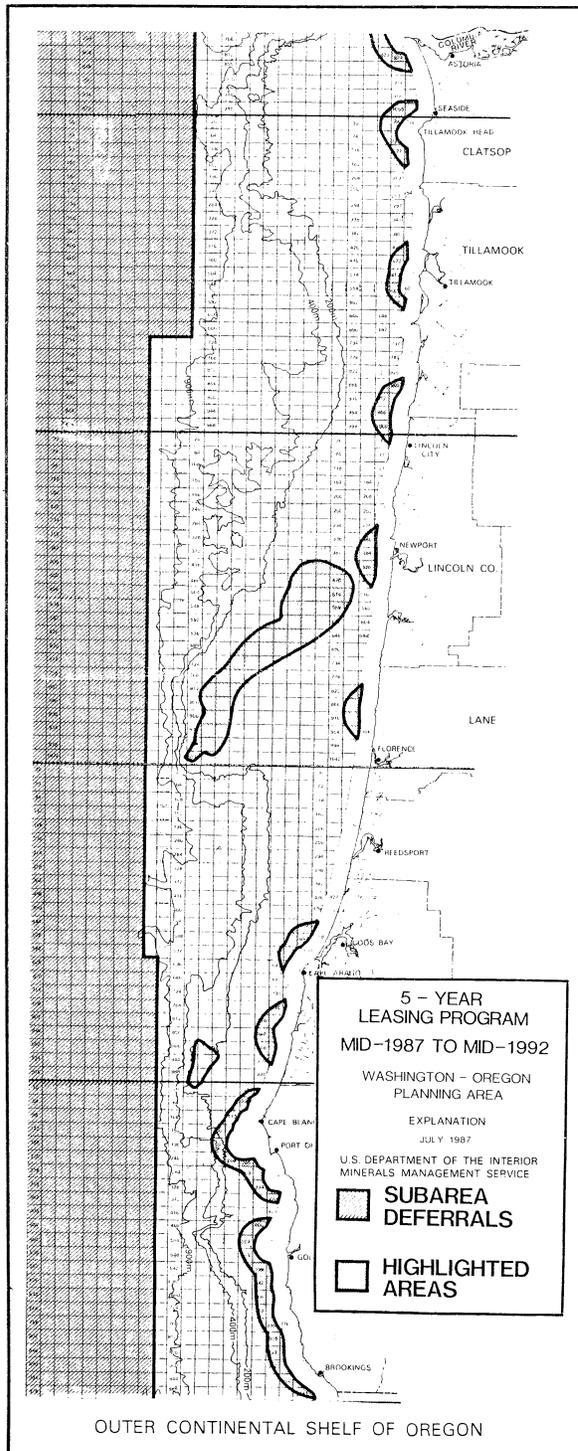
The SAC provides scientific advice to the MMS Environmental Studies Program and other scientific aspects of the oil and gas program. Its members are scientists and technical specialists rather than state representatives. However, Oregon has, on several occasions, presented the SAC with a variety of concerns about the MMS Environmental Studies Program.

2.2. LEASE SALE # 132: WASHINGTON-OREGON

2.2.1 Determining the Effective Planning Area

The entire Washington-Oregon OCS Planning Area encompasses nearly 70,000 square miles, or over 48 million acres. During the development of the program, Oregon had requested the deletion of areas below 200 meters in depth. Interior's response was the deferral of deep water areas below 900 meters. These deferrals yield an effective planning area of over 19,000 square miles, 12.7 million acres.

Oregon also requested that specific areas be deleted from lease sale consideration: critical fisheries areas over the Heceta, Stonewall, Perpetua and Coquille Banks; buffers around the Oregon Islands National Wildlife Refuge, Cascade Head, the Salmon River estuary; and buffers around major estuary mouths. These areas were not deleted from the final program. Instead, they were "highlighted" for "special pre-sale consideration". The program does not detail the nature of such consideration. Together, Oregon's requested exclusions total 900 square miles, or less than 5% of the effective planning area.



2.2.2 Environmental Studies

Information about marine and coastal resources and environment is critical to every step in the OCS leasing and development process. No decision can be made without supporting environmental documents. Oregon in particular has a requirement for environmental information and analysis in Goal 19, Ocean Resources. Governors Atiyeh (1984-86) and Goldschmidt (1987-88) both required adequate environmental information as a condition of their approval of OCS development.

The MMS Environmental Studies Program

The Minerals Management Service administers a national OCS Environmental Studies Program (ESP) to support its OCS oil and gas program. Since the program's inception in 1973, more than \$448 million has been spent on studies nationwide, of which \$59.6 million has been spent in the Pacific Region.

Through 1980, the program had spent a little more than \$330,000 on studies off Washington and Oregon. Between 1980 and 1987, no money was allocated, and thus no studies were conducted, in the region despite numerous suggested studies.

Since FY 1987, MMS has begun conducting studies within the region aimed at acquiring basic oceanographic data, OCS fisheries data, baseline information on marine birds and mammals, and profiles of coastal communities and economics. Overall, the MMS environmental studies effort in the region will need substantial improvement if it is to fill identified data gaps.

This will be a key issue to be addressed by the state-federal Pacific Northwest OCS Working Group.

2.2.3 Needed Research for OCS Oil and Gas Leasing

The research needs for oil and gas management largely coincide with information needed for managing other ocean resources. The report of the Research Needs Subcommittee is contained in the appendix. In addition, the Oregon Department of Fish and Wildlife has completed a Draft *Research Study Needs for Managing Living Marine Resources*.

The Department of the Interior Minerals Management Service held a Symposium and Workshop on OCS Research Needs in May, 1988. Such a symposium had been suggested by Oregon nearly three years ago as way to frame a the environmental studies program for the Pacific Northwest. The results of the Symposium have not yet been published.

Oregon will need to continually monitor available information and assess its own information base for managing offshore oil and gas activities both inside and outside the territorial sea. It will need to establish an effective network among ocean information centers, marine researchers, and state and local agencies which will need to use the information.

2.2.4 A New Approach: The Pacific Northwest OCS Working Group

Throughout preparation of the Five-Year Program, Oregon urged Interior to establish a state-federal working group to coordinate planning for OCS leasing in the Northwest. In February 1988, Oregon Governor Goldschmidt and Washington Governor Gardner formally requested that Secretary of the Interior Hodel work with the states to establish a Pacific Northwest OCS Working Group.

As proposed, the Working Group would facilitate both policy and technical coordination and consultation among the states, federal agencies, treaty tribes and other

parties. It is intended at the outset that pre-lease environmental studies be a major focus of the working group, along with the identification of areas to be included or excluded from lease sale consideration, the scoping of issues for the environmental impact statement, and development of mitigation and monitoring programs.

Negotiations continue with Interior on the objectives, purpose, and representation of the group. It is not yet clear if Interior is willing to share major planning responsibilities with Oregon and Washington through such a group, or what staff and financial support might be available.

THE PLANNING SCHEDULE FOR LEASE SALE #132

Over two years is required to plan each lease sale included in the program. The following schedule shows the stages and timing for Lease Sale # 132.

November 1989: Request for Industry Interest

In a new step for frontier areas, MMS will survey companies to determine whether there is sufficient interest to undertake to lease sale.

March 1990: Call for Information and Nominations

States, federal agencies, the public and industry provide basic information for MMS evaluation, including areas to be deleted, areas to be buffered, and key environmental information necessary for planning. Industry also identifies lease blocks of interest.

June 1990: Area Identification

Areas defined for detailed analysis in the Environmental Impact Statement.

March 1991: Draft Environmental Impact Statement

Describes the planning area and potential environmental affects of OCS oil and gas development activities. States must be prepared to analyse and respond to the DEIS, and detail stipulations and conditions for proposed leasing areas. A public hearing on the DEIS is scheduled for April 1991.

September 1991: Final Environmental Impact Statement

Response to comments on DEIS. A Secretarial Issue Document analyses key leasing issues. Again, states must be prepared to participate in the FEIS review.

November 1991: Proposed Notice of Sale

Identifies specific lease sale blocks (approximately 3 x 3 mile areas) and lists detailed terms and conditions of lease sale.

January 1992: Governor's Comments on Proposed Notice

60-day comment period. State must be specific in its response to the Final EIS and Secretarial Issue Document.

March 1992: Final Notice of Sale

Final Secretarial decision on lease sale.

April 1992: Lease Sale #132

Lease Sale # 132 held.

2.3. OIL AND GAS RESOURCES

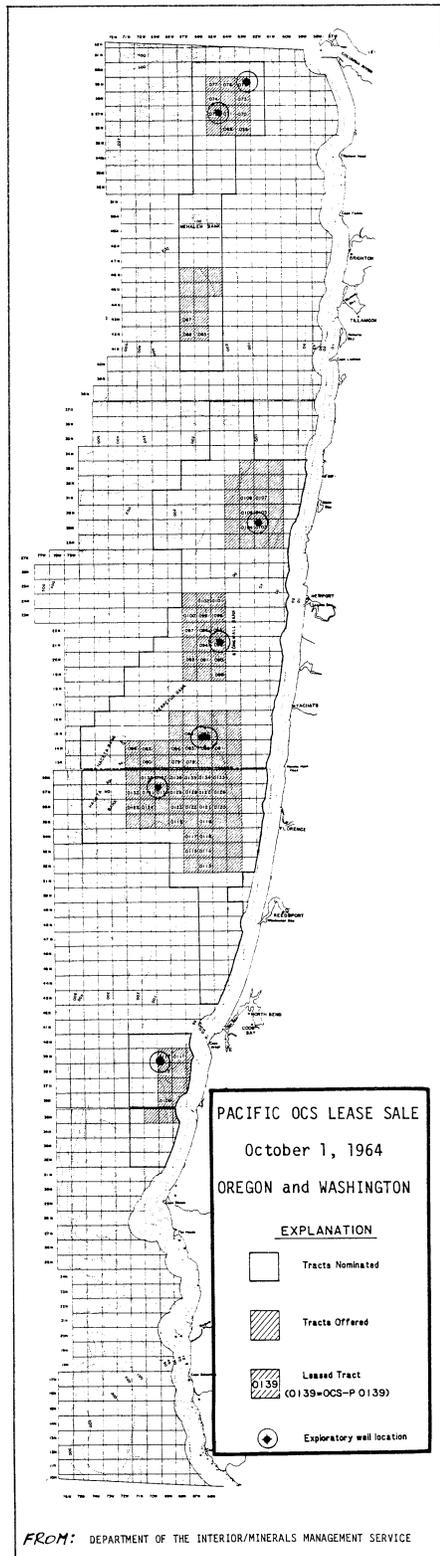


Figure 2-4: 1964 Federal OCS Leases off Oregon

2.3.1 Past Exploration off Oregon

An OCS oil and gas lease sale for areas off Oregon and Washington was held on October 1, 1964 (see Figure 2-4). Bids were received on 74 tracts (425,433 acres) off Oregon. The average bid off was \$65.27 per acre, and the highest bid was \$367 per acre.

Eight exploratory wells were drilled in federal waters off Oregon between April, 1965 and August, 1967. Although some wells yielded hydrocarbons, none were judged to contain resources of commercial value. Consequently, all of the offshore leases were relinquished to the federal government by November 30, 1969.

2.3.2 Geologic Indications

Oregon's offshore geology is complex and only generally understood. It, like many of the features in the terrestrial landscape, is a function of the slowly-moving plates on the Earth's surface. The structure of continental shelf geology results from the subduction, or geologic sinking, of the oceanic plate under the plates which make up North America. The volcanism, folding, faulting, erosion and deposition of layers of sediments on the ocean floor which result from plate movements all contribute to the conditions necessary to produce and trap petroleum resources. (For a more detailed discussion of the nature of these forces, see the chapter on Geology in *The Oregon Ocean Book*.)

Geologic evidence indicates that several sedimentary basins may exist along the Oregon and Washington coastlines (see Figure 2-5). These basins are ill-defined at present; however, they do appear to be at least 15,000 feet thick. They are judged by both the U.S. Geological Survey and the Minerals Management Service to have the proper conditions for the formation and geologic concentration of oil. The Minerals Management Service maintains that "the outlook for future production is favorable".

The development of commercial natural gas fields near Mist in northwestern Oregon suggests Oregon's offshore rock formations may also contain more natural gas than oil.

2.3.3 Oil and Gas Estimates

Oregon's offshore geology has not been fully explored, so no one knows how much oil or gas might lie beneath the ocean floor. In 1981, the U.S. Geological Survey (USGS) prepared a statistical estimate of 300 million barrels of oil and 1.5 trillion cubic feet of gas in the Oregon-Washington OCS in less than 200 feet of water. USGS believes there is a 50 percent chance that at least 100 million barrels of oil and 600 billion cubic feet of gas would be recoverable. By comparison, a 1984 Minerals Management Service statistical estimate reports that a total of 180 million barrels of oil and 3.26 trillion cubic feet of gas lie within in the entire planning area, of which a smaller amount is thought to be recoverable.

The 1987-1992 Five-Year OCS Oil and Gas Leasing Program also contains statistical estimates of petroleum reserves in the Oregon/Washington planning area. Such estimates vary according to whether the oil and gas can be economically recovered. Economic viability of recovery depends, in turn, on the price of oil in the world market. MMS estimates that, at \$15.75/barrel, 50 million barrels could be recovered economically off Oregon and Washington, and that at \$32.50, more than double that price, 60 million barrels could be recovered from the same area.

MMS estimates that Lease Sale #132 could result in the production of 58 million barrels of oil and 1,043 billion cubic feet of natural gas over a 35-year period. This level of production is expected to require 10 exploration wells and 29 production wells. The production wells would all be accessible from a single offshore platform.

Much more geologic information is needed to make better estimates of petroleum resources in offshore Oregon and Washington. At the very least, state-held data needs to be combined with federal data to improve the basis for federal statistical estimates.

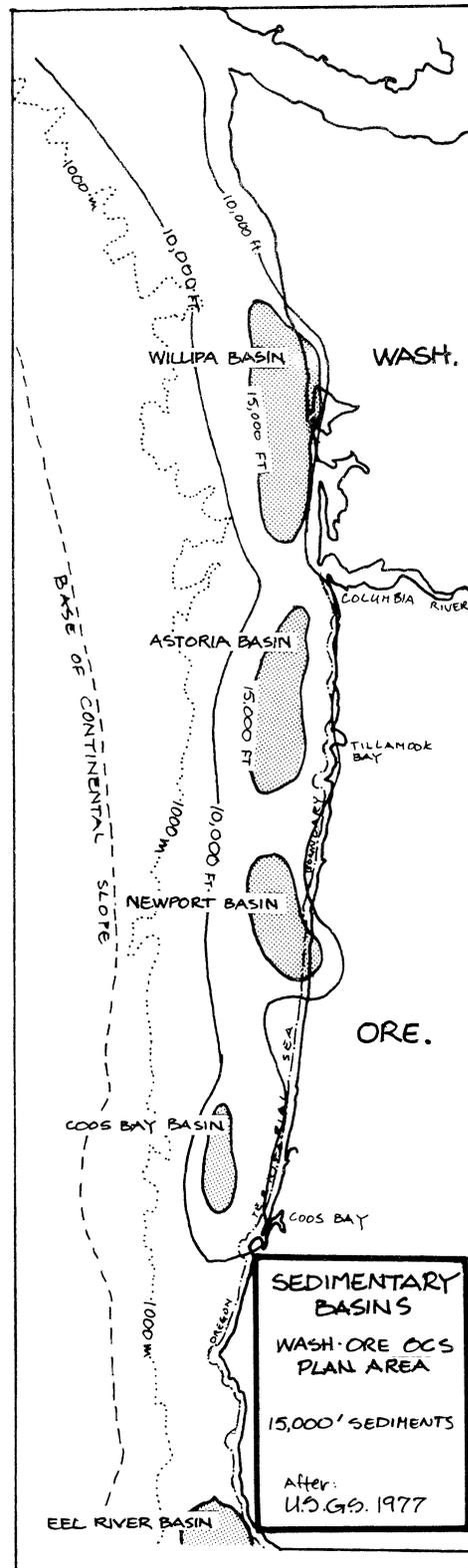


Figure 2-5: Northeastern Pacific Sedimentary Basins

2.4. OIL AND GAS DEVELOPMENT STEPS

Four major steps lead to the development of oil and gas reserves in offshore Oregon, whether in state or federal waters. The first involves the development of information on which to base bids, and occurs before leasing. The other three occur after a lease sale, and are focused on blocks leased by a company. Each step increases the detail of information available to a company. All steps after a lease sale are subject to detailed review and approval by the state under the provisions of the Coastal Zone Management Act. Oregon will need to have good information, detailed standards, and expertise at these later stages in order to effectively manage exploration activities. Briefly, the four development steps are:

2.4.1 Prelease Exploration

Seismic survey vessels use acoustic signals to obtain profiles of geologic structure down to several miles below the sea-floor. These surveys require a permit from MMS in federal waters and from Oregon's Division of State Lands in the territorial sea. Oregon has a Memorandum of Agreement with MMS to coordinate these surveys with current fishing activity to avoid conflicts at sea. The state can review the information by agreement with MMS and the company. Analysis of the survey results will lead to a decision on which tracts might yield commercial quantities of oil or gas.

MARINE SEISMIC SURVEY

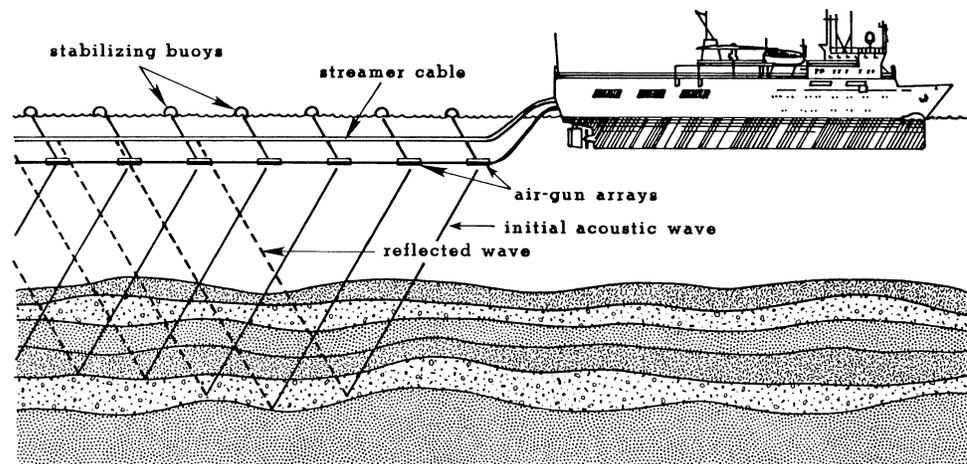


Figure 2-6: Seismic Research Vessel

2.4.2 Postlease Exploration

Exploration drill rigs are brought in to drill exploratory wells to determine whether oil is present, and to confirm the seismic survey data. These rigs range from special drill ships to huge floating platforms. Although drilling an exploratory well takes only

a few months, the exploration stage itself may last several years, as several different blocks may need to be drilled.

A company is required to submit a detailed exploration plan to MMS for review and approval. These plans are reviewed for consistency with the state's coastal management program. An Environmental Assessment is prepared by MMS.

2.4.3 Development

If exploration confirms the presence of commercial oil or gas deposits, a permanent production platform is constructed on the site and a number of wells are drilled to determine the extent of the field. This is when major planning decisions about facilities and operations are made.

Development and production plans must be submitted to and reviewed by MMS. An EIS is required for the first such plan in a frontier area. A wide variety of federal agency approvals are needed. Development activities are also reviewed by states for consistency with the provisions of the state's coastal management program.

2.4.4 Production

As an oil or gas field is developed, the developer makes preparations for production of crude oil for transportation and eventual refinement. Necessary transportation facilities (pipelines and/or tanker terminals) and on-shore storage or processing facilities require state and local approvals, and production plans require MMS approval, which is subject to state consistency certification.

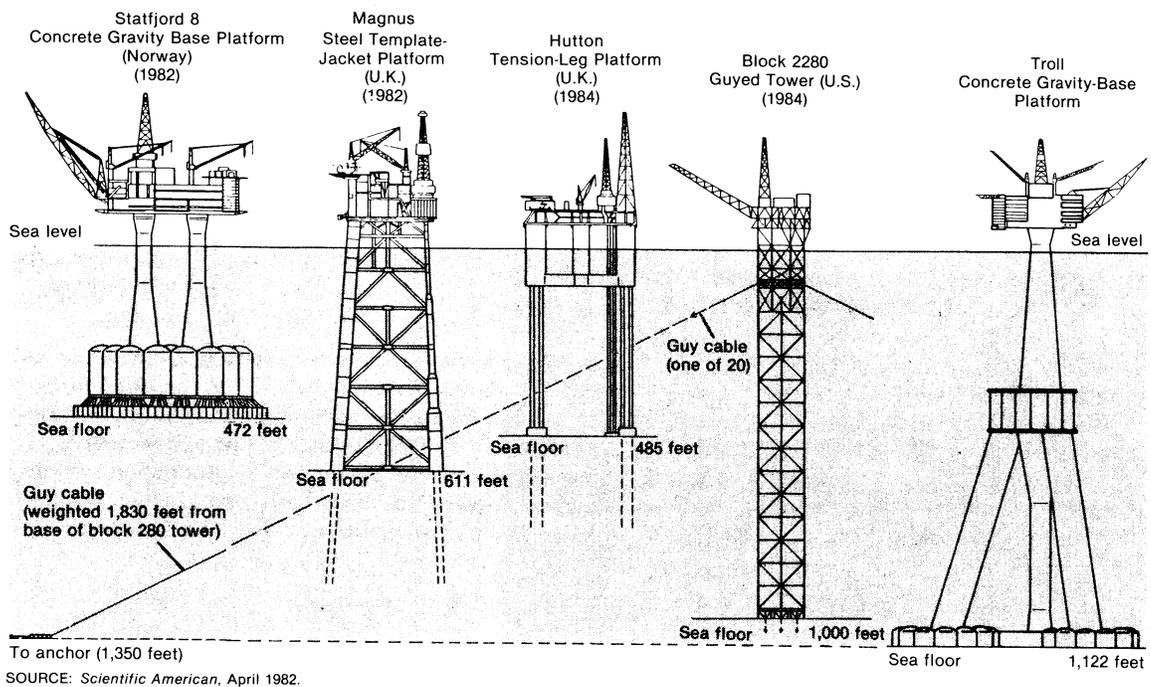


Figure 2-7: Frontier Area Production Platforms

2.5. EFFECTS OF OFFSHORE OIL AND GAS DEVELOPMENT

Oregon's immediate concern with offshore oil and gas development centers on the way in which such development will affect both its offshore environment and its coastal communities. These various effects are summarized in this section, along with the information needed for their management.

2.5.1 Environmental Effects

Offshore oil and gas development activities have the potential for a wide range of effects on organisms, populations, communities, and habitats in the marine and coastal environments. These activities would occur within a complex, dynamic, fluid environment where predicting, measuring, and containing effects is often difficult, if not impossible.

The principal offshore management challenge will be to minimize the risk of long-term or irreversible adverse environmental impacts. This "risk management" approach complements Goal 19 policies which both assign highest priority to the use of renewable marine resources and requires that scientific inventory information be used to assess the potential for an activity to have adverse environmental impacts.

The Task Force is continuing to develop strategies for using a risk management approach to ocean resources.

Research is Needed

Although the general categories of potential environmental impacts from offshore oil and gas activities are known, research is needed to apply such general understanding to the ecosystems and environments in the Pacific Northwest. The 1987 ODFW Draft *Research Plan* cautions that, despite the existence of a large body of oceanographic and fisheries data in the region, "there is insufficient information to evaluate the risks of offshore development to many important habitats, populations, and communities."

Thus the data most needed in offshore Oregon would establish baseline conditions to support monitoring programs and the measurement of effects from OCS development. The absence of adequate information is not unique to offshore Oregon. The Environmental Protection Agency (EPA), in response to the Draft EIS for Lease Sale # 91 in northern California, pointed out the lack of baseline environmental information crucial for both preparing an adequate environmental impact statement and making decisions on permits for development activities. The criticism also applies to the information base in the Oregon-Washington Planning Area.

2.5.2 Oil Spills

Although spectacular oil spills are rare, no other aspect of offshore oil and gas development is of such concern as oil spills. Oil spills, or "accidental discharges" of oil into the ocean, occur either as a dramatic event or an accumulation of small discharges. Platform "blowouts" and other spills contribute a very small amount to the total volume of spilled oil. Tankers, on the other hand, are a major source of spilled oil.

The environmental effects of an oil spill can be significant or trivial. The highly dynamic, unpredictable ocean environment increases the difficulty of predicting spill trajectories and containing or cleaning up a spill. The volume of spilled oil is not necessarily the critical factor. A small oil spill event in the wrong place at the wrong time has the potential to be worse than a large spill. In 1985, a leaking barge near

San Francisco lost 616 barrels of oil which killed 10,577 birds. On the other hand, a 1984 tanker event spilled 35,000 barrels, which killed an estimated 5,000 birds.

Fate of Spilled Oil

Both the physical properties of oil and the dynamics of the ocean environment determine the fate of spilled oil in the marine environment. Physical properties of oil which affect its behavior are its specific gravity, distillation characteristics (volatility with temperature), viscosity (resistance to flow), and pour point (the temperature at which it behaves as a solid). Ocean dynamics include water current and wind speed and direction; wave action; water and air temperatures; and sunlight.

Effects of Spilled Oil on Marine Life

The range of effects of spilled oil on marine life---from plankton to whales---is varied and complex. Adverse impacts result from simple ingestion and bioaccumulation. Concentration of compounds in the food web can have debilitating, toxic, mutagenic, or carcinogenic effects. Any damage to chromosomes, eggs, larvae or young can cause long-term population reductions, particularly if they are combined with other environmental stresses in a particular year. For birds and mammals, additional effects result from diving through oil patches and losing the insulation of fur or feathers.

During certain times of the year, entire populations of certain bird species concentrate on relatively few nesting sites along the Oregon Coast. Potential oil spill damage to populations during these times is very high.

Economic Effects of Spills

Spill containment and cleanup can be very expensive. Large pieces of sophisticated equipment and highly trained crews are necessary and expensive, as are crews with shovels, brooms and bags. Disposal of residue is an expense. Oil spills can cause loss of fishing opportunities or recreational activity, and thereby cause economic losses in a community. Boats and equipment may be fouled, with resultant cleanup or replacement costs. The state should develop a program of damage assessment and compensation which holds the spiller fully responsible.

Oil Spill Risk Assessment

Minerals Management Service bases its calculations of the risk of oil spills on the estimated volume of recoverable oil and the number of platforms and related facilities which would be built. MMS typically calculates risk to spills of greater than 1000 barrels and spreads that risk over an entire planning area. Thus, for Oregon and Washington, the Five-Year Program projects a low volume of recoverable oil, and then estimates a very low risk of oil spill damage to Oregon's coast.

The model used by MMS spreads oil spill risk over a large area, and tends to ignore the risk to local populations of critical species during certain times of the year. This risk assessment method needs substantial revision for the Washington-Oregon planning area.

Oil Spill Trajectory Models

Accurate computer modeling of potential oil spill trajectories is extremely difficult. The fate of spilled oil is affected by too many variables that are not well measured or understood. MMS, NOAA and EPA have all attempted to develop models, and each has had limited success and application.

Trajectory models require knowledge of ocean currents. At present, there is almost no information on ocean currents in less than 50 meters of water for the planning area. Lack of this nearshore current data makes trajectory modeling very difficult. In addition, there are very limited direct current measurements south of Newport; there are none south of Cape Blanco.

Spill Response and Cleanup

Except on infrequent days of calm ocean conditions, oil spills off Oregon will be virtually impossible to contain. EPA tests indicate that two-foot seas limit at-sea cleanup to less than 40% of the spilled oil, and that six-foot seas are the practical limit for mechanical equipment.

Oregon will therefore need to work with industry, local government, and federal agencies to prepare for spill response and cleanup through a coordinated plan for responding to spills and managing cleanup activities. To date, DEQ has prepared response plans for Coos Bay, Yaquina Bay, and the Columbia River estuary. A response plan for the 300-mile long Oregon coast must be prepared.

Needed Information: Identification of high risk habitat areas, ocean current data in shallow waters and south of Coos Bay, nearshore ocean circulation with estuaries, better spill trajectory models, effects of chronic low-level discharges, and baseline water quality measurements.

2.5.3 Other Environmental Effects

The ODFW Draft *Research Plan* identifies five major categories of environmental effects.

Seismic surveys: Seismic survey vessels use an "acoustic pulse" which travels down through the water, penetrates the rock layers below, and is reflected from the surface of each layer back to sensors towed on long cables behind the vessel. Seismic surveys help locate geologic structures that would be most likely to contain petroleum.

Potential effects of seismic activities include damage to fish eggs and larvae and scattering of schooled fish, both of which could decrease fish catch rates and amounts. Seismic survey operations can disrupt commercial fishing operations, causing costly delays in retrieving and re-setting fishing gear. Cables towed through fixed-gear fishery areas can damage or destroy costly fishing equipment.

Needed Information: The effects of seismic surveys on larval and juvenile rockfish and dungeness crab.

Contaminants: Contaminants result from offshore oil and gas development in several forms. Oil spills, discussed above, are potentially the most catastrophic form of contamination resulting from offshore development. Other prevalent forms are discussed individually below.

- **Drilling Muds and Cuttings:** Drilling muds are used to lubricate the drill bit, flush cut rock chips to the surface, and maintain pressure in the borehole to keep the upward surge of water, gas and oil under control. Although the muds are mostly comprised of clay (bentonite), they also contain barium, caustic soda, and occasionally diesel oil used for lubrication. Spent muds are typically discharged from the drilling platform into the ocean. The Final Environmental Impact Statement (FEIS) for the Five-Year Program estimates that some 175,000 barrels of drilling muds and

cuttings would result from exploration in the Washington-Oregon planning area. It then estimates that production would require one platform with 29 wells, which would produce an estimated 43.5 million barrels of muds and cuttings over the life of the field. A National Pollutant Discharge Elimination System (NPDES) permit is required from EPA to discharge drilling muds. A lease sale stipulation typically required by MMS in California requires that exploration plans include a fluid dispersion model for activities proposed within 1000 meters of sensitive resources.

- **Formation Waters:** Water trapped with sediments in the rock strata is pumped to the surface with the oil. This "formation water" must be separated from the oil and either re-injected back underground or, as is usually the case in southern California, discharged into the ocean.

Formation waters can be distinctly different from ocean waters. They are characterized by high levels of chlorides, trace metals, lighter fractions of hydrocarbons, insoluble heavy hydrocarbons, and gases. The effects of formation waters have not been studied to the same extent as those of drilling muds and cuttings

- **Air Discharges:** Well field operations rely on equipment and procedures that produce air pollutants with both individual and cumulative effects.

Diesel engines used in platform installation, well drilling, support vessels, and pipeline installation are a primary source of carbon monoxide and oxides of nitrogen and sulfur. Other sources of air contaminants include volatile organic compounds released as vapors during preprocessing and pipeline, storage, and tanker operations. Although the amounts can be significant, they can be controlled by use of certain equipment and operational techniques.

Needed Information: Identification of habitat areas sensitive to drilling muds and cuttings; the effects of formation waters on marine water quality; and baseline air quality measurements.

Disturbance from noise or activity: Although offshore oil and gas development activities can disturb marine life, many such disturbances can be minimized or avoided.

- **Vessel and Aircraft Traffic:** Seabird colonies may be disrupted by noise and movement of helicopters, airplanes, and boats, particularly during nesting and rearing times. Adverse effects can be minimized by locating drilling operations well away from sensitive areas, by designating flight path and navigation lanes to avoid colonies, and by seasonal restrictions on operations.
- **Noise:** Offshore platforms generate noise that is audible for about 2 miles in light wind conditions and less than a mile in storm conditions. Noise from vessels and aircraft may create greater adverse impacts to marine birds and mammals than platform noise.

Needed Information: Cumulative effects of disturbance on marine bird and mammal populations, and specific disturbance effects on individual species.

Habitat alteration or removal: Drilling muds and cuttings (see above) can smother benthic communities near drilling operations. On soft bottoms, subsurface pipeline installation results in short-term sediment mounds and trenches in swaths about 60 meters wide. These mounds can smother, and trenches remove, benthic organisms. Installation across hard bottoms requires blasting, with a resultant removal of habitat.

An oil and gas production platform sits on top of a tower called a jacket. The jacket, attached to the seabed, rises to above the sea surface. Over time, the jacket provides habitat for marine organisms until whole communities of fish and supporting food communities develop. In the Gulf of Mexico these communities are the basis of a major recreational fishery.

Conflicts with fishing operations:

- **Space Use Conflicts:** Exploration vessels, particularly drill ships and semi-submersible drill ships, use long anchoring cables to maintain position over a well. It is estimated that a platform in 100 meters of water would close nearly one square kilometer to other ocean uses. Platforms located in deeper water would require a wider anchor pattern.
- **Pipelines and Subsea Equipment:** Subsea pipelines can interfere with fishing gear in several ways. Techniques are available to minimize pipeline and equipment conflicts with fishing gear. Lease sale stipulations can be employed to ensure that these techniques are used.

2.5.4 Onshore Effects

Offshore oil and gas exploration and development operations can generate a number of onshore impacts, depending on the phase of the operation, the location of operations and magnitude of any discovered resource. The Onshore Impacts Subcommittee of the Task Force notes in its Onshore Impacts White Paper that "It has been demonstrated in California that offshore petroleum exploration and development can have wide-reaching economic and environmental onshore impacts. These impacts will be long lasting, if not permanent and should be closely analyzed on a multidisciplinary level."

Any at-sea conflicts between petroleum activities and commercial fishing, for instance, can result in second level onshore effects by impacting the income of fishermen and, by extension, the many elements of the commercial fishing industry which rely on the health of the fish catch.

Prelease:

During the seismic survey phase, there are almost no onshore effects. A seismic vessel may refuel at a coastal port but otherwise can perform extended at-sea operations without coming in to port. Some seismic surveys use shore-based radio transmitters as position references which may require a local permits for antenna erection.

Postlease:

Support facilities: Exploration and development phases use a drillship or offshore platform and ferry crews and supplies from shore by helicopter or boat. Hence dock space and airfields would be needed onshore along with maintenance and support staff and supplies. Storage is needed for drilling muds and other equipment which is

transported to the at-sea operation as needed. If economically recoverable reserves are discovered and a company or consortium begins development and production, there can be other onshore effects.

Transportation facilities: There are several different scenarios for transportation of oil and gas. Some may involve pipelines crossing the ocean shore from the seabed to upland storage or pipelines. Unless great care is taken in siting and burying these pipelines, shore crossings and onshore routes have the potential for significant visual effects along the Oregon coast where numerous state parks and Highway 101 hug the shoreline.

Marine terminals may be constructed at major estuaries to load products onto tankers for shipment to distant refineries. Ship channels may need to be dredged to accommodate tankers and dredged materials disposed of. The risks of minor, but frequent, spills into coastal estuaries and ship accidents at port entrances increases the chances of oil contamination in the host estuary. Transportation facilities for petroleum products can be a major siting issue for local governments and state agencies.

Processing: It is unlikely that petroleum reserves of a magnitude great enough to economically justify new processing facilities will be found off Oregon. Rather, it is more likely that any petroleum produced here will be transported to San Francisco, southern California or to the Gulf of Mexico for refining.

Labor force: Offshore oil and gas exploration and development requires a trained work force. The petroleum industry is highly mobile and is oriented toward flying in special labor needs to an operation on a routine basis. Only a small percentage of the work is performed by local crews. However, local employment will be stimulated by support facilities and services.

One of the unintended effects of resource discoveries could be the attraction of an overabundance of job seekers to the area. This influx of extra work force, often accompanied by families, can create strains on local social and family services if these workers cannot find other employment. This influx can also drive up the price of lodging at the expense of other users, such as travelers.

The onshore effects of offshore oil and gas development require additional study during preparation of the Ocean Resources Management Plan.

2.6. STATE MANAGEMENT OF OFFSHORE OIL AND GAS DEVELOPMENT

2.6.1 Existing State Program

At present, the Division of State Lands has clear statutory authority to enter into leases for oil and gas development within the state-owned nearshore. However, the statutes were enacted in the 1960s, before the development of Oregon's land use planning program and the requirements of Goal 19, Ocean Resources.

The Division of State Lands has had no requests for nearshore oil and gas leasing for nearly 20 years. Consequently, its program has been dormant. The Division has identified a need to update and clarify the state's proprietary and regulatory programs before entering into any new state leases for oil and gas development. The Task Force will work with the Division to develop appropriate legislative recommendations for the 1991 legislative session.

Other state agencies involved in managing oil and gas development, and their specific roles, are:

- The Department of Geology and Mineral Industries (DOGAMI) regulates actual drilling practices and techniques.
- The Department of Environmental Quality (DEQ) regulates air and water discharges.
- The Department of Fish and Wildlife (ODFW) advises on marine habitat and fisheries but has no direct regulatory authority.
- The Department of Land Conservation and Development (DLCD) administers Statewide Planning Goal 19, Ocean Resources.
- The Energy Facility Siting Council (EFSC) regulates natural gas pipelines over six inches in diameter.
- The Department of Transportation, Parks and Recreation Division has authority over ocean shore improvements, and would therefore regulate pipeline crossings.

2.6.2 State G & G Survey Permits: The First Step

In mid-1986 the State Land Board adopted administrative rules for geological and geophysical (seismic) surveys, known as G & G Surveys, in state waters. These rules allow DSL to issue proprietary permits for these surveys after review and comment by state agencies and the public. Permit applications will be reviewed against the provisions of Goal 19, Ocean Resources.

Several management techniques are built into these rules to protect renewable marine resources and avoid conflicts with other ocean users. Five subregions are delineated along the coast; a separate application for each is required. A buffer of at least two miles is required during the summer around sea lion breeding areas on the south coast, unless the Department of Fish and Wildlife recommends otherwise.

The administrative rules governing G & G Surveys are complete and well suited to the present direction of Oregon's ocean resources management program.

2.6.3 Local Government Management

The comprehensive plan and related development ordinances of coastal local governments provides the basic management regime for onshore development resulting from offshore oil and gas development. State regulatory permits or leases will be needed for specific activities within estuaries, such as dredging or filling, but the overall framework for a host of onshore land use decisions is the local planning program.

As such, local governments, in conjunction with port districts, may need to review and improve local ordinances to address specific needs of offshore related development. If offshore development occurs either in state waters or on the federal OCS, affected coastal communities will need improved technical capability to adequately provide for the management of onshore development within the framework of the local comprehensive plan

2.6.4 Needed Improvements

At present there is no overall strategy for managing oil and gas exploration and development in the Oregon Territorial Sea. If Lease Sale # 132 is held, industry may request that areas within Oregon waters be leased during the same period. The state's process of determining whether to invite lease bids is analagous to the pre-lease planning undertaken by the Department of the Interior. Oregon will need to develop a process of pre-lease planning which responds to the substantial concerns raised by initiation of the federal planning process. Oregon will need to be as diligent in its lease sale determinations for state waters as it expects Interior to be, even at the Five-Year OCS leasing program stage.

Oregon's management regime for exploration and development needs improvement to reach parity with that of the federal Minerals Management Service. A clear, coordinated, interagency review and approval process needs to be charted. A substantial set of technical regulations and stipulations, paralleling or exceeding those developed by Interior and related federal agencies, are needed. These new program areas will require major additions to the technical expertise available to DSL, ODFW, DEQ, DOGAMI, Parks, and DLCD.

**Preliminary Analysis of Agency Roles for Oil and Gas Exploration
and Development in Oregon's Territorial Sea**

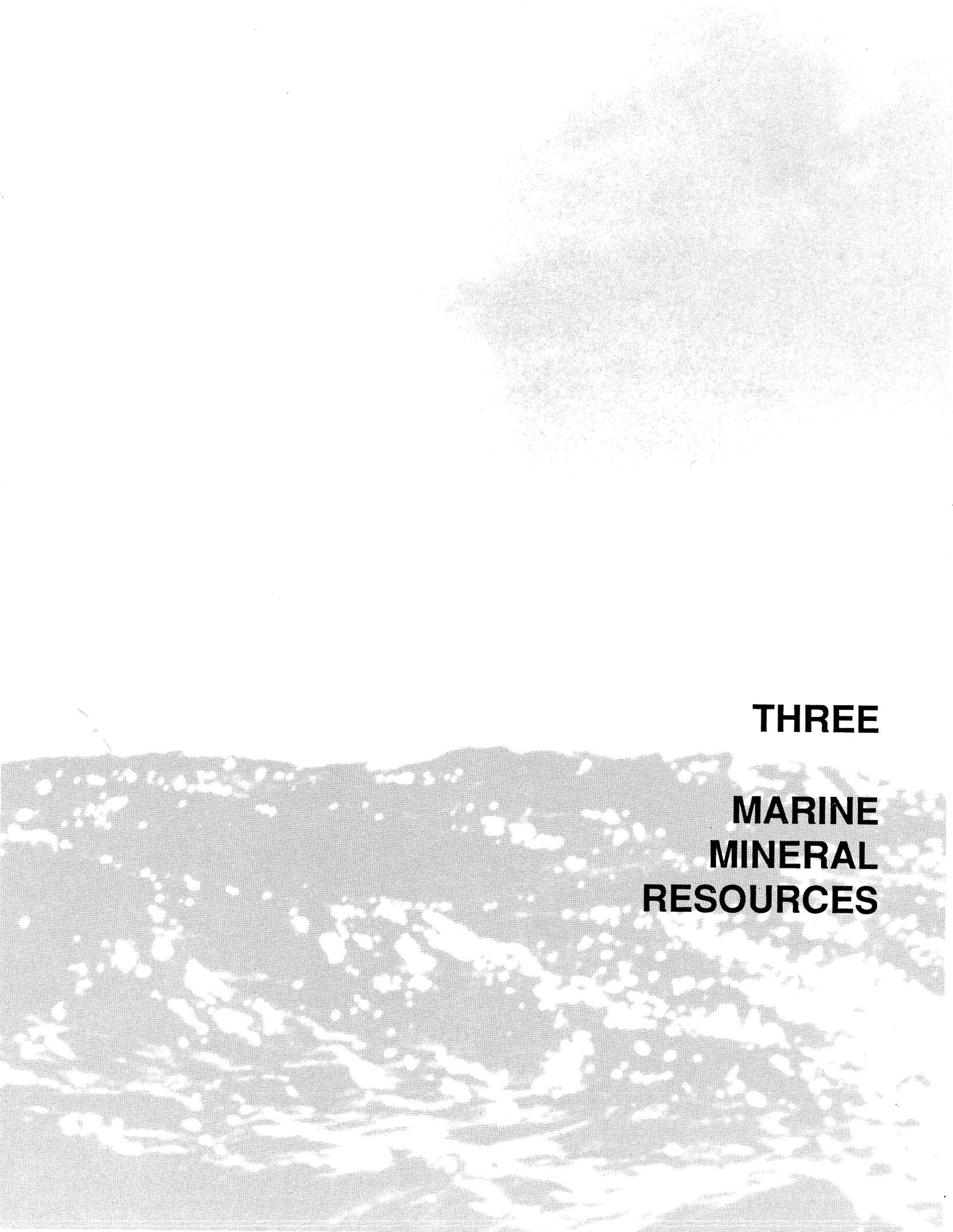
	Agency	Function	Authority	Notes
Geophysical Exploration	DSL	Proprietary (proprietary)	ORS§ 274.735	Authority to grant geological, geophysical, seismic survey permits for oil, gas, sulphur exploration
	DOGAMI ODFW	Advisory Advisory	ORS§ 274.735(1)(b) & (c) ORS§ 274.740(1)	Requirement for DSL consultation with DOGAMI and ODFW in establishing permit conditions
	DOGAMI DLCD	Regulatory Advisory	ORS§ 520.055 ORS197	
Leasing	DSL	Leasing	ORS§ 274.710(2) OAR141-82-005ff.	Authority to lease tidal submerged lands for oil, gas, sulphur
	DOGAMI ODFW DOT DEQ	Advisory	ORS§ 274.755(2)	Requirement that DSL give written notice of proposed lease sale, thus allowing for agency comments
	DOGAMI ODFW Various other	Advisory	ORS§ 274.780(1) & (2)	Requirement to consult DOGAMI, ODFW and "other interested agencies, boards and commissions" in determining lease provisions
Exploratory Drilling	DOGAMI	Regulatory	ORS§ 520.025	Drilling permit
	DEQ	Regulatory	33 USC 1341 ORS§ 468.730 OAR340-48-005ff.	Clean Water Act, Section 401 water quality certification
	DEQ	Regulatory	ORS§ 468.730 ORS§ 468.740 OAR 340-45-005ff.	Clean Water Act, Section 402 NPDES permit(s) for drill mud and formation water discharges
	DEQ ACOE	Regulatory Regulatory	ORS§ 468.310 33 USC 403 33 CFR 322	Possible Air Contaminant Discharge permit Rivers and Harbors Act, Section 10 permit for placement of exploratory drilling rig
Development & Production	DOGAMI	Regulatory	ORS§ 520.025	Drilling permit
	DEQ	Regulatory	33 USC 1341 ORS§ 468.730 OAR340-48-005ff.	Clean Water Act, Section 401 water quality certification
	DEQ	Regulatory	ORS§ 468.730 ORS§ 468.740 OAR340-48-005ff.	Clean Water Act, Section 402 NPDES permit(s) for drill mud and formation water discharges
	DEQ ACOE	Regulatory Regulatory	ORS§ 468.310 33 USC 403 33 CFR 322	Possible Air Contaminant Discharge permit Rivers and Harbors Act, Section 10 permit for placement of production platform.

Pipelines

DSL and DOT(P&RD)	Proprietary (easement) Regulatory	ORS§ 274.710(3)(a) ORS§ 390.715 OAR736-20-040 ORS§ 274.755(2)	Pipeline easement across ocean shore Ocean shore pipeline permit (a type of ocean shore improvement permit) Requirement that DSL give written notice of proposed pipeline easement, thus allowing for agency comments
DOGAMI ODFW DOT DEQ	Advisory Regulatory Regulatory	 ORS§ 469.300ff. 33 USC 1341 ORS§ 468.730 OAR340-48-005ff.	 Energy Facility Site Certificate for pipeline Clean Water Act Section 401 state water quality effects certification for ACOE permits
ACOE	Regulatory	33 USC 403 33 CFR 322	Rivers and Harbors Act, Section 10 for any necessary dredging needed for laying pipeline.
ACOE	Regulatory	33 USC 1344 33 CFR 323	Clean Water Act, Section 404 dredged material disposal permit
ACOE	Regulatory	33 USC 1413 33 CFR 324	Marine Protection, Research and Sanctuaries Act, Section 103 dredged material transportation permit
EPA	Permit Review	33 USC 1413 40 CFR 225.2	EPA review of Section 103 permit granted by ACOE
EPA	Permit Review		EPA review of Section 404 permit granted by ACOE

Onshore Facilities

Local	Regulatory		Necessary local permits, variances, etc. Would also include certification of consistency with local comprehensive plan.
DSL Various	Regulatory Advisory	ORS§ 541.605-695 OAR 141-85-035	Removal / Fill law Removal / Fill. Requirement that DSL "consult with appropriate governmental agencies...to develop a factual basis for a permit decision."
DOT(P&RD)	Regulatory	ORS§ 390.650	Ocean shore improvement permit (other than pipelines)
DEQ	Regulatory	33 USC 1341 ORS§ 468.730 OAR340-48-005ff.	Clean Water Act Section 401 state water quality effects certification for ACOE permits
DEQ	Regulatory	ORS§ 468.730 ORS§ 468.740 OAR 340-45-005ff.	Clean Water Act Section 402 NPDES (National Pollutant Discharge Elimination System) waste discharge permit
EFSC	Regulatory	ORS§ 469.300ff.	Energy Facility Site Certificate for onshore pipelines
ACOE	Regulatory	33 USC 403 33 CFR 322	Rivers and Harbors Act, Section 10 for any necessary dredging needed for laying pipeline.
ACOE	Regulatory	33 USC 1344 33 CFR 323	Clean Water Act, Section 404 dredged material disposal permit for material from pipeline trench
ACOE	Regulatory	33 USC 1413 33 CFR 324	Marine Protection, Research and Sanctuaries Act, Section 103 dredged material transportation permit
EPA	Permit Review	33 USC 1413 40 CFR 225.2	EPA review of Section 103 permit granted by ACOE
EPA	Permit Review		EPA review of Section 404 permit granted by ACOE



THREE

**MARINE
MINERAL
RESOURCES**

3. MARINE MINERAL RESOURCES

3.1. MINERAL RESOURCES

3.1.1 Overview

The continental shelf off Oregon contains numerous surface deposits of heavy minerals. Such deposits, or placers, have been noted off the mouth of the Columbia River, along the beaches of the central and north coast, and off the south coast between the Rogue River and Cape Blanco. Most of these deposits can be related to present-day river systems.

The "black sand" placers off the southern Oregon coast have been a principal topic of Task Force study. Many details about these deposits are not yet known, but geologic evidence indicates that they contain major heavy mineral resources such as chromium and titanium. If such resources exist in commercial quantities, Oregon could benefit from their responsible exploration and careful development.

In 1985, the Oregon Department of Geology and Mineral Industries (DOGAMI) published its *Mineral Resources Map, Offshore Oregon (GMS-37)* which locates and describes the mineral resources in offshore Oregon. The state's potential offshore mineral resources include:

- "Black sands", or heavy mineral placers, on the continental shelf.
- Sand and gravel on the continental shelf.
- Polymetallic sulfides on the Gorda Ridge in the deep ocean basin.

3.1.2 Onshore Minerals: Clues to Offshore Resources

In 1852, miners began to sluice the dark beach sands along the southern Oregon coast. At Whiskey Run north of Bandon, at Gold Beach, and near Cape Blanco, they worked next to the sea to recover gold. Above the beach, miners cleared brush and dug pits and tunnels to recover the gold buried in ancient uplifted beaches. This hunt for gold continued well into the 1920's; in fact, upland gold mining continues today. But perhaps of greater importance now, these gold-bearing sands are also rich in chromite and other minerals whose value has increased considerably since Oregon's beach sand mining began.

During mineral shortages of World War II, the coastal terraces of southwest Oregon and the Columbia River mouth were explored for chromite (a compound of iron, chromium, and oxygen) and ilmenite (a compound of iron, titanium, and oxygen). 450,000 tons of raw sand eventually yielded about 52,000 tons of concentrated black sands, of which 37-39 percent was chromite.

Geologic investigations of black sand deposits on upland marine terraces include more than 100 drill samples taken by the Bureau of Mines during the 1970s between the Coquille River and Cape Arago. These marine terrace and shoreline deposits offer direct clues to the formation and composition of offshore placer deposits.

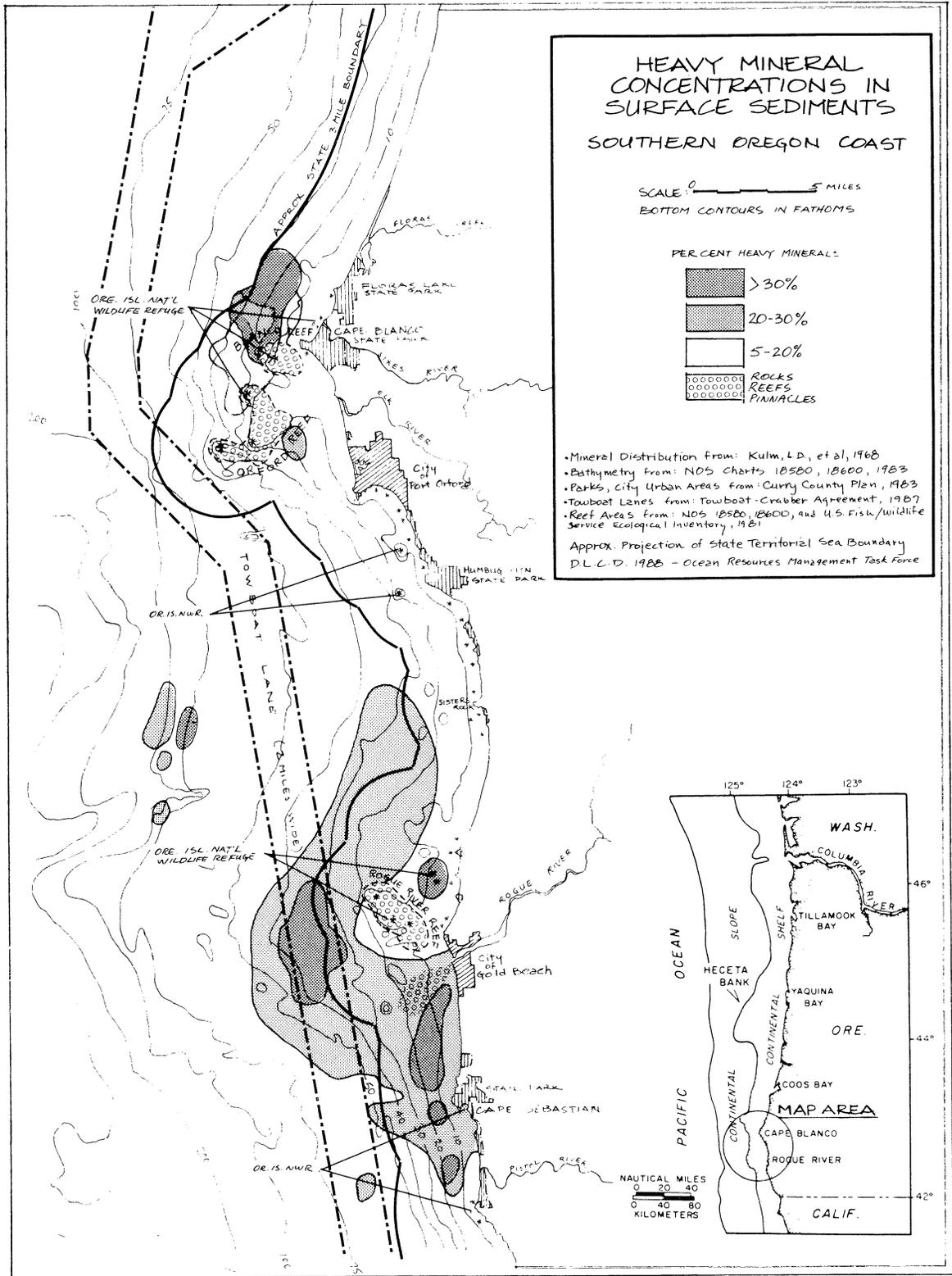


Figure 3-1: Southern Oregon Offshore Placers

3.1.3 Black Sand Placers

What Are They?

Placers are naturally concentrated sediment deposits that typically contain heavy minerals. In the ocean off Oregon, many of these deposits are so concentrated that they are black. Oregon's placers contain a variety of economic minerals. Chromite dominates the south coast deposits; titanium, in the form of ilmenite, is most abundant north of Coos Bay. Other minerals include gold, platinum, palladium, and zircon. Glauconite, phosphorite, and manganese deposits, typically formed by chemical reactions in sea water, have not been studied off Oregon.

How Would They Be Used?

Ilmenite and rutile, the two principal titanium minerals, are used primarily to make white pigment for paint and plastic and, to a minor extent, for titanium metal. The United States currently imports virtually all of its titanium, mainly from Australia, Sierra Leone, and the Republic of South Africa.

Zircon is used in foundry sands, refractories, chemicals, ceramics, and as a source for zirconium and hafnium metals used in nuclear and chemical processing equipment. The United States also imports a major part of its zircon supply, primarily from Australia and the Republic of South Africa.

Chromium is needed to produce steels and superalloys, to manufacture a wide variety of chemicals, and to produce refractory materials. Approximately 80 percent of U.S. demand for chromium is satisfied by imports, chiefly from the Republic of South Africa, Zimbabwe, Turkey and Yugoslavia.

The overall viability of offshore mining operations may very well depend upon the presence of certain other minerals, including gold, platinum-group metals, magnetite, and monzanite, which contains rare-earth metals. Except for magnetite, these minerals generally occur in extremely low concentrations; nonetheless, they could be an important factor in the commercial recovery of Oregon's marine minerals.

Where Are They?

Black sand concentrations have been identified along most of the Oregon coast, both onshore and offshore. Major black sand placers are located off the southern Oregon coast west of the Rogue River and Cape Blanco (see map). Ocean bottom samples show that they are concentrated in areas where the water is less than 100 meters deep, and that they lie within both state and federal waters.

How Did They Form?

Like onshore deposits, placers were created by repeated sorting and reworking of sediments flushed from the ancestral Siskiyou Mountains. Wave action and longshore ocean currents carried away lighter sand grains and left concentrations of the heavier grains at various locations along the coast. This process was apparently repeated several times at successive sea levels since the last ice age.

In addition to evidence from the analysis of bottom samples, magnetic surveys indicate that large deposits may be buried beneath sediments. Geologists suspect that offshore deposits may be even more enriched than those located onshore. But additional magnetic studies and analysis of deeper samples will reveal the three-dimensional nature, quality, and extent of the deposits.

3.2. GEOLOGIC INFORMATION AND NEEDED RESEARCH

With the limited information available, Oregon can only make the most preliminary decisions about development of marine mineral resources. Information is the crucial element of state management of marine minerals. It is necessary to determine where profitably-recovered minerals are located; where the effects of their recovery may be most felt; and the nature and extent of onshore processing facilities.

3.2.1 Research to Date

Offshore Oregon has been criss-crossed by researchers conducting studies to determine the nature and location of mineral-rich sands. They have collected samples and data that are still being analyzed. In 1986 the Oregon Department of Geology and Mineral Industries published an inventory of the existing geological and geophysical data on heavy mineral placer deposits throughout the region (Open File Report 86-10). It also published a long-range plan for further research and exploration of the offshore heavy mineral and metal deposits.

The search for mineral deposits in the ocean requires a wide array of sophisticated instruments and techniques. Many of them are used together to cross-check and add different dimensions to the information. A typical geophysical and geological research vessel, with various instrumentation, is shown on the next page.

Funds appropriated by the 1987 Legislature through the Division of State Lands have enabled Oregon State University researchers to analyze the bottom samples gathered over the years. Although this research is crucial to accurately characterize Oregon's offshore mineral resource, far more work is necessary before investments are made to begin recovery. To date there has been no reported commercial exploration of these offshore placers.

OSU geologists are analyzing surface sediment samples obtained throughout the offshore area. This research, funded by the State of Oregon, is providing detailed information on the mineral content of the placers, and will help determine whether and where additional field work is necessary. Preliminary results indicate that chromite concentrations in the south coast placers are extremely high, perhaps higher than existing commercial deposits elsewhere in the world.

The Department of Fish and Wildlife has arranged to photograph a known placer area as part of a research program being conducted for the Department of the Interior's OCS oil and gas environmental studies program. The photography will take place in late summer 1988. This project is an example of the kind of simple but crucial research that is needed for Oregon's offshore minerals.

3.2.2 Needed Research and Exploration

In a 1986 report (Open File Report 86-10), the Department of Geology and Mineral Industries (DOGAMI) proposed a long range plan for research and exploration of the heavy mineral deposits of the Oregon coast. DOGAMI recommends a three-part program:

- 1) Comprehensive summary and interpretation of existing data to identify the most promising target areas. (Whereas Open File Report 86-10 inventories existing information, it does not provide a comprehensive analysis and interpretation).
- 2) Field work over at least two seasons to collect more data.
- 3) Summarize and interpret 1) and 2).

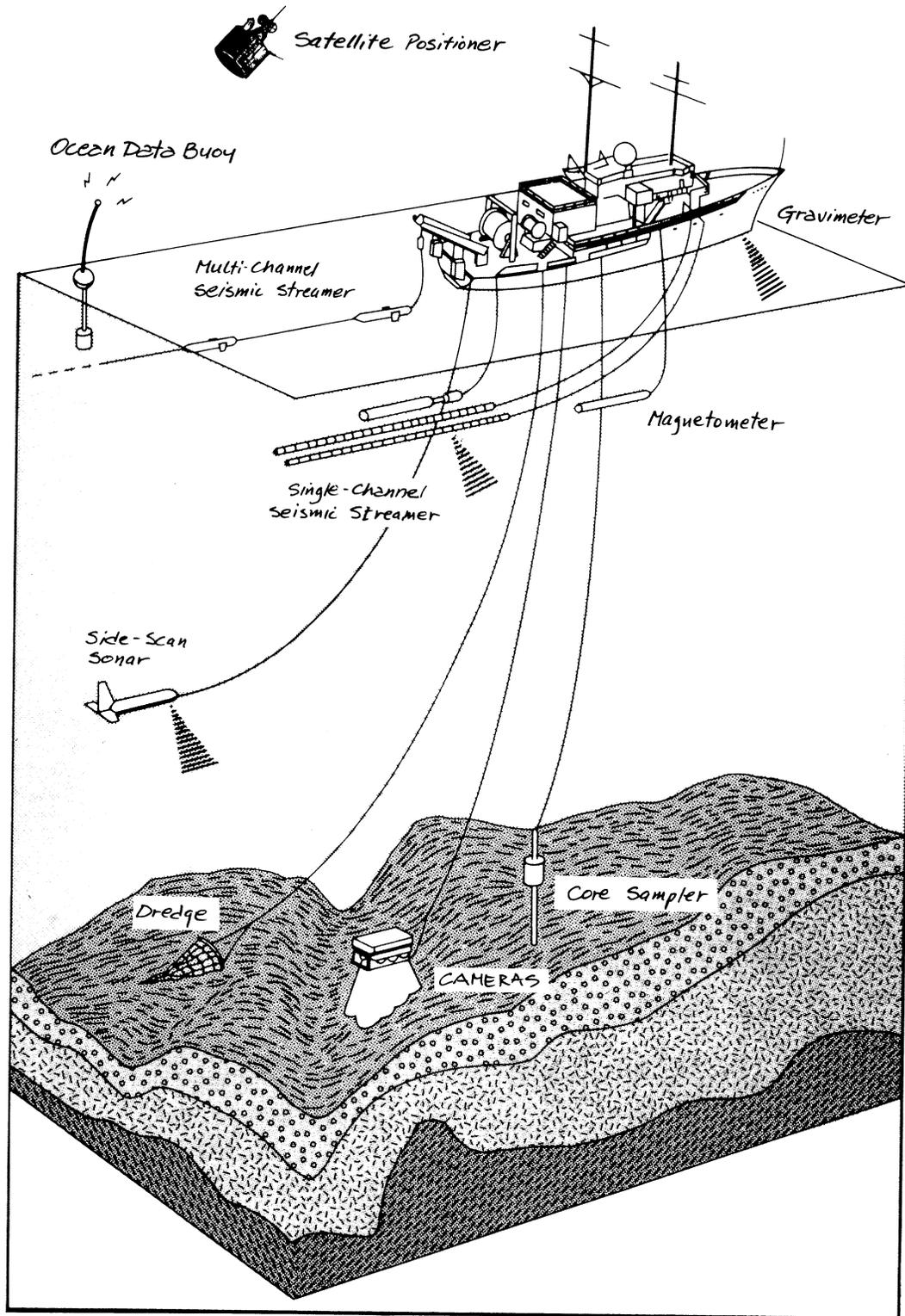


Figure 3-2: Exploration Tools for Minerals Research

Exploration of target areas, as recommended by DOGAMI, would combine both indirect geophysical measurements and direct geologic sampling during at least two seasons of field work.

Indirect geophysical measurements could include seismic surveys and magnetic surveys. These would provide reconnaissance-level information about sediment thickness, geologic structure, and the size and shape of placers.

Direct geologic sampling, or the acquisition of bottom sediment samples, is needed to provide "ground truth" about the interpretations of the geophysical surveys and to direct further geophysical work. Surface samples, such as box cores or grab samples, are just a start. Deeper core samples are required to establish the depth of the placers. These deeper samples would be taken with a "vibracore" to a depth of about thirty feet.

3.2.3 Funding Research and Exploration

Field work is expensive. There appear to be three basic approaches to funding the necessary research. Any one or a combination could be used.

1) The state could directly fund academic research institutions and state agencies to gain the needed information from state waters.

2) Oregon can work with federal agencies such as the Minerals Management Service, the U.S. Geological Survey, and NOAA, to obtain funding for mineral research.

3) Provide incentives to the private sector to encourage investment in research and exploration of the mineral area on behalf of the state. Senate Bill 606, 1987, provides a measure of incentive by authorizing the Division of State Lands to enter into exclusive exploration contracts with a potential developer.

3.2.4 Cooperative State-Federal Research Programs

Oregon, through DOGAMI, is currently negotiating an agreement with the Department of the Interior's Minerals Management Service's Office of Strategic and International Minerals to establish a state-federal task force to investigate the economic and environmental aspects of Oregon's offshore minerals. This task force would, in some respects, be a successor to the Gorda Ridge Task Force (see section 3.6.4). It is anticipated that the proposed task force will be formed in fall 1988.

At first, the proposed task force would coordinate a project to investigate potential economic and strategic resources. The initial project would also identify data gaps and recommend a program of research and data collection to facilitate the preparation of an economic feasibility report. Later task force projects would include coordination of research and exploration, and analysis of all aspects of resource development so that Interior and Oregon can make informed and independent policy decisions.

3.3. INDUSTRY OPERATIONS

Oregon's offshore placers may or may not contain economically recoverable resources. Several complex factors determine commercial viability. Cost of production at the mine-site depends upon geologic and environmental factors and operational variables. Prices on the world market depend upon such factors as existing worldwide production capacity, commodity demands, political stability in producing and consuming nations, and production costs in producing countries.

3.3.1 Operational Costs

Two recent studies investigated the commercial feasibility of recovering Oregon's offshore mineral sands. Both were based upon the available, but limited, geologic and mineral information, and a depressed world market for metals. Each developed a hypothetical mining and production scenario to determine operational costs.

One, a July 1987 study by the Congressional Office of Technology Assessment (OTA) of marine minerals in the U.S. Exclusive Economic Zone, states that "it is possible that the Oregon chromite sands might be used for the manufacture of sodium dichromate, the major industrial chromium chemical", and concludes that, depending on mineral content, "there may be considerable potential for economically interesting deposits offshore." The scenario concluded that "the costs per ton of concentrate...allow only small margins to make and distribute a finished product, currently worth about \$40 per ton. Hence, it is clear that chromite alone would not be worth recovering."

The second, a 1987 "Economic Reconnaissance" by the U.S. Bureau of Mines (BOM) concluded that a placer mining operation could be viable if annual mining capacity is 2.5 million tons, chromite grades are over 6 per cent and are combined with gold, titanium and zircon, if the deposit is more than 50 million tons and is within 40 miles of Coos Bay (a deep draft port), and if it lies at a depth of no more than about 50 meters. The BOM study recommends that the "occurrence of adequate resource grades and deposit size at feasible depths should be established" prior to leasing.

3.3.2 Recovery and Separation

Black sand deposits could very likely be mined by modification of existing dredging technology. Both scenarios noted above proposed the use of a trailing suction hopper dredge because they are self-propelled, self-contained, self-sufficient, and do not require anchors, mooring devices or tug assistance. These dredges can operate in moderately rough seas with wave heights up to 12 feet. Other dredge designs are either untested or thought to be technologically inadequate.

Dredging in rough seas at depths from 50 to 100 meters plus the thickness of the deposit itself will require modifications to existing U.S. hopper dredge technology. A Japanese design is apparently capable of working in water depths of up to 100 meters.

High volumes of sediments can be brought to the surface at a relatively low cost, but transport to shore is costly. Therefore, on-board processing of dredged material appears to be necessary to separate valuable mineral sands from other sands. Both scenarios noted above projected the use of mechanical processing; neither assumed any chemical or electrical processes. Screening and spiraling of the dredged material would reduce the bulk by half and retain nearly all of the economically desirable heavy minerals. Tailings would be discharged back into the ocean. A pipe

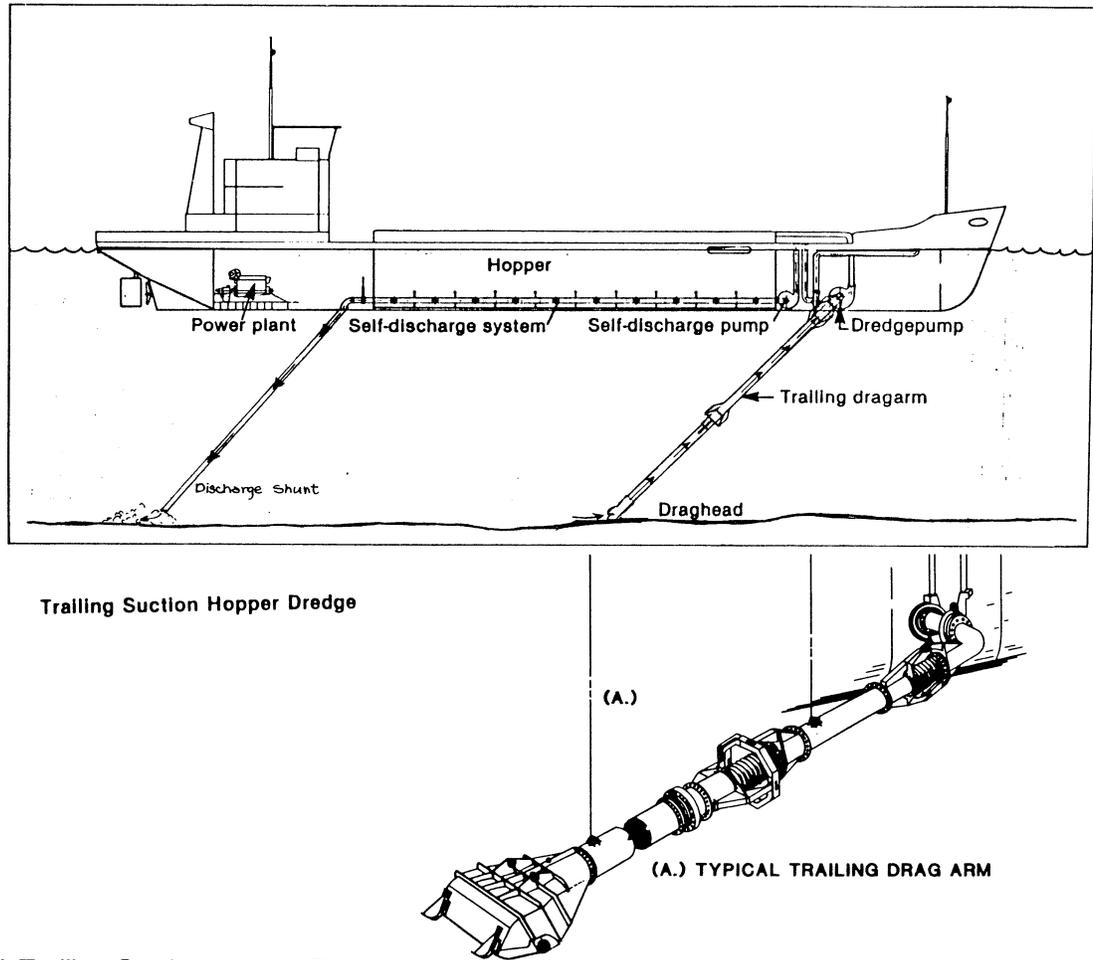


Figure 3-3: A Trailing Suction Hopper Dredge

could shunt tailings to the bottom rather than merely discharging them into the water column.

Distance to port is a key factor in dredging operations. A hopper dredge would work on site until full, then steam to port to unload. The OTA scenario projected one round trip per day over a distance of about 75 miles, and the BOM scenario projected a maximum distance of 40 miles. The BOM analysis found that there was no economic benefit to using a smaller dredge on site and offloading onto a barge for separate shipment to port.

3.3.3 Onshore Operations

Onshore operations could take a variety of forms. Some products from off-shore dredging might simply be stockpiled for transshipment to distant processing plants, while others might require further processing or beneficiation to separate the various mineral fractions prior to shipment. Finally, further processing of one or more metals into a more finished product may be possible if the facilities can be properly sited.

3.4. EFFECTS FROM OFFSHORE PLACER MINING

3.4.1 Environmental Effects

Offshore mining operations can have adverse effects on the marine environment. While there may be some similarities to offshore oil and gas development, offshore mining would not result in oil spills, one of the most catastrophic potential effects of oil development. Ocean mining effects will primarily be sedimentation from mining and shipboard operations.

Benthic (Bottom) Effects

Removal and destruction of benthic habitat and communities will probably be the most direct effect of placer mining on the marine environment. The extent and consequences of these activities will depend, in part, upon the kind of benthic habitat removed or affected, the size of the area disrupted, and the depth of holes on the bottom. Deep pits do not readily backfill with sediments, so broad and shallow excavations may be most desirable.

Lighter sediments removed by on-board processing will be discharged into the ocean, either at the surface or by pipe onto the bottom. These lighter sediment grains will be entrained in the current, and will gradually settle to the bottom away from the mine site.

Studies by the U.S. Army Corps of Engineers show that, with the help of vigorous bottom currents, active benthic communities can repopulate dredged material sediment mounds within a year or two. One conclusion of the Corps' study is that biological conditions in shallow water areas that are highly influenced by wave action appear to be influenced to a greater degree by natural environmental variations than by dredging.

Needed Information: *Baseline studies of benthic populations and communities; monitoring programs to ensure that rates of disturbance are linked to rates of recovery. Substrate composition and bottom current data.*

Water Column Effects

Offshore placer mining will result in two types of turbidity plumes. They will be generated on the bottom by dredging operations, and in the water column by the discharge of sediments from separation of the materials at sea. Plumes will obscure sunlight and thus affect primary productivity. Sediments in plumes can clog fish gills, and, like dredged material discharge, plumes can smother benthic habitat.

Plume effects will depend on their volume, their persistence, and where in the water column they occur. Plumes will be affected by the strength and depth of currents and the rate at which sediments settle, which in turn depend on the size and density of sediment particles. Plume effects can be minimized by pumping sediments back to the bottom instead of discharging them into the water column.

Placer sediments appear to be chemically inert, and are not readily incorporated into the marine food web. Unrecovered target minerals are heavy and, rather than drifting with less dense particles, will tend to sink rapidly.

Oregon's nearshore ocean environment is highly dynamic and, in the wintertime, naturally quite turbid. The fate and effects of an additional source of turbidity is unknown. The effects of turbidity plumes from shallow ocean mining are still being researched.

Needed Information: *Baseline water quality measurements within the project area to determine seasonal turbidity levels; current measurements at all levels to determine dispersion direction and speed; sediment analysis to estimate settling time and persistence; monitoring during operations to measure plume persistence, direction, and effects.*

Wave Patterns and Shoreline Alteration

Some surprising consequences of large-scale offshore mining can be the alteration of wave patterns, the disruption of sediment transport, and increased shoreline erosion. Excavations and sediment mounds disrupt the bottom profile, and thereby affect wave patterns, with the result that increased wave energy could be directed at some points along the shoreline.

The Office of Technology Assessment (1987) reviewed European studies of offshore gravel and sand removal that show that deep holes (230 feet) do not readily refill with sediment, and that a shallow lowering of the seafloor over a broad area is preferred. While these studies did not include such mitigating measures as pumping tailings to the bottom to partially refill excavated areas, the OTA report concluded that one way to minimize effects of excavations on the seafloor is to "smooth" seafloor gouges by filling them with similar sediments.

Needed Information: *The description of a proposed mining operation; sources of local beach sands adjacent to mining area; modeling of currents and wave patterns to determine effects on shoreline configuration; a monitoring program to evaluate refilling of dredged areas and shoreline changes.*

Air Quality Effects

Air discharges from offshore hopper dredges are expected to be negligible.

Operational Effects

Noise and activity from shipboard engines and processing equipment could be of importance if operations were close to sensitive seabird and marine mammal habitat. Placers in the same region as Orford Reef (Cape Blanco) and Rogue River Reef, (see Fig. 3-1) the only two identified breeding and pupping sites for the Northern Sea Lion in Oregon, may require buffer zones to prevent disturbance of the sea lions, especially during breeding and rearing seasons.

Space use conflicts could occur between dredging operations and fishing. This may be especially true for bottom trawlers and crabbers. Likewise, salmon sport fishing activity may be affected. These conflicts can be reduced or avoided by a number of measures discussed elsewhere.

Needed Information: *Baseline information on fishing and crabbing activity near the placers; monitoring of effects on seabirds and marine mammals, especially during sensitive seasons.*

3.4.2 Onshore Impacts

Offshore mining for black sands may have a range of effects onshore, depending on the location of the operations, the size of the dredge vessels, and the nature of the onshore processing facilities. The following is a rough estimate of these effects:

Operational Support

Major marine mining support operations would most likely be located at larger ports such as Coos Bay, where dock space, ship repair, fueling, and stockpile areas are

available. Ship repair and maintenance are estimated to be at least one month per year on a routine basis. In addition, a large area would be needed to offload and stockpile placer concentrate, to await either further processing or transshipment.

Helicopter and service boats may also operate out of smaller ports located closer to the at-sea operations, such as Gold Beach or Tillamook.

Processing

Economic factors and the composition of the placers will be primary factors in determining the level of onshore processing of Oregon's deposits. A processing facility would require virtually the same siting considerations as a pulp mill or lumber mill: space for raw material storing and sorting, rail access, electricity, water, and dock access. Depending on the process used, effects could include surface runoff from stockpiles; settling and discharge of processing waters; air emissions, perhaps with heavy metals; and noise.

Local governments and state agencies will manage the onshore effects of off-shore development within the framework of their comprehensive plans and state agency rules.

3.5. OTHER MINERAL RESOURCES IN OFFSHORE OREGON

3.5.1 Polymetallic Sulfides

"Polymetallic sulfide" describes a group of related sulfide minerals that occur in geologically active areas of the ocean floor. Metals found in such minerals include zinc, lead, copper, and iron. (The processes that result in the creation of polymetallic sulfides are discussed in *The Oregon Ocean Book*.) Off Oregon, polymetallic sulfides have recently been found on the seafloor spreading centers of the Gorda Ridge, about 120 miles west of Coos Bay, and Juan de Fuca Ridge, over 200 miles west of Newport. Both areas are located several hundred meters below sea level.

In late 1983, the U.S. Department of the Interior proposed a lease sale for polymetallic sulfide minerals on the Gorda Ridge. The Draft EIS revealed an absence of information on mineral resources, and major gaps in knowledge about both ocean conditions and marine resources in the region. In early 1984, a technical task force, formed by Oregon Governor Victor Atiyeh and Secretary of the Interior William Clark, was given the responsibility to determine the technical implications of a lease sale on the Gorda Ridge.

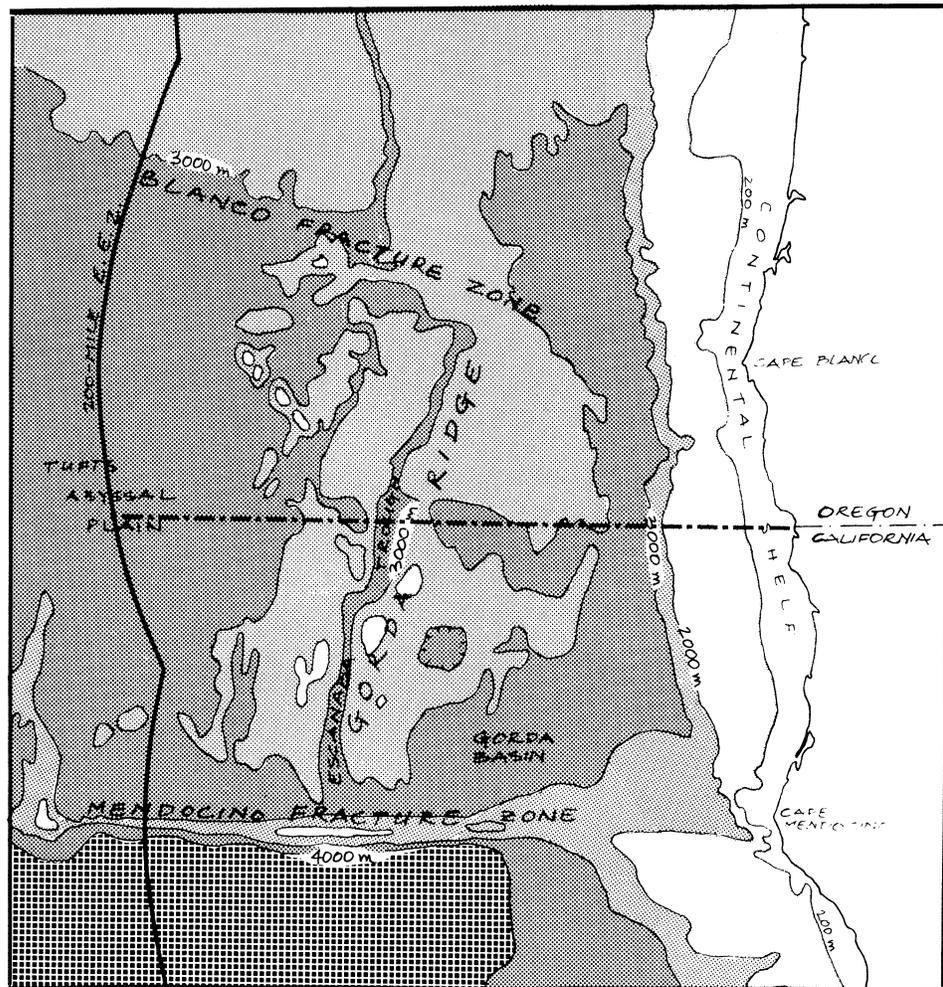


Figure 3-4: The Gorda Ridge in Offshore Oregon

The Gorda Ridge Task Force coordinated annual summer research dives from 1984 through 1988. The Department of the Interior, the major contributor of research funding, has determined that leasing is premature, and has officially terminated the lease sale process. Interior will not fund research on the Gorda Ridge after 1988.

While there was great interest in polymetallic sulfide resources when the Gorda Ridge lease sale was proposed, it has since become clear that actual development, should it occur, is several decades in the future.

3.5.2 Gravel

A few small, localized gravel deposits are located off the Oregon coast. They are relicts of an era 15,000 years ago when sea level was some 200 meters lower than today. At that time, wave action concentrated gravel in small "pocket beaches" located between ridges. Although other gravel deposits are thought to occur at the mouths of ancient stream channels that cut across the continental shelf, sparse sampling has not led to their detection.

Estimates of the total volume of gravel in offshore Oregon range from 100 to 500 million cubic meters. By contrast, there are huge gravel deposits off the coast of Washington just north of the Columbia River.

The Task Force has not yet investigated the commercial prospects for gravel deposits.

3.6. MANAGEMENT OF MARINE MINERALS AND MATERIALS

3.6.1 Oregon's Existing Management System

Oregon's system for managing the development of marine minerals (placers) and materials (sand and gravel) is relatively undeveloped. A framework to allow exploration for hard mineral deposits, but not marine sand and gravel, was established in 1987 by SB 606. The Division of State Lands has prepared draft administrative rules to implement SB 606.

Oregon's system for managing marine minerals development beyond the exploration phase is unclear. Under SB 606, DSL has authority, under certain conditions, to convert exploration contracts into development leases, should the state decide to proceed with such efforts. This authority is derived from DSL's proprietary role as manager of state-owned lands. Current laws are unclear as to whether additional regulatory permits would be required.

At present, no state agency has the expressed authority to regulate offshore mining. It is possible that the Removal-Fill Law, which applies to actions involving the removal or placement of more than 50 cubic yards of material from the "waters of the state", and which is administered by DSL, would apply to offshore mining. However, the law has never been applied in that manner. Its legislative history expresses the intent to regulate sand and gravel extraction, but makes no reference to other types of removal activity. By contrast, the Department of Geology and Mineral Industries has clear authority to regulate onshore mining, but has no mandate to do the same for offshore operations.

The Task Force is now reviewing apparent deficiencies in current law in order to develop recommendations for an integrated minerals management regime. Fundamental to that process will be a decision on whether an additional regulatory permit process should be instituted. Another alternative would have DSL include conditions or stipulations on any development lease to address environmental or other regulatory concerns. These conditions could be developed in concert with other resource agencies.

3.6.2 Senate Bill 606

The 1987 Oregon Legislature enacted Senate Bill 606 as a companion to SB 630. Its purpose is to update the statutory provisions for exploration and possible development of mineral resources in Oregon's territorial sea.

SB 606, now codified in ORS Chapter 274, contains a provision that gives the Division of State Lands authority to enter into contracts with private parties for the purpose of exploration for mineral resources. Such contracts, obtained through competitive bids, apply to specific ocean areas. Most importantly, they carry a preference right allowing conversion to a development lease if and when the State Land Board decides to allow ocean mineral development.

The new law neither commits the state to marine mineral development nor allows such development to occur until authorized by the Territorial Sea Management Plan, which SB 630 requires the State Land Board to adopt by July 1, 1991. Instead, SB 606 encourages private exploration through the preference clause but does not promise a lease for mineral extraction. The law also requires that all information gained during exploration be made public, so as to aid in development of both the Territorial Sea Management Plan and administrative rules governing marine mineral mining.

The Division of State Lands has prepared draft administrative rules to implement SB 606. However, additional work is needed prior to the Land Board's adoption. Once adopted, DSL could offer exploration contracts to encourage commercial exploration for marine minerals.

3.6.3 Options for State Regulation of Marine Mineral Mining

The greatest weakness in the existing system for managing marine minerals development is the absence of both clear authority and agreement on the method of regulating actual mineral removal. There appear to be three basic ways in which an adequate system may be developed. First, the state may choose to use lease stipulations under existing State Land Board leasing authority. Second, it may choose to use its existing removal-fill permits authority. Third, it may choose to establish the authority and regulations specifically for Oregon's marine minerals and materials situation.

- **Lease Stipulations**

The State Land Board could enter into a lease for the extraction of marine minerals from state-owned submerged lands under ORS 273.551. A lease could include a variety of stipulations which would have the effect of permit conditions. This option would also allow the Board to set lease fees high enough to cover the administrative costs associated with review and processing of the lease.

Leases can be executed with only a minimum of consultation with other state agencies. The State Land Board is required under ORS 273.551 to consult only with DOGAMI. No other state agencies are specifically involved. State agency coordination rules adopted by DLCD (OAR 660-30-005) would probably require compliance with the provisions of the state's coastal management program.

Once a lease is issued, permits would be required to develop a deposit, and would be required to comply with the OCOMP. But exactly what permits would be required is uncertain. The U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and the Oregon Department of Environmental Quality may all be involved under existing law. If the discharge of tailings is ruled to be "discharge of dredged materials", concurrent state and federal certification under the Clean Water Act are required. But if the waste is found to be an industrial "waste material", it would require a National Pollutant Discharge Elimination System (NPDES) permit for point source discharge under Section 402 of the Clean Water Act. Finally, EPA could determine that the waste has been "transported", in which case three federal permits are required. EPA would issue an ocean dumping permit and a transportation permit under Section 102 of the Clean Water Act, and the Corps would issue one for "transport" under Section 103 of the Marine Protection, Research and Sanctuaries Act.

- **The Removal-Fill Law**

Under the authority of Chapter 541 of the Oregon Revised Statutes, the Division of State Lands can issue permits for removal of material from submerged and submersible lands. This law could conceivably be used as the basis for regulating the development of marine minerals, especially placer deposits, since the operations and impacts are virtually identical to those for dredging. However, this law was intended to regulate dredging of estuaries and rivers rather than the ocean floor. Furthermore, removal activities permitted under ORS 541 are specifically exempted from the requirements of ORS 517.750-955, which governs mined land reclamation.

Several amendments to existing law are needed to clarify the role of the removal-fill law in marine mining. ORS 274 (marine minerals exploration) could be modified to

include a simple declaration that marine mineral extraction is to be regulated under the existing removal-fill law. ORS 541 and ORS 517 could be amended to require reclamation of mined areas on the ocean bottom. ORS 541 could be amended to allow DSL to charge fees sufficient to recover costs associated with reviewing and processing permits for ocean mining activities. ORS 541 and OAR 141, Division 85, need amendments to reflect the possibility for ocean removal and fill activities. Finally, amendments to the removal-fill law would also need to address mine waste discharge and the permits which may be required.

- **A New Oregon Marine Minerals Management Act**

Problems with existing state law and uncertainties about regulation of marine mining could be solved by developing a marine minerals regime that included new statutes designed to address the specifics of Oregon's marine minerals management needs as identified by the Task Force. Such a regime might extend ORS 274, which governs marine minerals exploration contracts, by outlining the requirements of the recovery phase in statute, and developing administrative rule concepts for DSL.

The preparation of a marine minerals regulatory program which responds positively to the needs of all parties will require time. Over the past seven months many possible elements of a minerals management program have been suggested. The Division of State Lands, along with a subcommittee of the Task Force, will need to review and consider the following factors:

- Joint Review Panels to coordinate interagency review of mining proposals, and Land Board actions based upon coordinated agency review.
- Incremental decisions based on increasing information.
- Application fees sufficient to cover costs of permit review and processing.
- State financial return from sound development, not bonus bids.
- Environmental research coupled to minerals exploration.
- Public disclosure of mineral and environmental information.
- Creation of logical mining units with stable reference areas.
- State-federal coordination and co-management of entire area.
- Assure tenancy to discoverer consistent with management plan.
- Risk management through a variety of management techniques.
- Require monitoring programs with feedback to operational permits.
- Establish mitigation program for other users.
- Diligence requirements.
- Reclamation.

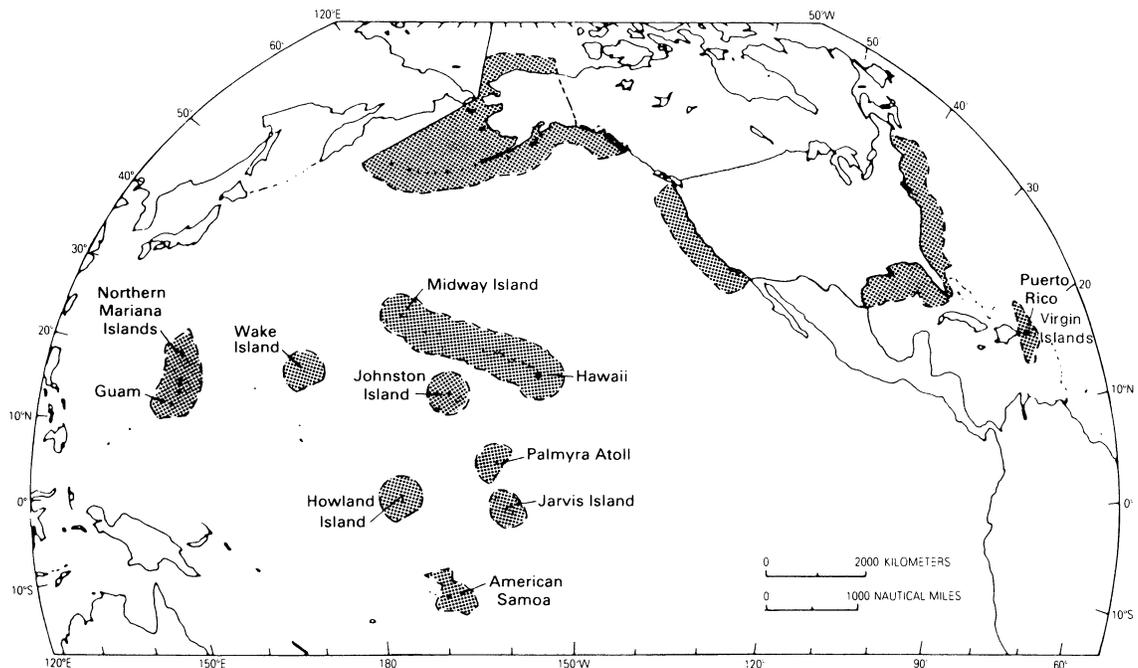
One of the keys to a marine mineral management program is information about potential mineral resources and their ocean setting. It is important that SB 606 be implemented to allow Oregon, through exclusive exploration contracts with private industry, to explore potential offshore mineral deposits so that better management decisions can be made.

3.6.4 Co-Management With Federal Agencies

Commercial-quality placers may extend across the line that divides state and federal ownership of the ocean floor. It is crucial to the environmental and economic success of any marine mining venture that Oregon's regulatory program for state waters be coordinated closely with federal agency regulatory programs for federal waters. In fact, because these deposits lie so close to shore, it is preferable to "co-manage" the entire area within the framework of Oregon's minerals management program. This will require a state-federal working group to integrate the two regulatory programs. Governor Goldschmidt has requested Secretary of the Interior Hodel to establish such a group. As noted below, there are major issues to be resolved at the federal level if such a program is to succeed. Nonetheless, Oregon must prepare its marine minerals recovery program to guide federal decisions.

3.6.5 Federal Regulation and Management of Marine Minerals

The 1983 United States Exclusive Economic Zone brought into focus the absence of a coherent U.S. marine minerals regime. At present, two federal statutes provide authority for marine mineral regulation to two different agencies. Congress is now considering legislation to establish a program for exploration and commercial recovery of marine minerals under the United States' jurisdiction. In addition, several federal laws affect the exploration, development and recovery of marine minerals within both state and federal waters.



Exclusive Economic Zone (EEZ) of the United States, Commonwealth of Puerto Rico, Commonwealth of the Northern Mariana Islands, and the United States overseas territories and possessions. (Outlines of map are approximate)

Figure 3-5: The U.S. Exclusive Economic Zone

United States Exclusive Economic Zone

Presidential Proclamation 5030 of March 10, 1983, established exclusive jurisdiction of the United States over ocean resources within a minimum of 200 miles of the coastline of the United States, the Commonwealth of Puerto Rico, Northern Marianas Islands and other U.S. territories and possessions. This area is now known as the Exclusive Economic Zone, or EEZ.

The EEZ has its roots in the United Nations' Law of the Sea Convention, a ten year process which sought international agreement on a wide range of ocean issues, including marine minerals management. The United States refused to sign the convention in 1982, after being persuaded that it failed to establish a deep seabed mining regime in a manner satisfactory to "the interests and principles of industrialized nations...."

Instead, the United States established the 200-mile EEZ to assert the interests of the U.S. in marine resources, principally minerals. This coincided with growing interest in cobalt-rich crusts near the Hawaiian Islands and possible polymetallic sulfide deposits on the Gorda Ridge and Juan de Fuca Ridge off Oregon and Washington. The exploration and development of marine minerals in the new EEZ suddenly became a high priority.

Outer Continental Shelf Lands Act (OCSLA)

The OCSLA directs the Secretary of the Interior to establish a program of oil and gas leasing on the outer continental shelf. The OCSLA authorizes standards, procedures, regulations, and an environmental studies program which are aimed specifically at the offshore oil and gas industry. Sealed bid lease sales are held and leases awarded to the highest cash bonus bid. Under the OCSLA, the continental shelf has always been interpreted as submerged lands adjacent to the continental U.S., including Alaska and Hawaii, within 200 meters, or about 600 feet, of water.

The OCSLA specifically authorizes the Secretary to lease for minerals other than oil, gas, or sulphur. Interior used that provision to extend its jurisdiction over seabed minerals of the entire EEZ and, through the Minerals Management Service, establish a program of "International and Strategic Minerals" which will include regulation of marine mineral recovery.

There are problems with the Outer Continental Shelf Lands Act as a minerals statute. First, it covers only the outer continental shelf of the fifty states, but not the substantial areas surrounding U.S. territories. Second, it requires competitive bonus bid lease sales, a method suited to the conditions of the petroleum industry but not to the more volatile and speculative minerals industry. Third, the OCSLA does not establish procedures or obligations to involve states and citizens in minerals research and recovery, although it does allow for state-federal consultation such as the successful Gorda Ridge Task Force (see 3.5.1). And finally, it does not establish an environmental studies program for marine mineral areas.

Despite these shortcomings in the OCSLA, MMS has moved ahead with preparation of regulations for marine minerals exploration and development. These rules have met with almost universal opposition among industry, the states, environmental groups, and other federal agencies. In early 1988, MMS reorganized its minerals program to focus more on short-term commodities rather than long-term exploration, and indicated a willingness to seek Congressional remedies to the problems of the OCSLA.

Deep Seabed Hard Minerals Resources Act (DSHMRA)

The DSHMRA was adopted in 1980 as an interim measure pending the United States' adoption of the marine mineral provisions of the Law of the Sea Convention. The DSHMRA was aimed exclusively at the exploration and recovery of manganese nodules on the deep ocean seabed beyond the resource jurisdiction of any nation. Unlike the OCSLA, which bases its authority on territorial control, the DSHMRA regulates the activities of U.S. citizens (companies) outside U.S. territory.

The DSHMRA establishes a licensing system for exploration and a permit system for recovery. The National Oceanic and Atmospheric Administration may grant an exploration license to an applicant for an area chosen by the applicant. An environmental impact statement is required. No rent or royalties are required, since the U.S. does not own the seabed or minerals, but a tax is levied on the value of the materials recovered. The law also requires that U.S. vessels be used.

Rules for exploration licenses have been adopted by NOAA. Rules for the recovery phase have been prepared but not adopted by NOAA. Due to an almost non-existent industry demand to recover manganese nodules, and pending legislation on ocean minerals in general, deep seabed issues are not a top priority for NOAA.

National Seabed Hard Minerals Act of 1986 (HR1260, "The Lowry Bill")

Congress presently is attempting to remedy the shortcomings of the existing marine mineral laws and to establish a regime which "recognizes the differences between oil and gas resource development and hard mineral resource development".

HR1260 encourages minerals exploration and investment through exclusive exploration licenses with preference rights, requires environmental research, recognizes the responsibilities of states for coastal management, establishes state-federal task forces, and delineates the responsibilities of both the Department of the Interior and NOAA for marine minerals exploration and development.

In early 1988, HR1260 was passed out of the House Merchant Marine and Fisheries Committee to the House Interior Committee. A companion bill is being prepared for the Senate's consideration. Further action on this bill is expected in late summer 1988.

Related Federal Laws

Numerous federal laws will apply to activities associated with marine mineral development in state and federal waters. Some of the more relevant are:

- National Environmental Policy Act (NEPA)

NEPA requires preparation of an environmental impact statement for major federal actions affecting the environment. Proposals for marine mineral development in federal waters would require an EIS. Permits from the Corps of Engineers for mineral mining in state waters would probably require an EIS.

- Clean Water Act

Administrative responsibilities of the Clean Water Act are divided among the Corps of Engineers, the Environmental Protection Agency, and the Oregon Department of Environmental Quality. Responsibility for Section 401 permits certifying discharges has been delegated to DEQ by EPA. Section 402 National Pollution Discharge Elimination System (NPDES) permits are required from DEQ for point source industrial waste discharge. And Section 404 permits are required from the Corps of Engineers for dredged material discharge.

- Marine Protection, Research and Sanctuaries Act

NOAA can establish marine sanctuary areas in both state and federal ocean waters and establish regulations for uses and activities on a case-by-case basis. No marine sanctuaries have been designated off Oregon, although the Heceta-Stonewall Banks is a candidate area.

EPA regulates ocean dumping of dredged materials under this Act.

- Marine Mammals Protection Act (MMPA)

NOAA, through the National Marine Fisheries Service, protects whales, seals, and sea lions under the MMPA. Interior, through the U.S. Fish and Wildlife Service, protects sea otters, walruses, and polar bears. Minerals operations near marine mammal habitat would be required to comply with the requirements of MMPA.

- Coastal Zone Management Act (CZMA)

Oregon's coastal management program was developed and approved pursuant to the federal CZMA. Federal activities directly affecting Oregon's coastal zone must be consistent with Oregon's coastal management program. The Oregon program consists of local government comprehensive plans approved by the Land Conservation and Development Commission, statewide planning goals, and state agency programs. The Oregon Ocean Resources Management Act of 1987 (SB630) has been determined by NOAA to be a "routine program implementation" of the Oregon Coastal Management Program.

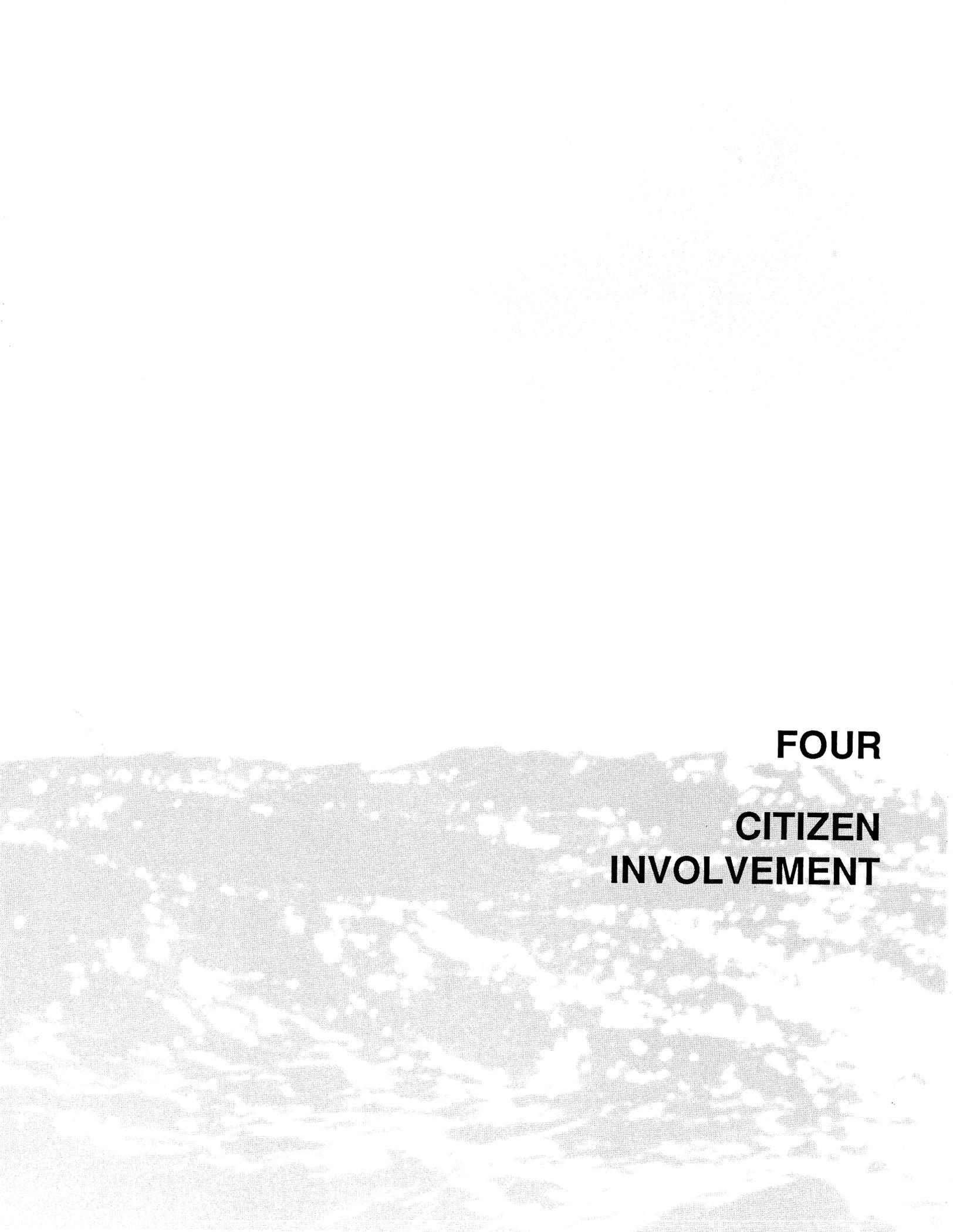
- Rivers and Harbors Appropriations Act of 1899

The U.S. Army Corps of Engineers regulates the removal and fill of materials in navigable waters through the Rivers and Harbors Act. It is not yet clear how this law would interact with new, separate marine mining legislation.

Agency Roles for Hard Minerals and Materials Mining

(This table assumes that none of the components of any discharge of material from the mining vessel is determined to constitute a discharge of "waste material")

	Agency	Function	Authority	Notes	
Exploration	DSL	Proprietary	ORS§ 274.611–640	Hard mineral exploration contracts – S.B. 606	
	DOGAMI ODFW & DLCD	Advisory	ORS§ 274.635(1)	Requirement that DSL consult regarding provisions of exploration contract	
Leasing	DSL	Proprietary	ORS§ 273.551(3)	General leasing authority for leasing "not otherwise expressly authorized"	
	DOGAMI	Advisory	ORS§ 273.551(1)	General requirement that DSL consult DOGAMI before executing mining or drilling leases	
Extraction	DSL Various	Permitting Advisory	ORS§ 541.605–695 OAR 141–85–035	Removal / Fill law Removal / Fill. Requirement that DSL "consult with appropriate governmental agencies...to develop a factual basis for a permit decision." if ORS 541 applies.	
	DEQ	Permitting	33 USC 1341 ORS§ 468.730 OAR 340–48–005ff.	Clean Water Act Section 401 certification for ACOE permits (certification action may be waived by DEQ)	
	DEQ	Permitting	ORS§ 468.730,740 OAR 340–45–005ff.	Possible Clean Water Act, Section 402 NPDES permit	
	ACOE	Permitting	33 USC 403 33 CFR 322	Rivers and Harbors Act, Section 10	
	ACOE	Permitting	33 USC 1344 33 CFR 323	Possible Clean Water Act, Section 404 dredged material discharge permit	
	ACOE	Permitting	33 USC 1413 33 CFR 324	Possible Marine Protection, Research and Sanctuaries Act, Section 103 permit for transportation of dredged material for disposal	
	EPA	Permit Review	33 USC 1413 40 CFR 225.2	EPA review of Section 103 permit granted by ACOE	
	EPA	Permit Review		EPA review of Section 404 permit granted by ACOE	
	Onshore Processing	Local	Permitting		Necessary local permits, variances, etc. Would also include certification of consistency with local comprehensive plan.
		DSL Various	Permitting Advisory	ORS§ 541.605–695 OAR 141–85–035	Removal / Fill law Removal / Fill. Requirement that DSL "consult with appropriate governmental agencies...to develop a factual basis for a permit decision."
		DEQ	Permitting	33 USC 1341 ORS§ 468.730 OAR 340–48–005ff.	Clean Water Act Section 401 state water quality effects certification for ACOE permits
DEQ		Permitting	ORS§ 468.730 ORS§ 468.740	Clean Water Act Section 402 NPDES waste discharge permit	
ACOE		Permitting	33 USC 403 33 CFR 322	Rivers and Harbors Act, Section 10 for any necessary dredging or filling.	
ACOE		Permitting	33 USC 1344 33 CFR 323	Clean Water Act, Section 404 dredged material disposal permit	
ACOE		Permitting	33 USC 1413 33 CFR 324	Marine Protection, Research and Sanctuaries Act, Section 103 dredged material transportation permit	
EPA		Permit Review	33 USC 1413 40 CFR 225.2	EPA review of Section 103 permit granted by ACOE	
EPA		Permit Review		EPA review of Section 404 permit granted by ACOE	



FOUR
CITIZEN
INVOLVEMENT

4. CITIZEN INVOLVEMENT PROGRAM

4.1. BACKGROUND

The 1987 Legislature passed SB 630 which directed several state agencies, ocean user groups, local governments and public representatives to work together to design a management plan for Oregon's ocean resources. The bill provided that a Plan be developed with several elements, including a public involvement program.

Provisions of the public involvement program will be included in the Interim Plan. Public involvement activities will be implemented under the direction of the task force staff as provided by the Department of Land Conservation and Development.

The schedule for developing the Ocean Resources Management Plan is as follows:

March 1988

Draft citizen involvement program for review by the Task Force

July 1988

Interim Ocean Resources Management Plan is developed by Task Force and submitted to the Joint Legislative Committee on Land Use (JLCLU), including a summary of public involvement goals, activities and responsibilities.

June 1990

The Final Plan is Submitted to the JLCLU, the Speaker of the House, and the President of the Senate.

August 1990

The Final Plan is submitted to LCDC for adoption by December 1, 1990.

July 1991

State Land Board adopts a Territorial Sea Management Plan, and submits it to LCDC to determine consistency with the Ocean Resources Management plan and the statewide planning goals.

4.2. GOALS

Provide information to interested parties and the public about the Oregon Ocean Resources Management Planning process, its enabling legislation and task force work plan.

Explain issues outlined in the Ocean Management Plan draft documents and working papers.

Provide opportunities for public involvement in all phases of the development of the Ocean Resources Management Plan.

4.3. METHODS OF COMMUNICATION AND COSTS

Mailing List:

Provided by DLCD staff

A mailing list comprised of interested citizens; coastal and ocean interest groups; interested organizations; ocean resource users; and interested federal,

state and local agencies. The mailing list will be used for newsletters, notices of meetings and other related informational material. The list will be updated and expanded as interested individuals or groups request to be included.

News Media: \$600

News releases will be issued for each major step in the planning process.

Brochure: \$3500 to \$7000

A two-color brochure will be developed to provide the public with general information about the Oregon Ocean Resources Management Plan, the planning process, why the plan is important, and opportunities for citizen involvement. The brochure will be distributed at informational meetings, workshops and other gatherings. It will be available at displays. It could also be mailed to individuals and organizations who request copies for their members.

Fact Sheets: \$600 to \$1000

A series of fact sheets will be developed on specific topics. The fact sheets can be used as handouts at meetings, displays, workshops, and hearings.

Newsletters: \$700/issue, maximum of 15 issues

An Oregon Ocean Newsletter will be developed to provide information to interested citizens, groups and agencies. The newsletter will be published as needed to provide current information.

Newsletters published by state agencies and interested organizations will be asked to publish information about the Oregon Ocean Resources Management Plan, the planning process and opportunities for public involvement.

Displays \$1,000 each

Displays will be established at the Marine Science Center, the South Slough Estuarine Sanctuary, and other sites as appropriate. The displays will provide the public with information about the Ocean Resources management planning process, the need for a management plan, and opportunities for public involvement. Brochures, fact sheets, and other informational materials will be available at the displays.

Public Libraries and Schools Mailing costs \$600

Public Libraries in coastal communities and in other cities will be asked to establish a file for information about the Ocean Resources Management Plan. Libraries will receive copies of the newsletter, brochures, fact sheets, and other informational materials as appropriate. A copy of the proposed draft plan will be distributed to all public libraries state wide.

Informational Meetings Staff travel \$1500

Informational meetings will be held with interested groups such as local governments, citizen groups, and others to provide information on the Ocean Resources Management Plan and planning process.

Public Workshop Displays \$500

Three public workshops will be held, including two in coastal locations. The workshops will be conducted by the Task Force to solicit ideas, opinions and facts to be considered in developing the proposed plan.

Public Hearings**Newspaper Notices \$250**

The Task Force shall conduct a public hearing on the draft proposed plan. The Commission shall conduct at least four public hearings, three of which will be in counties adjacent to the territorial sea with the fourth in another location in the state.

Survey sheet**\$200**

A survey sheet will be prepared to solicit information from the public. The survey will be available at all informational meetings, workshops, hearings and displays.

4.4. CITIZEN INVOLVEMENT ACTIVITIES

DLCD will take the lead in organizing and scheduling public involvement activities and will draw on the expertise of other agencies as needed. The task force and agencies represented on the task force will serve as consultants to DLCDC.

4.4.1 Activity Time Line

January 1988 - July 1988

Identify interest groups including state agencies, federal agencies, business and industry groups, environmental groups, sport and recreation groups, city and county officials, ports, and news media.

Develop and maintain mailing list including interest groups and individuals who request information.

Establish Oregon Ocean newsletter, and identify existing newsletters which can be used to provide information on the Ocean Resources Management Plan and related activities to their recipients.

Develop list of libraries to be used as information centers.

July 1988 - September 1988

Deliver Interim Plan and other informational materials to libraries.

Develop brochure on Ocean Resource Management Plan. Brochure will include recommendations in the interim report, the time line for developing the Final Plan, and opportunities for public involvement.

Produce one Oregon Ocean newsletter with information on bill requirements, task force activities, availability of the interim report, report highlights, opportunities for public involvement, final plan schedule, and availability of the brochure.

Send news release, summarizing information listed above and other appropriate information, to newsletter editors and media list.

September 1988 - December 1988

Develop plan for informational meetings with interest groups.

Distribute brochure.

Identify fact sheet topics, to include a summary of the citizen involvement program, interim report recommendations, the ocean management decision-making process, and issues to be addressed in the final plan.

January 1989 - March 1989

Update mailing list.

Write fact sheets.

Distribute news release on current task force and staff activities.

Produce one Oregon Ocean newsletter.

Design displays for Marine Science Center and the South Slough Estuarine Sanctuary, and explore other display opportunities such as parks, schools, and libraries.

Develop plan for three task force workshops required by statute. Determine locations, agenda, dates, participants, displays, presentations and presentation materials, informational materials, and opportunities for public comment.

April 1989 - June 1989

Schedule informational meetings with interested parties and interest groups as necessary and as requested.

Update fact sheets and mailing list as needed.

Build and set up displays.

Send news release on displays and current task force activities to media and newsletter editors.

July 1989 - September 1989

Update mailing list as needed.

Maintain the displays at South Slough and Marine Science Center, and information at libraries

Finalize agendas and prepare updated materials for workshops.

Publicize workshops.

October 1989 - December 1989

Hold workshops.

Maintain and update mailing list after workshops.

Maintain displays and library information.

January 1990 - March 1990

Summarize public comments and concerns from workshops.

Update fact sheets.

Maintain display areas.

April 1990 - June 1, 1990

Prepare executive summary of draft plan.

Send draft plan to libraries.

Distribute news release on draft plan, public hearing schedule, and availability of information to media list and newsletters.

Public hearings on draft plan conducted by the task force.

Plan submitted to the Legislature by June 1, 1990

June 1, 1990 - July 30, 1990

PUBLIC COMMENT PERIOD

Send draft plan and executive summary to libraries.

Send draft plan to the governing boards or commissions of agencies and groups represented on the task force, and to coastal cities, counties, and port districts.

Update displays.

Conduct follow-up information briefings as requested.

August 1990 - December 1990

Plan submitted to LCDC, which holds four hearings on the plan.

Issue public notice and news release on commission hearings.

Update mailing list after hearing.

LCDC adopts Plan by December 1, 1990.

Send information update on approved plan to newsletters.

Plan presented by commission to Joint Legislative Committee on Land Use, House Speaker, and Senate President.

July 1, 1991

Territorial Sea Management Plan adopted by State Land Board.

