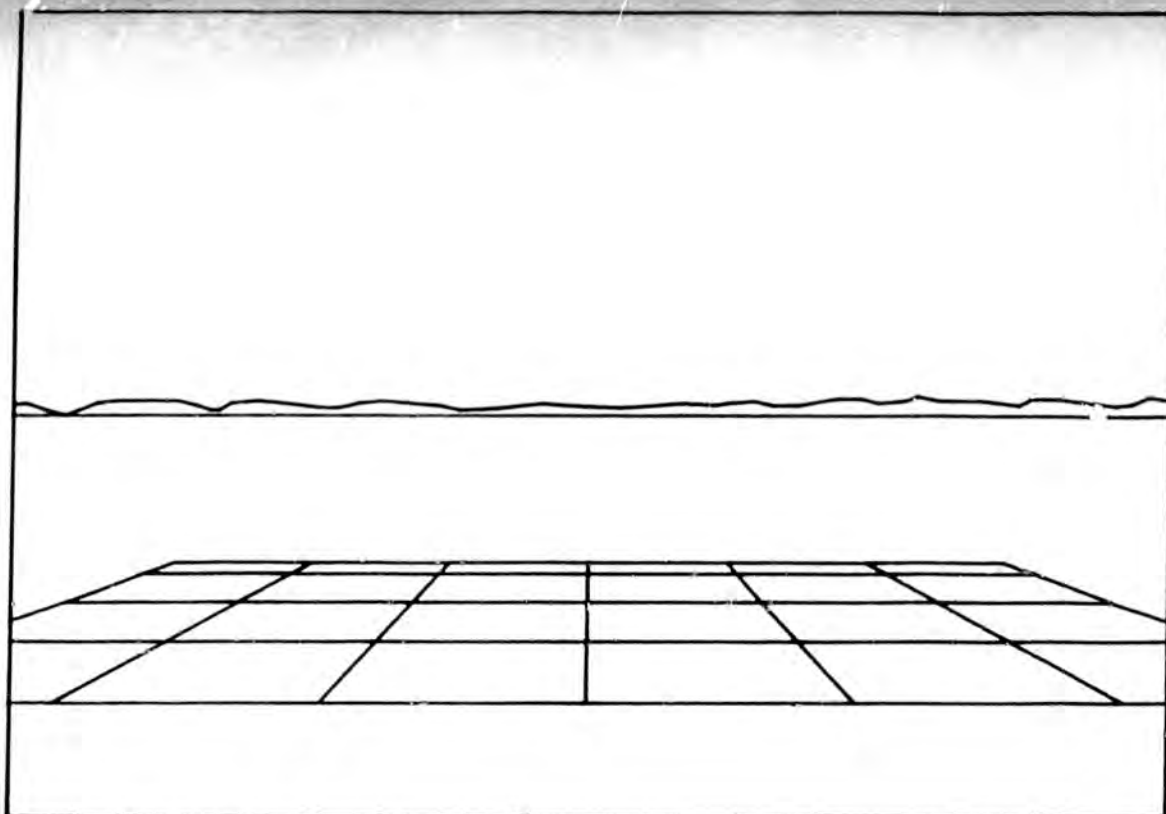


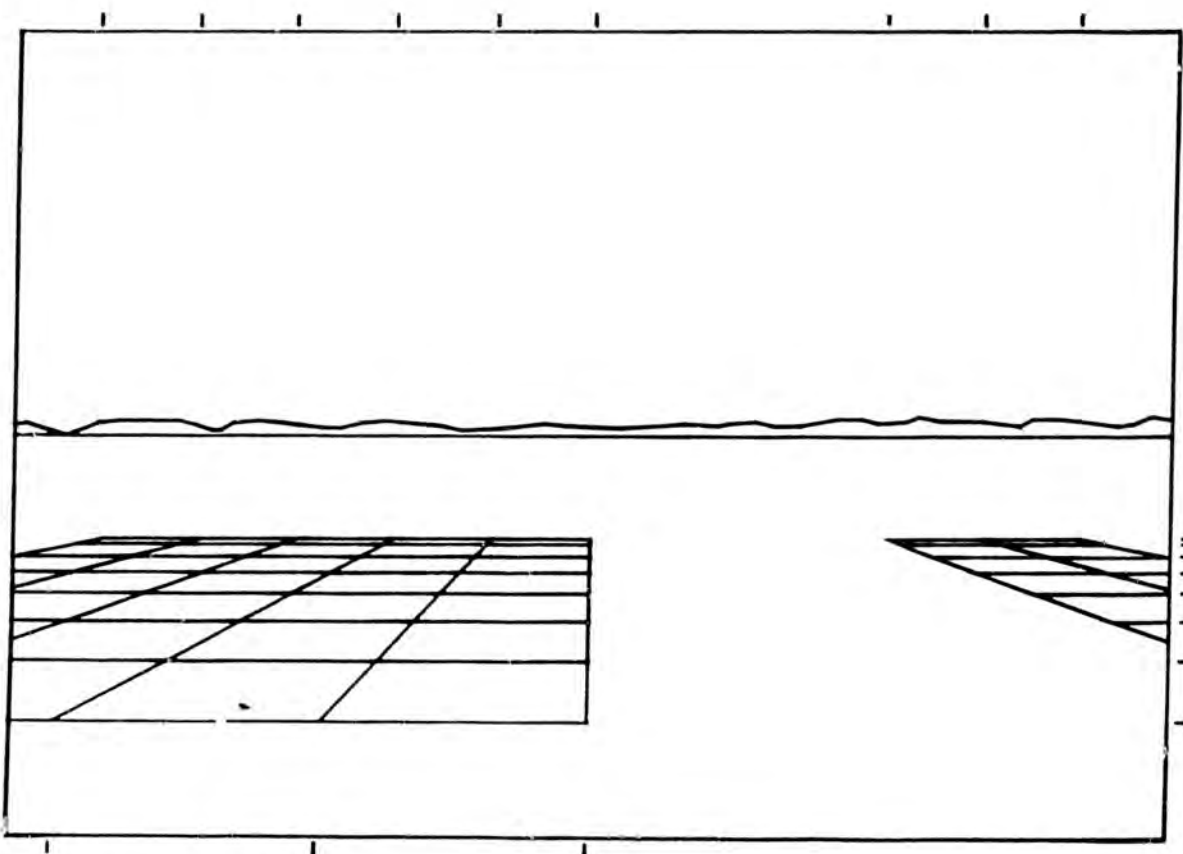
ALASKA LEGISLATURE SPECIAL COMMITTEE/SUBJECT FILE 8672
1902 SCOMM 75: MARICULTURE (FISH FARMING), 1987-1990

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5. Excerpts from Washington State "Aquaculture Siting Study"



5 Acres 100 ft. Grid



(2 Adjacent Projects)

7.5 and 3 Acres 100' Grid

Distance Offshore: 300 ft.

Observer Position: 105 ft. Above Sealevel

Typical Aquaculture Facility

Figure 1 Computer Simulation - View 4

AQUACULTURE VISUAL IMPACT ANALYSIS

		sensitivity level/visibility						
		High Sensitivity High Visibility	High Sensitivity Moderate Visibility	High Sensitivity Low Visibility	Moderate Sensitivity High Visibility	Moderate Sensitivity Moderate Visibility	Moderate Sensitivity Low Visibility	Low Sensitivity Any Visibility Category
scenic quality	Wilderness Areas	I	I	I	I	I	I	I
	HIGH	II	II	III	III	III	III	III
	MODERATE	II	III	III	III	III	IV	IV
	LOW	III	III	III	III	III	IV	IV

Visual Impact Classifications:

Class I (Wilderness Areas) - Severe Visual Impact

Any permanently visible aquaculture facility will likely have a severe visual impact that cannot be mitigated.

Class II - High Visual Impact

Areas where permanently visible aquaculture facilities will likely be visually obtrusive. To mitigate impact, project scale should be small enough not to call attention to itself or be located so not to be visually evident from key viewing points. Project design should borrow from the colors of the natural setting.

Class III - Moderate Visual Impact

Areas where permanently visible aquaculture facilities will be visually evident. To mitigate impact, project should remain visually subordinate to the project setting. Project design should borrow from the colors of the natural setting. Scale should be small enough so not to cover more than 10% of the cone of vision as seen from key observation points.

Class IV - Low Visual Impact

Areas where existing visual disruptions dominate (Industrial Landscapes); or areas of low sensitivity / Visibility. Most aquaculture facilities are unlikely to have an adverse visual effect. Few, if any, mitigation measures are necessary.

6. Washington State Shoreline Management Act of 1971
(excerpts); Coastal Zone Management Act of 1972
(U.S./Federal excerpts)

Chapter 90.58 RCW

SHORELINE MANAGEMENT ACT OF 1971

Sections			
90.58.010	Short title	90.58.290	Restrictions as affecting fair market value of property.
90.58.020	Legislative findings—State policy enunciated—Use preference.	90.58.300	Department as regulating state agency—Special authority.
90.58.030	Definitions and concepts.	90.58.310	Designation of shorelines of state-wide significance by legislature—Recommendation by director, procedure.
90.58.040	Program applicable to shorelines of the state.	90.58.320	Height limitation respecting permits.
90.58.050	Program as cooperative between local government and state—Responsibilities differentiated.	90.58.330	Study of shorelines of cities and towns submitted to legislature—Scope.
90.58.060	Timetable for adoption of initial guidelines—Public hearings, notice of.	90.58.340	Use policies for land adjacent to shorelines, development of.
90.58.070	Local governments to submit letters of intent—Department to act upon failure of local government.	90.58.350	Nonapplication to treaty rights.
90.58.080	Timetable for local governments to complete shoreline inventories and master programs.	90.58.360	Existing requirements for permits, certificates, etc., not obviated.
90.58.090	Approval of master program or segments thereof, when—Departmental alternatives when shorelines of state-wide significance—Later adoption of master program supersedes departmental program.	90.58.500	Exemption from this chapter for emergency recovery operations from Mt. St. Helens eruption authorized—Compliance with objectives required—Sediment retention structure exempt from RCW 90.58.030(3)(c)—Expiration of section.
90.58.100	Programs as constituting use regulations—Duties when preparing programs and amendments thereto—Program contents.	90.58.550	Oil or natural gas exploration in marine waters—Definitions—Application for permit—Requirements—Review—Enforcement.
90.58.110	Development of program within two or more adjacent local government jurisdictions—Development of program in segments, when.	90.58.560	Oil or natural gas exploration—Violations of RCW 90.58.550—Penalty—Appeal.
90.58.120	Adoption of rules, programs, etc., subject to RCW 34.04.025—Public hearings, notice of—Public inspection after approval or adoption.	90.58.900	Liberal construction—1971 ex.s. c 286.
90.58.130	Involvement of all persons and entities having interest, means.	90.58.910	Severability—1971 ex.s. c 286.
90.58.140	Development permits—Grounds for granting—Administration by local government, conditions—Applications—Notices—Rescission—When permits not required—Approval when permit for variance or conditional use.	90.58.911	Severability—1983 c 138.
90.58.145	Substantial development permit—Structures at temporary ferry terminals—Hood Canal bridge—Removal of structures.	90.58.920	Effective date—1971 ex.s. c 286.
90.58.150	Selective commercial timber cutting, when.	90.58.930	Referendum to the people—1971 ex.s. c 286—Determining if act continues in force and effect.
90.58.160	Prohibition against surface drilling for oil or gas, where.		
90.58.170	Shorelines hearings board—Established—Members—Chairman—Quorum for decision—Expenses of members.		
90.58.175	Rules and regulations.		
90.58.180	Appeals from granting, denying, or rescinding permits, procedure—Board to act, when—Local government appeals to board—Grounds for declaring rule, regulation, or guideline invalid—Appeals to court, procedure.		
90.58.190	Review and adjustments to master programs.		
90.58.200	Rules and regulations.		
90.58.210	Court actions to insure against conflicting uses and to enforce—Civil penalty—Review.		
90.58.220	General penalty.		
90.58.230	Violators liable for damages resulting from violation—Attorney's fees and costs.		
90.58.240	Additional authority granted department and local governments.		
90.58.250	Department to cooperate with local governments—Grants for development of master programs.		
90.58.260	State to represent its interest before federal agencies, interstate agencies and courts.		
90.58.270	Nonapplication to certain structures, docks, developments, etc., placed in navigable waters—Nonapplication to certain rights of action, authority.		
90.58.280	Application to all state agencies, counties, public and municipal corporations.		

Marine oil pollution—Baseline study program: RCW 43.21A.405 through 43.21A.420.

RCW 90.58.010 Short title. This chapter shall be known and may be cited as the "Shoreline Management Act of 1971". [1971 ex.s. c 286 § 1.]

RCW 90.58.020 Legislative findings—State policy enunciated—Use preference. The legislature finds that the shorelines of the state are among the most valuable and fragile of its natural resources and that there is great concern throughout the state relating to their utilization, protection, restoration, and preservation. In addition it finds that ever increasing pressures of additional uses are being placed on the shorelines necessitating increased coordination in the management and development of the shorelines of the state. The legislature further finds that much of the shorelines of the state and the uplands adjacent thereto are in private ownership; that unrestricted construction on the privately owned or publicly owned shorelines of the state is not in the best public interest; and therefore, coordinated planning is necessary in order to protect the public interest associated with the shorelines of the state while, at the same time, recognizing and protecting private property rights consistent with the public interest. There is, therefore, a clear and urgent demand for a planned, rational, and concerted effort, jointly performed by federal, state, and local governments, to prevent the inherent harm in an

uncoordinated and piecemeal development of the state's shorelines.

It is the policy of the state to provide for the management of the shorelines of the state by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the state and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto.

The legislature declares that the interest of all of the people shall be paramount in the management of shorelines of state wide significance. The department, in adopting guidelines for shorelines of state wide significance, and local government, in developing master programs for shorelines of state wide significance, shall give preference to uses in the following order of preference which:

- (1) Recognize and protect the state-wide interest over local interest;
- (2) Preserve the natural character of the shoreline;
- (3) Result in long term over short term benefit;
- (4) Protect the resources and ecology of the shoreline;
- (5) Increase public access to publicly owned areas of the shorelines;
- (6) Increase recreational opportunities for the public in the shoreline;
- (7) Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

In the implementation of this policy the public's opportunity to enjoy the physical and aesthetic qualities of natural shorelines of the state shall be preserved to the greatest extent feasible consistent with the overall best interest of the state and the people generally. To this end uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline. Alterations of the natural condition of the shorelines of the state, in those limited instances when authorized, shall be given priority for single family residences, ports, shoreline recreational uses including but not limited to parks, marinas, piers, and other improvements facilitating public access to shorelines of the state, industrial and commercial developments which are particularly dependent on their location on or use of the shorelines of the state and other development that will provide an opportunity for substantial numbers of the people to enjoy the shorelines of the state. Alterations of the natural condition of the shorelines and wetlands of the state shall be recognized by the department. Shorelines and wetlands of the state shall be appropriately classified and these classifications shall be revised when circumstances warrant regardless of whether the change in circumstances occurs through man-made causes or natural causes. Any areas resulting from alterations of the natural condition of the shorelines and wetlands of the state no longer meeting the definition of "shorelines

of the state" shall not be subject to the provisions of chapter 90.58 RCW.

Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water. [1982 1st ex.s. c 13 § 1; 1971 ex.s. c 286 § 2.]

RCW 90.58.030 Definitions and concepts. As used in this chapter, unless the context otherwise requires, the following definitions and concepts apply:

(1) Administration:

(a) "Department" means the department of ecology;

(b) "Director" means the director of the department of ecology;

(c) "Local government" means any county, incorporated city, or town which contains within its boundaries any lands or waters subject to this chapter;

(d) "Person" means an individual, partnership, corporation, association, organization, cooperative, public or municipal corporation, or agency of the state or local governmental unit however designated;

(e) "Hearing board" means the shoreline hearings board established by this chapter.

(2) Geographical:

(a) "Extreme low tide" means the lowest line on the land reached by a receding tide;

(b) "Ordinary high water mark" on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: *Provided*, That in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water;

(c) "Shorelines of the state" are the total of all "shorelines" and "shorelines of state-wide significance" within the state;

(d) "Shorelines" means all of the water areas of the state, including reservoirs, and their associated wetlands, together with the lands underlying them; except (i) shorelines of state-wide significance; (ii) shorelines on segments of streams upstream of a point where the mean annual flow is twenty cubic feet per second or less and the wetlands associated with such upstream segments; and (iii) shorelines on lakes less than twenty acres in size and wetlands associated with such small lakes;

(e) "Shorelines of state-wide significance" means the following shorelines of the state:

(i) The area between the ordinary high water mark and the western boundary of the state from Cape Disappointment on the south to Cape Flattery on the north, including harbors, bays, estuaries, and inlets;

COASTAL ZONE MANAGEMENT ACT OF 1972

(PL 92-583, 16 U.S.C. 1451 *et seq.*, October 27, 1972; Amended by PL 93-612, January 2, 1975; PL 94-370, July 26, 1976; PL 95-219, December 28, 1977; PL 95-372, September 18, 1978; PL 96-464, October 17, 1980; PL 98-620, November 11, 1984; PL 99-272, April 7, 1986)

SHORT TITLE

SEC. 301. This title may be cited as the "Coastal Zone Management Act of 1972".

CONGRESSIONAL FINDINGS

SEC. 302. The Congress finds that —

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

(b) The coastal zone is rich in a variety of natural, commercial, recreational, ecological, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the Nation.

(c) The increasing and competing demands upon the lands and waters of our coastal zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossil fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources, have resulted in the loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use, and shoreline erosion.

(d) The coastal zone, and the fish, shellfish, other living marine resources, and wildlife therein, are ecologically fragile and consequently extremely vulnerable to destruction by man's alterations.

(e) Important ecological, cultural, historic, and esthetic values in the coastal zone which are essential to the well-being of all citizens are being irretrievably damaged or lost.

[302(f) added by PL 96-464]

(f) New and expanding demands for food, energy, minerals, defense needs, recreation, waste disposal, transportation, and industrial activities in the Great

Lakes, territorial sea, and Outer Continental Shelf are placing stress on these areas and are creating the need for resolution of serious conflicts among important and competing uses and values in coastal and ocean waters. [Former 302(f)—(i) redesignated as (g)—(j) by PL 96-464]

(g) Special natural and scenic characteristics are being damaged by ill-planned development that threatens these values.

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

(i) The key to more effective protection and use of the land and water resources of the coastal zone is to encourage the states to exercise their full authority over the lands and waters in the coastal zone by assisting the states, in cooperation with Federal and local governments and other vitally affected interests, in developing land and water use programs for the coastal zone, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.

(j) The national objective of attaining a greater degree of energy self-sufficiency would be advanced by providing Federal financial assistance to meet state and local needs resulting from new or expanded energy activity in or affecting the coastal zone.

CONGRESSIONAL DECLARATION OF POLICY

SEC. 303. The Congress finds and declares that it is the national policy—

(1) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone for this and succeeding generations;

(2) to encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values as well as to needs for economic development, which programs should at least provide for—

(A) the protection of natural resources, including wetlands, floodplains, estuaries, beaches, dunes, barrier islands, coral reefs, and fish and wildlife and their habitat, within the coastal zone,

(B) the management of coastal development to minimize the loss of life and property caused by improper development in flood-prone, storm surge, geological hazard, and erosion-prone areas and in areas of subsidence and saltwater intrusion, and by the destruction of natural protective features such as beaches, dunes, wetlands, and barrier islands.

(C) priority consideration being given to coastal-dependent uses and orderly processes for siting major facilities related to national defense, energy, fisheries development, recreation, ports and transportation, and the location, to the maximum extent practicable, of new commercial and industrial developments in or adjacent to areas where such development already exists,

(D) public access to the coasts for recreation purposes,

(E) assistance in the redevelopment of deteriorating urban waterfronts and ports, and sensitive preservation and restoration of historic, cultural, and esthetic coastal features,

(F) the coordination and simplification of procedures in order to ensure expedited governmental decision-making for the management of coastal resources,

(G) continued consultation and coordination with, and the giving of adequate consideration to the views of, affected Federal agencies,

(H) the giving of timely and effective notification of, and opportunities for public and local government participation in, coastal management decisionmaking, and

(I) assistance to support comprehensive planning, conservation, and management for living marine resources, including planning for the siting of pollution control and aquaculture facilities within the coastal zone, and improved coordination between State and Federal coastal zone management agencies and State and wildlife agencies; and

(3) to encourage the preparation of special area management plans which provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection

of life and property in hazardous areas, and improved predictability in governmental decisionmaking; and

(4) to encourage the participation and cooperation of the public, state and local governments, and interstate and other regional agencies, as well as of the Federal agencies having programs affecting the coastal zone, in carrying out the purposes of this title.

[303 revised by PL 96-464]

DEFINITIONS

SEC. 304. For the purposes of this title —

(1) The term "coastal zone" means the coastal waters (including the lands therein and thereunder) and the adjacent shorelands (including the waters therein and thereunder), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches. The zone extends, in Great Lakes waters, to the international boundary between the United States and Canada and, in other areas, seaward to the outer limit of the United States territorial sea. The zone extends inland from the shorelines only to the extent necessary to control shorelands, the uses of which have a direct and significant impact on the coastal waters. Excluded from the coastal zone are lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents.

[304(2) added by PL 96-464]

(2) The term "coastal resource of national significance" means any coastal wetland, beach, dune, barrier island, reef, estuary, or fish and wildlife habitat, if any such area is determined by a coastal state to be of substantial biological or natural storm protective value. [Former 304(2)—(16) redesignated as (3)—(17) by PL 96-464]

(3) The term "coastal waters" means (A) in the Great Lakes area, the waters within the territorial jurisdiction of the United States consisting of the Great Lakes, their connecting waters, harbors, roadsteads, and estuary-type areas such as bays, shallows, and marshes and (B) in other areas, those waters, adjacent to the shorelines, which contain a measurable quantity or percentage of sea water, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries.

(4) The term "coastal state" means a state of the United States in, or bordering on, the Atlantic, Pacific, or Arctic Ocean, the Gulf of Mexico, Long Island Sound, or one or more of the Great Lakes. For the purposes of this title, the term also includes Puerto Rico, the Virgin Islands, Guam, the Commonwealth of the Northern

7. Etolin Island area Mariculture Pilot Project final report, re coastal use conflict and siting guidelines.

Alaska Coastal Zone Management Program (excerpts from statute); Alaska Coastal Zone Management Program - 1986 Annual Report (excerpts)

CONFLICTS WITH OTHER COASTAL USERS

Mariculture is a relatively new industry in Alaska and has potential to conflict with established uses. Many existing uses are dispersed over large areas while other activities likely to produce pollution are localized. These conditions provide opportunities to site mariculture facilities to avoid conflict with other users. Not all conflicts can be resolved, but most can.

Resource agencies in Alaska sometimes lack detailed information on all uses occurring in Alaska's vast coastal areas. Use patterns can be dynamic, varying dramatically in response to changes in natural conditions and government regulations. Resource agencies conduct planning and permit review processes to provide opportunities for existing and potential resource users to identify their needs.

Stringent water quality standards for growth of marketable seafood products will limit the suitability of sites to those physically located separate from areas with waste discharges. Determining acceptable separation distances will help guide any conflict resolution process and will determine areas where mariculture and other uses are incompatible.

This section will discuss major conflicts with other users of Alaska's coastal resources.

Land Management Issues

Resource agencies share responsibilities for development of new industries that depend on public resources for development. Primary land use manager for the state is the Department of Natural Resources (DNR). DNR is responsible for developing these resources while at the same time providing for resource conservation and protection.

DNR historically has been the state agency facing new industries needing access and use of state land, such as prospective barley farms, coal mines, petrochemical plants, shore based seafood processing facilities, geothermal

energy developments, and cattle ranching. Developers need assurance of long term property rights to secure financing and so they don't lose control of sites in which they have made significant capital investments. DNR's responsibility is to ensure that commitment of state lands will be lawful, in the public's best interest and will produce viable new industries, useful products, stable jobs, and hopefully a fair market value.

Other resource agencies such as ADF&G and DEC review development proposals under their statutory authorities and also provide guidance to DNR for development and protection of resources in their areas of responsibility. These agencies and others share in the Alaska Coastal Management Program (ACMP) which provides for a coordinated review of all coastal development in Alaska.

Aquatic farming may become a significant long term use of state tide and submerged lands. Alaska must achieve balance in its regulatory programs which will allow this industry to thrive, while at the same time protecting existing uses of land. Problems that may occur if balance is not achieved include displacement of public uses such as recreation and fish and wildlife harvest, conflicts with other commercial uses of tide and submerged lands, land speculation, impacts on adjacent land holders, and stifling of an emerging industry.

Mariculture Development Land Use Needs

Successful mariculture developments share a number of basic requirements. Foremost among these is a need to secure appropriate sites. Desirable features of a mariculture site are also often desirable for other uses, such as anchorages. Even in rural Alaska, it is a rare mariculture site that does not also attract other users.

Resolution of use conflict usually involves two approaches:

1. Separating uses geographically. Competing uses can often be separated to avoid conflicts.
2. Mitigating measures, such as site design, timing restrictions on use, or access corridor stipulations may allow more than one use of a site and resolve conflict.

Unfortunately, not all conflicts can be resolved to allow multiple use of the same site. It is then the land managers responsibility to determine best use of state lands. Such conflicts are more likely to occur in areas not covered by an appropriate land use plan. Experience has been, however, that many conflicts can be resolved using the State's coastal management program project consistency review system. This system has been developed and refined by state agencies over many years of permit review and conflict resolution.

Displacement of Public Use

Structures on tidelands can physically displace or obstruct other uses requiring surface access. Mariculturists sometimes apply for use of areas larger than the physical dimensions of proposed structures (see Table 3-3) to minimize impacts to their operations from other human activities. Physical displacement can exist for farm site as well as for upland facilities. This may affect an even larger area if other human activities require a degree of solitude.

Culture technique is one variable determining if displacement will occur, and the magnitude of physical displacement. Bottom culture and submerged structures have least impact on natural resource harvest, boating and on aesthetic enjoyment, but may displace fish and wildlife harvests of bottom dwelling species such as crab and clams.

Both longlines and rafts can interfere with recreational and commercial harvest ac-

tivities. While longlines require only surface floats, in contrast to log boom structures commonly used as rafts, very extensive longline grids are used in other countries such as Japan (see Table 3-4).

Floating culture of shellfish and seaweed are commonly kept separate through negotiation in other countries. Japanese, fishing cooperatives allocate uses, prohibiting fishing boats and nets in areas of seaweed culture, (Olson, 1987) and prohibiting suspended culture in nearshore areas where fishing rights are maintained over bottom culture areas (Ito et. al., 1975).

Aesthetic conflicts are less tangible than physical displacement. Longlines may be less objectionable than rafts in terms of their visibility, however some people object to floating structures in front of recreational homes or cabins, and to associated activities and noise resulting from mariculture operations. Aesthetic objections from recreational home owners have been an issue in New Zealand (Dias 1984), in Washington (Freeman, 1985; E. Hurlburt, pers. comm., 1988), and in British Columbia (Butler, 1986).

Recreation

Expectations and desires for seclusion when recreating in rural Alaska is highly valued by residents and visitors. A mariculture facility, particularly with caretaker facilities located in a smaller cove, will essentially eliminate that sense of seclusion for recreation users. Those recreation users tend to find other secluded and aesthetically pleasing areas. Coastal resources may receive competing uses in many areas. Degree and intensity of recreation pursuits are difficult to define and may be dynamic in nature. Rural coastal areas receive dispersed recreation activities by small groups or individuals at widespread and diverse sites.

Mariculture development has the potential to block or inhibit public access to coastal recreation areas. The ACMP recreation standard requires state agencies to give high priority to

maintaining public access to coastal waters. Mariculture operations that would form a barrier between coastal waters and shorelines, or that would prohibit access to important coastal areas, could be found inconsistent with ACMP requirements.

Anchorage

Potential conflicts exist between anchorages and mariculture development. Mariculture sites need room for floats, rafts and other waterborne structures. They also need pristine waters free from high coliform counts and other forms of pollutants. Some organisms and growing facilities are adversely affected by waves from boat wakes.

Boats need room to maneuver and anchor. Some boats inadvertently discharge waste products into water. Some boat operators may ignore sound waste management procedures and choose to discharge contaminants at will. Not all boat harbors in Southeast Alaska have adequate holding tank pumping stations available making it difficult for even conscientious boaters to comply.

Raw sewage means contamination of marine organisms by coliforms. Waste products such as chlorine used by some boats to flush sewage tanks and bilges are highly toxic to mariculture organisms. Heavy metals associated with fuel and oil wastes are readily absorbed and held by many species of sea vegetables.

Current information indicates large, heavily used anchorages, or small, strategically located anchorages and mariculture facilities are incompatible. Sewage, chlorine from sewage systems, diesel, oils or other waste products discharged from boats near a mariculture facility may result in unacceptably high coliform counts or other forms of pollution. Infrequent boat activity, that does not discharge harmful products into the water is not a major problem.

This situation could be improved by the compliance by all boats holding sewage and waste products for acceptable disposal. Develop-

ment of dumping facilities in more commercial harbors may also help to alleviate sewage problems.

Proposals for mariculture sites proposed in known anchorages should include alternate anchorages nearby. High use anchorages with no nearby alternative anchorages will have difficulty being permitted or leased for mariculture sites. Smaller, secondary anchorages with alternate anchorages nearby will probably be more successful in obtaining necessary authorizations.

Mitigating measures for this conflict usually means locating the two facilities far enough apart so there is no conflict. Another potential mitigating measure might be adoption of a "relay" system. Under this system shellfish are taken from contaminated or polluted areas to noncontaminated waters. Shellfish are held for a minimum of two weeks to cleanse themselves. Testing indicates when the acceptable product is released for sale. Actual time for this cleansing process may be considerably more than two weeks.

Relaying has not been tried in Alaska. It may require substantial handling and facilities that would add to the cost of products. Further testing would be needed if this system is considered.

Fish and Wildlife Harvest

Recently passed legislation requires that regulations must provide for the consideration of upland management policies and whether the proposed use of a site is compatible with the traditional and existing uses of the area in which the site is located. Both longline and raft culture techniques involve structures that can interfere with commercial and noncommercial harvest of fish and wildlife. Longlines require only floats on the surface, in contrast to log boom structures commonly used as rafts. Extensive longline grids are in use in other countries. (See table 3-4)

Conflicts between mariculture structures and other uses depend partly on if the farmer needs to restrict boat traffic. For example, farmers may wish to limit boat traffic to minimize potential for vandalism and pollution from fuel and sewage. Conversely, personal use crab fisheries may be very productive around rafts used for culturing sea organisms.

Because communities that use the study area are currently considered subsistence communities, subsistence harvests are important activities in most areas where aquatic farming may occur. Conflicts between mariculturists and subsistence users could occur as more facilities are developed. Development of direct competition for subsistence resources may increase as new residents enter rural areas. Loss of subsistence opportunities could occur if mariculture facilities are placed in important subsistence resource areas.

Results of a subsistence study currently being conducted by ADF&G, Division of Subsistence will be helpful in identifying potential conflicts.

Conflicts with Other Commercial Uses of Tidelands and Submerged Lands

The best sites for aquatic farm facilities may often be the best sites for other uses such as mineral or timber transfer and support facilities, log storage, commercial fishing grounds, anchorages, or commercial recreation development. Although mariculture is a new industry in Alaska, some conflicts have surfaced in Kodiak, Prince William Sound, and Southeast. Besides need for space, water quality standards for mariculture may preclude use of favored sites for other commercial or industrial facilities. Forcing more stringent mitigation measures or alternative siting for timber, mineral transfer, or tailings disposal could reduce or eliminate economic viability of resource extraction industries in a given area.

Conversely, mineral or timber transfer sites, log storage sites, and floating camps as-

sociated with resource development activities may limit space available or degrade water quality for mariculture facilities, making mariculture development more difficult and less likely.

Commercial Fishing

In the study area, commercial fishing seldom occurs in secluded coves and bays that are more commonly suitable for mariculture. Nevertheless, these protected coves may be important to the commercial fishing fleet because they provide safe anchorages close to fishing grounds or tenders.

Potential conflicts may develop due to fishing hook-off points. These are locations near shore where commercial fishing nets are set for harvest of fish. Hook-off points can occur virtually anywhere along shorelines free of rocks or other obstacles that would tangle nets. Some hook-off points are valuable sites for fishing boats as fish migration patterns bring them to the same area year after year. Culture techniques utilized by mariculture operations that restrict use of open shorelines have the potential to conflict with hook-off points.

Conflicts may be limited to those times of year fish harvest occurs. Separation of uses may be the only practical solution to this type of conflict.

Commercial Recreation

Commercial recreation in the form of hunting, fishing, and guiding, or the establishment of recreation lodges have potential for conflict with mariculture development. Aside from potential physical displacement, such recreation development could provide sources of point pollution.

Type and degree of conflict can only be determined on a case by case basis.

Logging

Conflicts with timber harvest operations may occur because floating facilities can interfere with log transfer and floating storage operations. In the study area, timber harvest on Forest Service lands is continuing, and operations require log transfer at tidewater, storage of log rafts in protected bays and inlets, and towing rafts to mills. Conflicts may arise because of: 1) the overlap of many siting and operational requirements for log transfer and storage and for mariculture, particularly a requirement for protected waters, and 2) the potential for degradation of water quality in the vicinity of log transfer facilities.

Log transfer and storage area siting involves a detailed review of potential environmental impacts and conflicts with other uses. Suitable sites which meet environmental and industry criteria are generally limited in number. Unless mariculture, log transfer and storage can coexist, there may be direct competition for sites.

Bark and other organic debris resulting from log transfer and storage can have adverse impacts similar in nature to those associated with floating mariculture facilities (Pacific Northwest Pollution Control Council, 1971; Pease, 1974; Schultz and Berg, 1976; Duval and Slaney Co., 1980). Anaerobic sediments can form and hydrogen sulphide may be released. Freese and O'Clair (1984) documented a relationship between low dissolved oxygen concentrations, high hydrogen sulphide and ammonia concentrations, and mortality in mussels and littleneck clams exposed to decomposing wood wastes under laboratory conditions. Decomposition of log wastes can also release leachate which are toxic to some species of shellfish (Buchanan et al., 1976).

Close proximity of log transfer facilities and floating mariculture facilities in small or poorly flushed waterbodies could result in contamination, disease, or mortality of cultured animals. Bottom culture should be precluded in areas where large quantities of bark could potentially be deposited. Intertidal storage

and upland support facilities should be located to minimize potential problems.

Other types of water quality conflicts may also occur. Use of pesticides at dry land log storage sites has been proposed in Alaska (e.g., the use of lindane mixed in diesel oil to control ambrosia beetle at Thorne Bay in 1983). These substances can bio-accumulate in shellfish. Requirements for boat and seaplane traffic for timber harvest and transfer operations also increase the potential for hydrocarbon pollution. Sewage discharge from logging facilities would be of concern as a possible point source of pollution. Logs are sometimes lost and floating debris could damage mariculture structures.

No known mitigating measures exist that could increase compatibility. Distances between TTF's and mariculture sites are determined largely on a case by case basis due to currents and other physical characteristics of the area in question.

Mining

Potential conflicts in the form of direct competition for suitable sites for mineral transfer and mariculture are similar in nature as those between mariculture and logging activities. Remote hardrock mine sites require upland facilities for processing ore, transfer facility operations, and for loading barges transporting ore to markets. Options for siting mariculture facilities in close proximity to mine sites are limited. Water quality impacts can result from mining operations. Disposal of tailings in marine waters that contain high concentrations of heavy metals or result in high levels of turbidity and suspended sediments are inherent conflicts. The potential for water pollution from sewage discharge, boat fuel hydrocarbons, and waste oil is similar to that for logging support facilities and operations.

Urban Development

Industrial and commercial development of shorelines may conflict with requirements of mariculture developments through physical competition for space or through a variety of pollution sources. Degree and type of impact is site specific.

The U.S. Forest Service manages most lands in the study area. No urban development is planned at this time.

Residential Development

Residential development along shorelines or floathomes can compete for physical space with mariculture facilities. Residential development can also result in point source discharge of sewage. Shoreline residents can object to mariculture on aesthetic grounds. One subdivision, Olive Cove, exists in the study area with both private and state ownership. Conflicts between mariculture facilities and residential development may be minimal. However, public and agency review should address these potential concerns if mariculture development is proposed in this area.

Historic or Archeological Sites

Upland development associated with mariculture is not compatible with historic or archeological sites. By law, these sites must not be affected or, as a last resort, extensive mitigation is required to identify and record values before impact occurs.

Because of limited surveys of variable intensity, all historical and archeological sites have not been located within the study area. Location of known sites will not be provided in an attempt to prevent vandalism.

If a U.S. Forest Service Special Use Permit is required, applicants must initiate a site survey by a qualified archeologist. The Special Use Permit will normally be denied when historic or archeological values are found on or adjacent to the requested site. State permits

may similarly require extensive mitigation or be subject to denial on these grounds.

Land Speculation

Prior to 1986, British Columbia experienced a dramatic rush for permits which allowed the holder to enter and occupy a site to conduct research for up to one year. It appears that these permits were being issued for large areas of land with little regard for potential impacts to the public. A gold rush image was created resulting in a great deal of public concern, and subsequently a moratorium was imposed. Alaska does not have an investigative permit similar to this permit but we could experience land speculation in other forms, most notably by applying for permits and leases to tie up a site.

Land speculation in this case is described as obtaining land use rights with the intent of not using the land for proposed uses but selling or trading those rights for a profit. This problem is not unique to mariculture and can occur in any use of state land. Speculation can be greatly reduced by close monitoring of development schedules and writing conditions in land use documents that would allow agencies to revoke permits or leases if the development is not proceeding as proposed.

Impacts on Adjacent Land Owners

Mariculture can impact adjacent land owners in a variety of ways: loss of tidelands access or boat moorage, loss of view, noise, loss of privacy, loss of habitat, and changes in water quality. This has been a significant issue in Washington and British Columbia, and may become a concern in Alaska.

Adjacent land owners have a number of ways to participate in mariculture facility siting. They can participate in development of state land use plans, coastal zone management programs, and local comprehensive plans. Adjacent owners are notified by mail of pend-

ing applications and are given an opportunity to comment on projects. A 30 day public notice pursuant to AS 38.05.945 is required for leases. Local governments, regional or village native corporations, local coastal districts, and communities are also notified. Local government or regional native corporations may hold public hearings if necessary. Department of Natural Resources reviews all of these comments and weighs the use and enjoyment of the adjacent owner against what is considered to be state's best interest.

Land use conflicts on uplands are adjudicated in the study area by Forest Service officials utilizing the Tongass Land Management Plan.

Upland Access

Access is a major consideration under current permit and lease review processes. A part of the state's "best interest" determination is an evaluation of impacts on access, especially to upland owners. Access is important for recreation and fish and wildlife harvest on public lands. Access by water craft, aircraft and in some circumstances by land vehicle can occur.

In most circumstances, access problems can be mitigated on a mariculture site by specification of easements or access corridors on permits or leases. In some circumstances there is not sufficient room to separate two uses. In these cases access may be allowed over other forms of development if a reasonable alternative cannot be found.

U.S. Forest Service as Upland Managers

As primary managers of uplands in the study area, the U.S. Forest Service has the responsibility of management of upland permits for mariculture development. Land use designation (LUD) I, II, III, and IV of Tongass Land Management Plan provides guidance for development in Tongass National Forest.

Following is a brief description of the four major land use designations for Forest Service lands:

LUD I (and LUD I Release Areas) - This designation is primarily a wilderness designation. It provides for minimal development compatible with maintenance of natural character of land.

LUD II - This designation is managed in a roadless state to retain its wildland character but would permit wildlife and fish habitat improvement and primitive recreational development. (The study area contains no LUD II lands)

LUD III - This land is managed for a variety of uses. Emphasis is on managing for uses and activities in a compatible and complementary manner to provide the greatest combination of benefits. These areas have either high use or high amenity values in conjunction with high commodity values.

LUD IV - This area will be managed to provide opportunities for intensive resource use and development where emphasis is primarily on commodity or market resources.

The southern half of Etolin Island is currently designated as LUD I Release. These lands are being managed to provide opportunities for solitude and primitive types of recreation in unaltered environment.

Components of mariculture projects occurring above mean high tide line must be compatible with the goals of the LUD classifications. Development in LUD IV areas is more acceptable than within the LUD I Release area. Development in all LUD areas will be restricted to structures specifically designed to blend into surrounding landscape. Size, location, and color of structures and the amount of trees to be removed will be specified by the Forest Service for development in all LUD's. Although goals for TLMP do not apply to the waters below mean high tide the U.S. Forest Service expects permitted activities on water adjacent to the Forest will be compatible with management direction for surrounding uplands.

There is currently one Special Use Permit for an upland facility to support mariculture development in the LUD I Release area. No more permits will be issued unless the designation changes to LUD II, III, or IV.

The U.S. Forest Service is presently revising its land management plan for the Tongass National Forest including the Etolin Island area. Specific direction on how the resources on Etolin Island will be managed will appear in the plan. Until the revision is completed current Tongass Land Management Plan direction and guidelines will apply to mariculture developments.

Cumulative Effects of Expanding Tidelands Use

For most of coastal Alaska, mariculture facilities are permitted on an individual basis. Impact from one or two farms may be minimal, but cumulative effects of numerous farms on existing uses may be dramatic. DNR management and area plans provide a process for resolving use conflicts on a regional basis, and best interest findings required under AS 38.05.035(e) provide mechanisms for resolving conflicts on individual permits/leases. The ACMP consistency review process also provides a mechanism for resolving conflicts regarding use of state tide and submerged lands.

Although a regional perspective is preferred, cost of management and area plans limits their use as a routine method of sorting out

problems and resolving conflicts. Lack of a regional perspective could lead to significant conflicts over time and is a major problem with the existing process.

During development of statewide guidelines, Alaska could evaluate British Columbia experience during its initiation to finfish aquaculture. Immediate needs for coastal planning occurred when it became apparent that a loss of access, a loss of anchorages, impacts on upland owners, impacts on recreation, and tourism. British Columbia placed a moratorium on leases and licenses for finfish farming and began an inquiry into finfish aquaculture and its impacts. Inquiries were completed in 1986. How well their conclusions or recommendations apply to Alaska conditions is uncertain.

Summary

While numbers of potential problems are large, it appears most land use problems associated with mariculture can be resolved. Appropriate land use plans and permit review processes, such as ACMP consistency determinations, are useful to resource agencies to accomplish resolution of conflict. Developing comprehensive area plans is desirable but time consuming (2-3 years) and expensive. Refined policies and regulations are being developed from newer and more accurate information by all resource and review agencies. This will greatly assist land management agencies in resolving conflicts among coastal users.

GUIDELINES AND MITIGATING MEASURES

Relative Measures of Suitability

In developing a mariculture facility several factors need to be considered: 1) if the site is capable of commercial production, 2) if the site is able to meet requirements of facility design, and 3) if the development is an acceptable use of public land and water.

Interactions between factors are complex, and may fluctuate from season to season or from year to year. The economic environment may support development, or can contribute to failures. Other uses sometimes compete for limited resources.

The following discussions are presented to assist agencies or individuals in determining the suitability of a site for select species of shellfish or kelp. It is unlikely any single site will be the "million dollar" site in all respects. Therefore, these indicators will be helpful in estimating the relative suitability of mariculture sites.

Guidelines for Siting Shellfish and Sea Vegetable Mariculture Facilities and Mitigating Impacts

"Mitigation" is the process of avoiding or minimizing adverse impacts. Proper siting of shellfish and seaweed mariculture facilities should result in avoiding the majority of adverse impacts that might otherwise occur.

Conflict over mariculture siting has resulted in development of siting criteria and zoning in both Washington and British Columbia. In both areas, conflict has primarily been over finfish net pen siting. However, guidelines developed are in use for "all aquaculture proposals involving floating structures and improvements" in British Columbia (B.C. Ministry of Forestry and Lands 1987).

Proposed siting guidelines are based on a review of interim guidelines for management of salmon net pen culture in Puget Sound (Science Applications International Corporation 1986), on draft guidelines for development and operation of aquaculture and fish processing facilities (Department of Fisheries and Oceans Canada, Pacific Region 1986 a,b), and on siting guidelines developed by ADF&G for other forms of coastal development and by DNR for area plans.

Guidelines proposed here are based on several assumptions: 1) mariculture in the near future will be similar to that currently practiced (i.e., floating structures will be used, but bottom culture techniques may be proposed), 2) regardless of culture technique used, exclusive use of areas will be desired by farmers, 3) sites require expansion potential, 4) farms require potential for access to and use of adjacent uplands for support facilities and use of intertidal zone and beach above high tide for beaching gear, and storing or hardening shellfish. Some criteria are in conflict (e.g., increasing stocking density to reduce areal extent to minimize user conflicts vs. decreasing stocking density and increasing areal extent to minimize sedimentation impacts). Applicability of each guideline will depend on specific sites and proposal under review but they are included in this report as guidelines to both prospective sea farmer and to project reviewers.

Fish and wildlife concentration areas and human use areas described have been mapped as part of this project for the Etolin Island area.

Guidelines are organized into three phases: 1) siting, 2) project design, and 3) operations. If sites can be selected which avoid areas described under Siting Guidelines, then measures described in subsequent sections to mitigate impacts through design or operation may be unnecessary.

Siting Guidelines

1. To minimize adverse impacts on productive benthic habitats:

1a - Conduct a site survey to determine flushing regime, benthic community composition, and baseline water quality (i.e., dissolved oxygen levels, presence of toxicants or contaminants).

1b - Site floating facilities and intertidal structures where currents are strong enough to disperse suspended organics and organic deposits. Avoid siting in small embayments with sills, natural restrictions to tidal exchange, or existing water quality problems.

1c - Site floating facilities or structures embedded in the substrate in areas with least productive benthic habitat. Avoid shallow areas (less than 40 feet deep at Mean Lower Low Water).

1d - Because bottom culture site requirements are likely to conflict with maintenance of existing productive benthic communities, detailed site analysis including a dive survey should occur prior to siting. Bottom culture requirements should be defined. Information on the existing benthic community, proposed methods of reducing or eliminating predation, stocking rates, and potential effects on competing species should be provided. Feasibility of culture in alternative sites which have lower benthic productivity should be evaluated.

1e - Avoid siting within 300 feet of herring spawning areas, hard shell clam concentration areas, and eelgrass and kelp beds. Avoid siting sea vegetables farms within 300 feet of herring spawning areas and eelgrass beds.

1f - Select least productive intertidal or upland areas for activities involving dredging, fill, significant compaction of vegetation and sediments (e.g., filling or mechanized

access), or flow alterations. Avoid use of equipment in productive habitat, particularly tideflats and salt marshes.

1g - Do not allow floating structures to ground at any tidal stage, except for planned beaching of gear for cleaning or fouling control. Beach gear in the intertidal area or beach area of lowest biological productivity. Sand or gravel beaches are the preferred sites; avoid tideflats adjacent to streams and salt marshes.

2. To avoid disturbance of sensitive fish or wildlife species or species during sensitive life history stages:

2a - Avoid siting within 330 feet or within a distance determined by the U.S. Fish and Wildlife Service of bald eagle nests.

2b - Avoid siting within a 300 foot radius of mouths of anadromous fish streams at Mean Lower Low Water.

2c - Avoid siting within one mile of: 1) harbor seal haul out concentration areas or pupping areas, 2) sea otter concentration areas, pupping areas, or feeding areas, and 3) seabird colonies.

2d - Avoid siting within waterfowl and shorebird seasonal concentration areas.

These guideline distances can be modified on a site specific basis if other measures will mitigate the disturbance or if disturbance is determined to be insignificant.

3. To minimize the effect of creating an attractive nuisance to potential predators or scavengers:

3a - Determine bird or mammal species which are expected to be a predator on the cultured species. Guideline distances for separation from concentration areas to avoid disturbance (#2 above) should be used as criteria if the species is a potential

predator. Distance of separation between rearing facilities and predator concentrations can be modified on a site specific basis if other measures will be implemented to minimize predation.

3b - Avoid siting mariculture facilities, including upland support facilities, adjacent to brown and black bear concentration areas.

3c - Avoid siting shellfish farms within areas where diving ducks, particularly scoters and goldeneyes, concentrate seasonally. Rafts or longlines may be sited within 1 mile of concentration areas if they can be sited in waters deeper than the birds traditionally feed on shellfish beds.

3d - Avoid siting shellfish farms within one mile of sea otter concentration areas.

4. To minimize conflicts with and displacement of traditional commercial and noncommercial users of fish and wildlife:

4a - Avoid siting in or adjacent to:

- ° Intensive commercial crab fishing areas
- ° Intensive commercial shrimp fishing areas (pot, trawl)
- ° Intensive commercial clam harvest areas (e.g., geoducks)
- ° Intensive commercial abalone harvest areas
- ° Intensive hunting areas (waterfowl)
- ° Intensive noncommercial fish and wildlife harvest areas
- ° Intensive anchorages within day use areas of major communities for sportfishing and other anchorages of local or regional importance
- ° Intensive float plane access areas
- ° Areas of restricted navigation

["Intensive Use" will have to be determined on a case-by-case basis. Generally, ADF&G conducts an assessment of the importance of a particular harvest area during permit reviews. The public will also have an opportunity to

comment. Due to the variety of uses and lack of data, it is difficult to set specific thresholds. Intensive uses identified here have been identified as ones likely to constitute a conflict in specific situations.]

5. To minimize interference with fisheries enhancement activities:

5a - Avoid siting facilities adjacent to hatcheries or within terminal harvest areas.

6. To avoid adverse impacts relating to water quality:

6a - Applicants should gather site specific information on possible contamination sources, and avoid siting facilities in areas with waste discharges. (e.g., sewage, mine tailings, boat use, etc.)

6b - Applicants should gather site specific information on water characteristics to ensure that adequate water quality can be maintained once culture operations commence. (e.g. salinity, tidal flushing, currents, depths, temperature, etc.)

6c - Applicants should gather site specific information on levels of PSP which may occur naturally in the area, both in native shellfish and bottom sediments.

7. DNR Land use permit/lease guidelines:

7a - Mariculture and competing uses. Mariculture may be allowed on state tidelands where there is no significant conflict and if the proposal is not in conflict with other guidelines. Siting of mariculture facilities may be more difficult on tidelands used for, or designated in area plans for use by, log transfer or storage, mineral transfer or access, and commercial activities. Approvals to locate mariculture facilities adjacent to existing or planned land sales, in crucial fish and wildlife habitat areas, developed recreation areas, and areas used intensively for harvest of fish and wildlife or

for anchorage will also be more difficult to obtain.

Consistent with other guidelines, these areas will be available for mariculture: 1) if land managers determine it is possible to site, design, and operate the two or more uses compatibly in the area, or 2) there is no feasible and prudent alternative for mariculture while one does exist for competing use. In no case will mariculture be allowed to foreclose access to mineral, timber, or recreation resources unless feasible or prudent alternative access exists. However, in some cases it may be in public interest to concentrate uses in one bay rather than allowing proliferation of uses in many bays.

7b - Upland owner support for mariculture. Upland owners are encouraged to identify areas where mariculture (including upland facilities) should and should not be developed and to communicate their conclusions to DNR and to the mariculture industry. Tideland development for mariculture should not conflict with management goals of adjacent uplands as provided by approved plans or policy of the managing agency.

7c - Mariculture caretaker facilities. Floating caretaker facilities for mariculture operations may be allowed. Floating caretaker facilities for mariculture operations will not be allowed in designated recreation or personal use areas unless a determination is made there is no feasible or prudent alternative. Determination will be made available for public comment.

7d - U.S. Coast Guard approval. Permits or leases will not be given until U.S. Coast Guard has certified that proposed facilities will not be a significant navigational hazard.

Project Design Guidelines

8. To minimize adverse impacts on productive benthic habitats:

8a - Increase distance of floating structures from shore to avoid shallow, productive habitats.

8b - In areas where potential for adverse impacts from organic sedimentation is high, minimize density of stocking and increase areal extent.

8c - Use flexible floating structures to minimize dampening action on waves and current flows (i.e., break water effects) to maintain natural circulation patterns.

9. To minimize adverse impacts of disease or toxicants on natural stocks:

9a - Avoid use of creosoted logs and pilings in structures.

9b - Avoid use of anti-fouling chemicals.

10. To minimize adverse impacts on predators or species sensitive to disturbance:

10a - Use nonlethal means of predator control.

10b - Use netting or other materials such as plywood to cover culture structures to provide a physical barrier to potential bird, mammal, and invertebrate predators.

10c - To minimize predation by waterfowl, waterbirds, and birds of prey, aquaculture operations should be covered with plywood or netting that has a mesh size small enough to prevent birds from penetrating it and is made of a gauge heavy enough to be visible to birds and to prevent them from becoming entangled in it. This guideline applies to nets used for both above water and underwater protection.

10d - Plywood or mesh covers on rearing structures should be employed to minimize attraction of bears.

10e - To prevent access by predators, use heavy gauge nets to prevent access.

10f - Operations should be designed and managed to minimize attraction of furbearers. If netting is employed, it should be of a mesh size small enough to prevent entrance and made of a gauge or material that cannot be chewed or clawed apart. Sheet metal collars should be placed on cables, boom sticks, and stiff legs attached to shore to minimize furbearer predation.

11. To minimize adverse impacts on other coastal users:

11a - The culture technique chosen can mitigate impacts on other users of the area if other users are not excluded from access to the area. Bottom culture avoids impacts to many commercial and noncommercial users of fish and wildlife resources, however harvest of bottom dwelling species may be displaced or precluded. Floating facilities are preferable to structures embedded in intertidal area. Longline culture facilities can be designed to be less visible than raft facilities, however low visibility can create navigation hazards. Longlines, by their nature, are more able to withstand rougher sea conditions than standard construction rafts and are suitable in areas of deeper water. Use of longlines provides greater siting flexibility to avoid sensitive areas or use conflicts, and may, in some cases, be a feasible and prudent alternatives to raft culture.

11b - Reduce areal extent of floating facilities to minimum size needed in areas where conflicting uses occur. Consider increasing stocking densities as a means to minimize areal extent.

11c - Provide navigation lanes or access easements through facilities.

11d - Increase distance of floating structures from shore to minimize use conflicts.

11e - Lower floating structures (e.g. nets, longlines) in the water column to avoid conflicts with navigation and recreational use of the area.

Comment: Lowering cultures, either temporarily or permanently within a range of 12 meters below the surface has also been recommended to avoid sets of fouling organisms, high surface water temperatures, rocking of scallops, and unstable salinity and temperature conditions. Growth may be reduced under these conditions, but disastrous events may also be avoided.

11f - Design size, color, and height of structures for low visibility where desirable to minimize impacts to aesthetics and where navigational hazards will not be created. Design high visibility marking devices (e.g., lighted buoys) where necessary for safe navigation.

11g - Consolidate facilities to minimize impacts on other users. However, establish separation distances between farms to minimize cumulative impacts on water quality and potential for disease transmission.

11h - Development plans. A site plan and other relevant information is requested on the Consolidated Shellfish Farm Application. An additional development plan will not usually be required. The preferred approach is for the site plan and other information to constitute a development plan to serve (at a minimum) as basis for DNR, ADF&G, DEC, ACMP, and upland owner review.

12. Upland facility sewage disposal.

12a - A sewage disposal system adequate to protect nearby shellfish from contamination will be required for any caretaker facilities associated with a mariculture operation.

Operational Guidelines

13. To minimize adverse impacts on productive benthic habitats:

13a - Set poles and anchors carefully during periods of lowest productivity.

13b - If structures (e.g., nets) are periodically removed, leave poles and anchors in place.

13c - Monitor sediment build up and impacts on substrate/water chemistry. Adjust stocking rates, remove organic deposits, or move facility if anaerobic substrate conditions are unavoidable.

13d - If herring spawn on structures, leave them in water until the spawn hatches.

14. To minimize adverse impacts on predator populations or species sensitive to disturbance:

14a - Use nonlethal predator control measures.

14b - Use nonlethal means of fouling control.

14c - Garbage should be kept to a minimum and incinerated. Food should be handled to prevent spillage from attracting bears and stored in bear-proof containers. Disposal of garbage by products or dead animals should be done in such a way as to minimize attraction of bears in a site approved by DEC.

14d - Remove structures during periods of conflict with species sensitive to disturbance.

Comment: This measure was identified as a mitigating measure for Nori farms in Washington (Washington DNR 1987). In a programmatic Federal Environmental Impact Statement, they identified the following mitigative measures: 1) removing all rafts when not in use for a period of one month

for production, 2) removing nets not actively used for production, 3) removing nets during herring spawning season if over-spawn of herring outside traditional areas was anticipated, 4) removing nets and structures in less than 10 feet of water depth between March 15 until June 15 every year to prevent impacts on juvenile salmon migration.

15. To minimize the impacts of disease, toxicants, or genetic changes on natural stocks:

15a - In the case of disease outbreaks, notify Alaska Department of Fish and Game and follow existing procedures for control of disease. Use of chemicals and disposal of diseased plants or animals must be approved by DEC.

15b - No exotic species of plants or animals can be imported without approval by Alaska Department of Fish and Game. (by law)

15c - Plants and animals shall not be transported between culture areas or from the wild to a culture situation without approval by Alaska Department of Fish and Game. (by law)

16. To minimize adverse impacts to other users:

16a - Remove structures (e.g., Nori nets) during periods of conflict with other fisheries.

16b - Restrict hours or periods of operation to daytime hours if necessary.

17. Performance standards

DNR will attach reasonable performance standards to permits or leases for project development and operation. Performance standards are to ensure permitted area is used for the approved activity, the proposal is economically viable, and the permit or lease is

not held for speculation or removal of a land base from competition. In all cases approved development plans must be adhered to. If the performance standards are not met, the permit or lease may be revoked.

Sec. 46.40.020. Objectives. The Alaska coastal management program shall be consistent with the following objectives:

(1) the use, management, restoration and enhancement of the overall quality of the coastal environment;

(2) the development of industrial or commercial enterprises which are consistent with the social, cultural, historic, economic and environmental interests of the people of the state;

(3) the orderly, balanced utilization and protection of the resources of the coastal area consistent with sound conservation and sustained yield principles;

(4) the management of coastal land and water uses in such a manner that, generally, those uses which are economically or physically dependent on a coastal location are given higher priority when compared to uses which do not economically or physically require a coastal location;

(5) the protection and management of significant historic, cultural, natural and aesthetic values and natural systems or processes within the coastal area;

(6) the prevention of damage to or degradation of land and water reserved for their natural values as a result of inconsistent land or water usages adjacent to that land;

(7) the recognition of the need for a continuing supply of energy to meet the requirements of the state and the contribution of a share of the state's resources to meet national energy needs; and

(8) the full and fair evaluation of all demands on the land and water in the coastal area. (§ 4 ch 84 SLA 1977)

Stated in *Hammond v. North Slope Borough*, Sup. Ct. Op. No. 2499 (File No. 5550, 5558), 845 P.2d 750 (1982).

Sec. 46.40.030. Development of district coastal management programs. Coastal resource districts shall develop and adopt district coastal management programs in accordance with the provisions of this chapter. The program adopted by a coastal resource district shall be based upon a municipality's existing comprehensive plan or a new comprehensive resource use plan or comprehensive statement of needs, policies, objectives and standards governing the use of resources within the coastal area of the district. The program shall be consistent with the guidelines and standards adopted by the council under AS 46.40.040 and shall include:

(1) a delineation within the district of the boundaries of the coastal area subject to the district coastal management program;

(2) a statement, list, or definition of the land and water uses and activities subject to the district coastal management program;

(3) a statement of policies to be applied to the land and water uses subject to the district coastal management program;

(4) regulations, as appropriate, to be applied to the land and water uses subject to the district coastal management program;

(5) a description of the uses and activities which will be considered proper and the uses and activities which will be considered improper with respect to the land and water within the coastal area;

(6) a summary or statement of the policies which will be applied and the procedures which will be used to determine whether specific proposals for land or water uses or activities shall be allowed; and

(7) a designation of, and the policies which will be applied to the use of, areas within the coastal resource district which merit special attention. (§ 4 ch 84 SLA 1977)

Opinions of attorney general. — The adoption of forest practices regulations by the Department of Natural Resources is 11 AAC 95 has completely precluded the coastal policy council's regulations. § AAC 80 100, in regulating timber harvest and processing in the coastal area. April 20, 1981. Op. Atty Gen.

The allocation of responsibility for promulgation of the forest practices regulations in coastal management consistency provisions is sufficiently unclear that it is appropriate for resolution by the

adoption of regulations since differing policy considerations emphasized in the Forest Practices Act, the Coastal Management Act, and proposed permit reform regulations will be served to a greater or lesser extent by assigning responsibility for interpreting and applying the forest practices regulations to more than one agency and under a particular result is not compelled under the various pieces of authorizing legislation. April 20, 1981. Op. Atty Gen.

ated in Hammond v. North Slope
gh, Sup. Ct. Op. No. 2499 (File No.
5558), 645 P.2d 750 (1982).

Sec. 46.40.040. Duties of the Alaska Coastal Policy Council.

Through the public hearing process and the recording of the minutes of the hearings, the Alaska Coastal Policy Council shall

(1) by regulation, adopt under the provisions of the Administrative Procedure Act (AS 44.62) not later than April 15, 1978, for the use of and application by coastal resource districts and state agencies for carrying out their responsibilities under this chapter; guidelines and standards for

(A) identifying the boundaries of the coastal area subject to the district coastal management program;

(B) determining the land and water uses and activities subject to the district coastal management program;

(C) developing policies applicable to the land and water uses subject to the district coastal management program;

(D) developing regulations applicable to the land and water uses subject to the district coastal management program;

(E) developing policies and procedures to determine whether specific proposals for the land and water uses or activities subject to the district coastal management program shall be allowed;

(F) designating and developing policies for the use of areas of the coast which merit special attention; and

(G) measuring the progress of a coastal resource district in meeting its responsibilities under this chapter;

(2) develop and maintain a program of technical and financial assistance to aid coastal resource districts in the development and implementation of district coastal management programs;

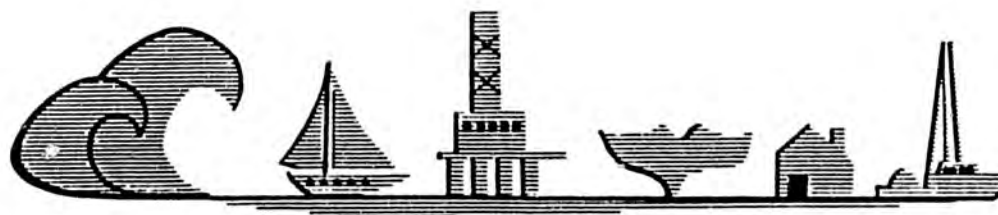
(3) undertake review and approval of district coastal management programs in accordance with this chapter;

(4) initiate a process for identifying and managing uses of state concern within specific areas of the coast;

(5) develop procedures or guidelines for consultation and coordination with federal agencies managing land or conducting activities potentially affecting the coastal area of the state. (§ 4 ch 84 SLA 1977; am § 1 ch 129 SLA 1978)

Alaska Coastal Management Program

1986
Annual Report



State of Alaska
Office of the Governor
Division of Governmental Coordination

Steve Cowper, Governor
January 1987

Introduction

The purpose of this document is to report to the Alaska State Legislature and the public on major actions and activities supported by the *Alaska Coastal Management Program* during 1986.

With the passage of the Alaska Coastal Management Act in 1977, local governments, rural regions, and the State of Alaska began working together to cooperatively manage the use and protection of Alaska's coastal resources. Since 1977, 34 coastal communities and regions have been participating with the state in coastal decisions and preparing plans which specifically address coastal development in their areas. The *Alaska Coastal Management Program* has been an important tool to help the State of Alaska ensure that state interests in coastal development are met, especially in federal actions which affect Alaska's coastal resources and communities.

The *Alaska Coastal Management Program* is designed to:

- bring a broad perspective to decisions on coastal land and water uses
- provide necessary information for use in decision-making
- provide a forum where conflicts can be identified and resolved
- enhance the State of Alaska's role in federal resource decisions and the role of local governments in state and federal decisions, and
- improve the timeliness and coordination of permitting decisions by the state.

Coastal Management: The Legislative Framework

Coastal management planning began with the federal Coastal Zone Management Act of 1972. In the Act, Congress stated its intent to "develop a national program for the management, beneficial use, protection, and development of land and water resources of the nation's coastal zone." The overall goal of the program is a *proper balance of resource development and protection*.

The federal Act encourages states to develop state coastal management programs tailored to their needs and interests. Two incentives are provided. First, the Act authorizes grants to states to develop and implement their programs. Second, the Act requires the federal government, in its discretionary actions, to be consistent with state programs.

The Alaska Coastal Management Act was then passed in 1977 to provide for the orderly and balanced development of Alaska's coast, with full opportunity for the involvement of coastal residents in decisions.



The Alaska Coastal Management Program

The State of Alaska and coastal communities, which are called *coastal districts*, work cooperatively to develop and implement Alaska's coastal management program. Coastal districts include:

- organized boroughs that exercise planning authority
- unified home rule municipalities
- home rule cities, first-class cities, and under certain circumstances, second-class cities
- regional coastal resource service areas directed by elected planning boards.

The Alaska Coastal Policy Council sets policy for the *Alaska Coastal Management Program* and approves coastal district programs. The Coastal Policy Council represents both state and local interests. The Council's membership includes seven state agency representatives and nine locally elected officials appointed by the Governor from nominations submitted by municipalities.

The Governor's Division of Governmental Coordination acts as staff to the Coastal Policy Council, coordinating the development, review, and approval of district programs.

The Coastal Policy Council adopted *standards* for development in the coastal area. The standards are general policies guiding various kinds of coastal development. These standards form the state program in areas where district programs have not been developed and approved by the Coastal Policy Council. Moreover, coastal districts must consider the state coastal management standards in the development of their district programs.

Standards have been adopted for the following topics:

- coastal development
- geophysical hazard areas
- recreation
- energy facilities
- transportation and utilities
- fish and seafood processing
- timber harvest and processing
- mining and mineral processing
- subsistence
- habitats
- air, land, and water quality
- historic, prehistoric, and archaeological resources

District Planning

Districts develop coastal management programs that include a resource inventory, a statement of the district's boundaries, policies for coastal development, and methods for implementing the program. The districts follow a *public participation and review* process specified in state guidelines. This process includes the development of two documents that are widely distributed for public review: the public hearing draft and the conceptually approved draft.

Some coastal areas have unique or significant values or uses associated with them. The Coastal Policy Council has the authority to adopt special management plans for these areas which merit *special attention*, which may be located either inside or outside of coastal districts.

After extensive public review and Coastal Policy Council approval, coastal district programs are submitted for the approval of the federal Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management (OCRM). These submittals are processed either as routine program implementation actions or as amendments to the *Alaska Coastal Management Program*. A determination by OCRM that a district program is an amendment initiates an extensive additional review by OCRM.

Once state, local, and federal approvals are granted, the programs are used to guide land and water uses and activities that have a direct and significant impact on coastal waters.

Program Implementation

Until district coastal management programs are developed and approved, state resource agencies use individual agency authorities to implement the *Alaska Coastal Management Program* standards in coastal areas of the state. Once district programs are fully approved, planning and management actions of state agencies must be consistent with the standards and with applicable district programs; the actions of districts must also be consistent with their coastal management programs.

Under the *Alaska Coastal Management Program* and the state consistency review process regulations (6 ACC 50), the Division of Governmental Coordination (DGC) schedules and coordinates agency review of all required state permits for projects located in Alaska's coastal area. DGC seeks to achieve agency consensus on project approvals. Once a proposed coastal development project has been found consistent with applicable standards of the *Alaska Coastal Management Program* and specific agency permit requirements, project permits are issued. The majority of projects reviewed for consistency are approved in review timeframes of either 30 or 50 days. DGC maintains regional offices in Anchorage, Fairbanks, and Juneau for convenient access by development project applicants. Having regional offices also facilitates timely project reviews and permit issuance by state resource agency personnel having the greatest familiarity with the natural resources of each region. The result of this process is that the time and effort needed to obtain state approval for a variety of permits is significantly limited, especially for projects requiring several federal and state approvals.

The consistency review process for coastal projects serves to:

- streamline and expedite reviews and decisions on coastal development projects
- establish uniformity in the state's comments and decisions on proposed projects, including direct federal actions or federally permitted development projects
- eliminate repetitive review decisions
- provide opportunity for public and local participation in state decisions
- assist applicants in the processing of state and federal permits
- achieve balanced, factually documented decisions including consideration of the costs and benefits of requiring a particular stipulation
- provide a mechanism for resolving conflicts between agencies, the applicant, and the local community, and
- render a conclusive consistency determination for coastal projects that must be reviewed for consistency with the *Alaska Coastal Management Program*.

1986 Progress Report

A summary of *Alaska Coastal Management Program* and district achievements in 1986 follows. More detailed information on the current

status of individual coastal district programs and district activities in 1986 is provided in the next section of this report.

Coastal Policy Council Actions

In 1986, the Coastal Policy Council approved three coastal district programs, three amendments to programs, and two plans for areas which merit special attention. The Coastal Policy Council approved the *City and Borough of Juneau* coastal management program, the *Northwest Arctic coastal resource service area* coastal management program, the *City of Valdez* coastal management program, and an amendment to the *City of Cordova* coastal management program. To

address federal concerns with the *Aleutians East* and *Bristol Bay* coastal resource service area programs, which were approved by the state in 1985, the Coastal Policy Council approved amendments to these two programs. The Coastal Policy Council also approved plans for two areas which merit special attention: the *Juneau downtown waterfront* and the *Eyak Lake* area adjacent to the *Cordova* coastal district.

8. Oregon Coastal Management Program Summary

Program Summary

The Oregon Coastal Management Program (OCMP) is part of Oregon's statewide program for coordinated land use planning. The program is a partnership between local governments and state and federal agencies to resolve general and often competing interests through land use plans and implementing measures for all lands in Oregon's coastal zone. The program is based primarily on the Oregon Land Use Planning Act (ORS 197) and its requirements including the statewide planning goals and requirements for state-approved comprehensive plans. The program also includes specific resource management authorities in other state laws.

The statewide planning goals are regulations adopted by the Land Conservation and Development Commission (LCDC) which set minimum standards for comprehensive planning and other government decisions affecting land use. The goals also express the state, regional, and national interests in land use. Four of the goals set specific standards for planning of coastal resources including estuaries, shorelands, beaches and dunes, and the ocean.

Comprehensive plans developed and administered by coastal cities and counties are the primary vehicle for implementing the goals. Plans must be fully coordinated with the needs and policies of state and federal agencies, special districts, and the public. Once approved by LCDC, a plan serves as the state's standards for all land use decisions within the geographic area it covers.

Several state laws for management of coastal resources are also included in the Oregon Coastal Management Program. These include the Removal-Fill Law, which regulates alterations to estuaries, lakes and other waterways, and the Oregon Beach Bill which regulates uses and alterations along the ocean shore.

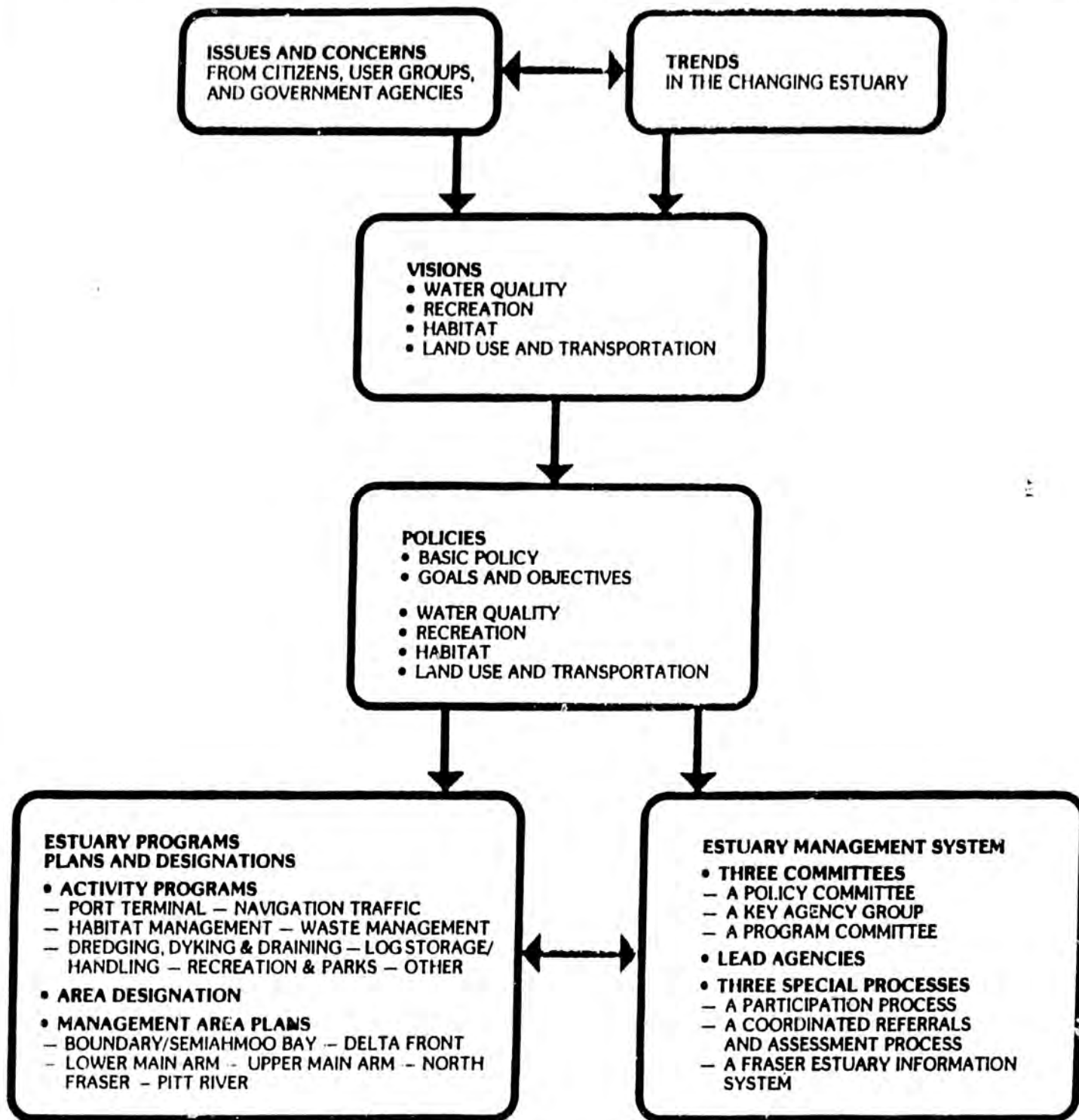
Together, the goals, comprehensive plans, and state statutes express particular concern about the importance of protecting estuarine, agriculture and timber resources; about the needs for water-dependent development, port development, energy production and commercial fishing; about flooding and erosion hazards associated with development in shoreland and beach and dune areas; and about recreational access, urbanization and the maintenance of open space. Through the goals, coordinated comprehensive plans and provisions of other state statutes, Oregon has a program which addresses these issues.

The objective of the OCMP is to develop, implement, and continuously improve a management program which will, as appropriate, preserve, conserve, develop and restore the natural resources of the coastal zone. The program attempts to create and maintain a balance between conservation and development, and between conflicting private and public interests. This balance is intended to assure the greatest benefits to this and succeeding generations of Oregonians.

Oregon's participation in the federal coastal zone management program has resulted in increased technical, financial and legal assistance to local governments, regional agencies and state agencies in managing coastal resources. The state has received funds to foster the development and implementation of coordinated comprehensive plans, to acquire the South Slough Estuarine Sanctuary, to create a technical data base for use in making more informed decisions, and to identify and plan for the impacts of coastal energy development. The state expects that future funds will be available for these purposes as well as for ongoing research, public education and for beach access. Finally, because Oregonians have taken the lead in wisely and responsibly managing their coastal resources, participation in the federal program assures that, under federal law, actions of federal agencies which affect the coastal zone will be consistent to the maximum possible extent with Oregon's program.

9. Fraser River Estuary Management Program - flowchart (from
"A Living River By the Door")

FRASER RIVER ESTUARY MANAGEMENT PROGRAM



10. Aquaculture Industry Overview: Statistics

AQUACULTURE IN BRITISH COLUMBIA

FIGURE 1- FARM SITES (OPERATION AND INVESTIGATION)
MAY, 1988

NORTH COAST

	Operate Farm		Investigate Site	
	Approved	Applied	Approved	Applied
Finfish	4	11	6	29
Shellfish	2	0	0	0

MID-COAST

	Operate Farm		Investigate Site	
	Approved	Applied	Approved	Applied
Finfish	0	2	0	3
Shellfish	0	1	0	0

VANCOUVER ISLAND

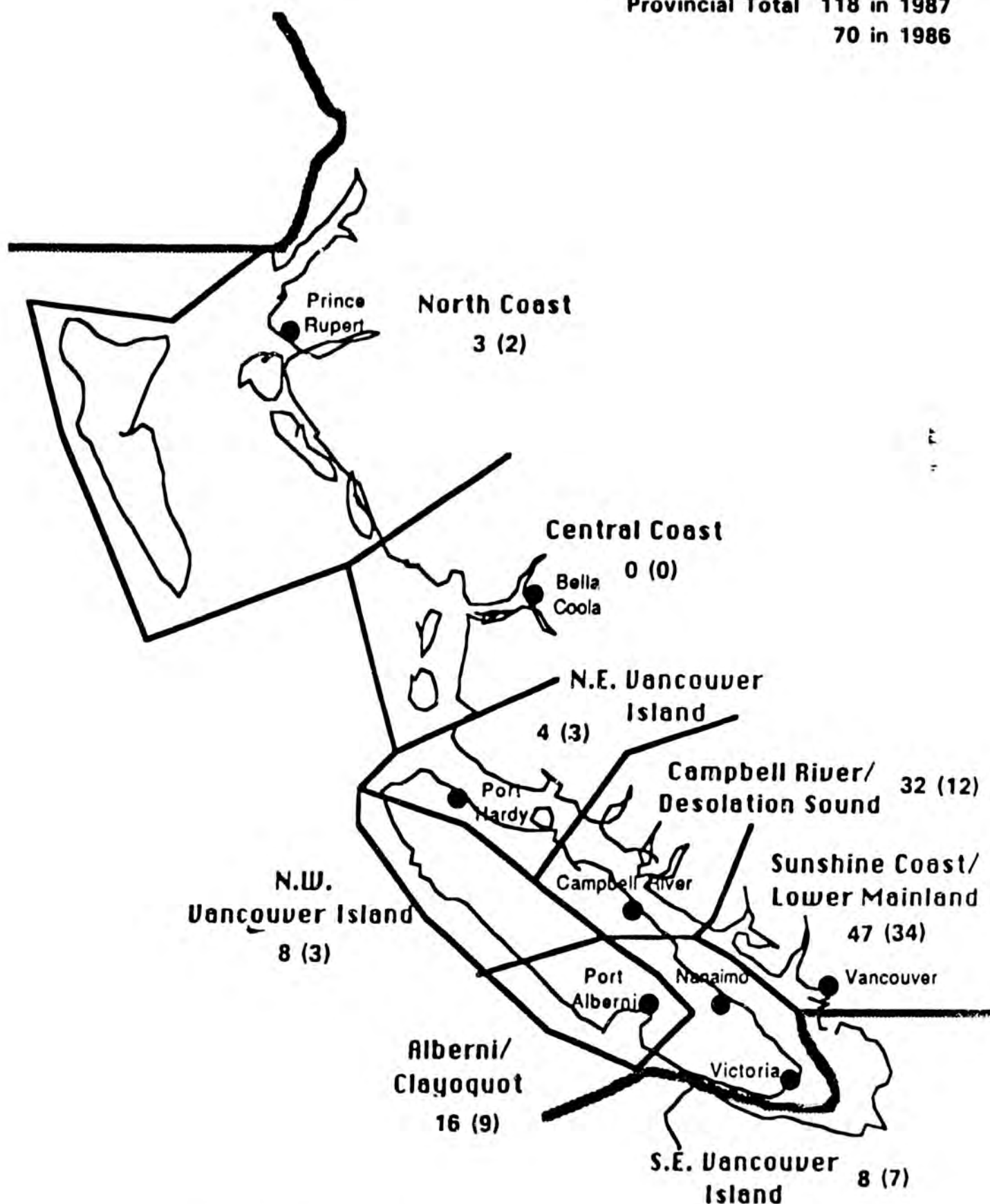
	Operate Farm		Investigate Site	
	Approved	Applied	Approved	Applied
Finfish	98	101	133	24
Shellfish	296	83	0	1

LOWER MAINLAND

	Operate Farm		Investigate Site	
	Approved	Applied	Approved	Applied
Finfish	76	33	18	18
Shellfish	106	32	3	2

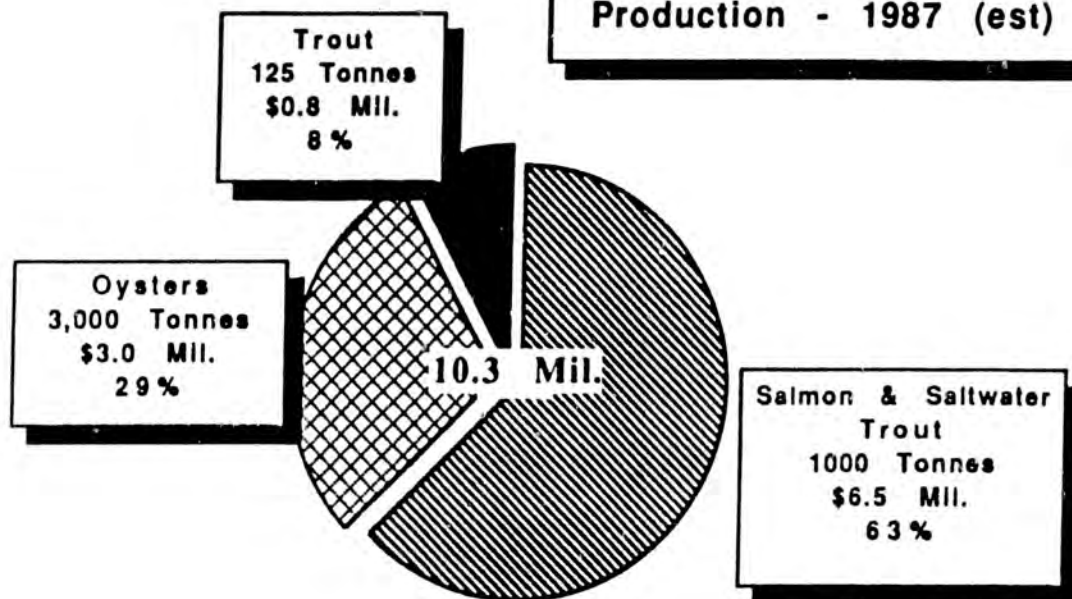
DISTRIBUTION OF OPERATING FARMS IN BRITISH COLUMBIA

Provincial Total 118 in 1987
70 in 1986

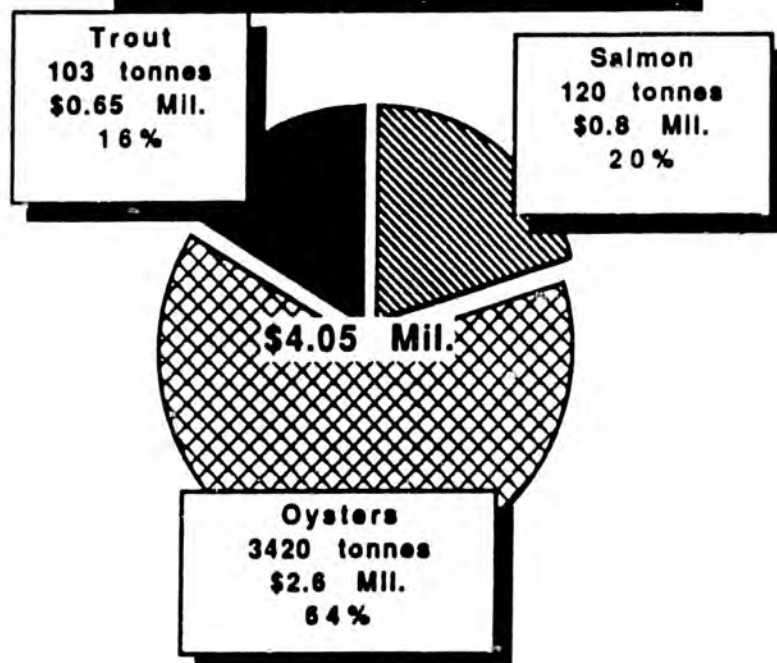


Up to November 30, 1987. Numbers in parentheses were the farms operating up to October 30, 1986.

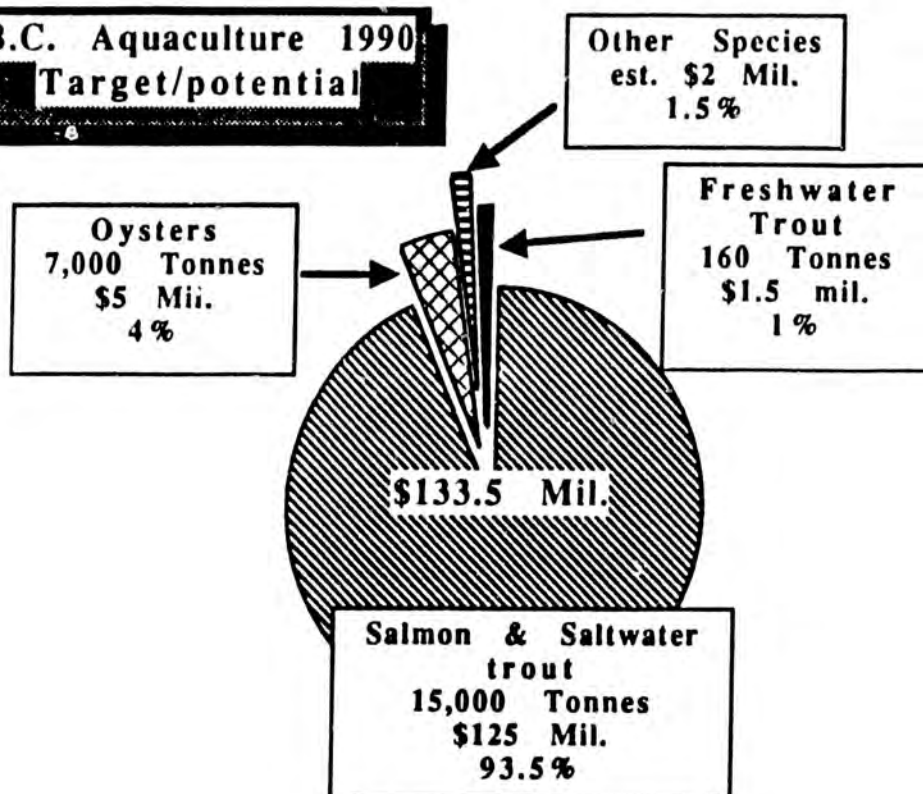
**B.C. Aquaculture
Production - 1987 (est)**



**B.C. Aquaculture Production -
1985**



**B.C. Aquaculture 1990
Target/potential**



11. Excerpt from Summary of Recommendations of Coastal Zone
Resource Sub-Committee (May 1977)

Summary of Coastal Zone Resource Sub-Committee
Recommendations:

1. Early consideration should be given to the establishment of an ongoing inter-governmental mechanism, comprised of the appropriate governmental agencies, whose fulltime commitment would be to:
 - A) Provide coordinative and advisory function to coastal related programs and plans or requests of government and non-governmental organizations, including the dissemination of information to the general public;
 - B) Identify regional resource management strategies and options and develop operating guidelines for integrated coastal resource management and protection;
 - C) Assess current initiatives, such as the joint federal/provincial study program on the Fraser River and Estuary, with regard to their applicability to other regions of the coast;
 - D) Direct the development and implementation of an integrated coastal resource management program by coordinating the following tasks:
 - i) The preparation of a coastal resource folio or atlas which provides an overall perspective of the coastal zone, including its physiographic, biotic, oceanographic and climatic regions, and boundaries, as well as associated coastal processes and natural resource values and uses. The scale of this folio should be at the "broad resource allocation level".
 - ii) The development and implementation of a "biophysical" inventory program for the coastal zone. Particularly for use with the shoreline and marine components of the coastal zone, this program will require:
 - a) The development, testing, and application of inventory methodologies and classification systems;

- b) The coordination of current and presently scheduled research and inventory efforts which may be pertinent to the program;
 - c) The establishment of research programs oriented towards in-depth examination of selected factors within biophysical resource systems;
 - d) The development of stronger liaisons between information generating and informed using agencies to ensure that the information is of a format and scale facilitating its immediate and maximum use;
 - e) The identification of appropriate criteria (classification systems) for such interpretations as use capability, use suitability, impact sensitivity, and potential harvestability.
- iii) The analysis of specific problems recurring in the coastal zone and the identification of priority geographic and subject areas requiring detailed inventory, research and management efforts.
- iv) The review of existing referral systems with a view towards identifying specific changes that can and should be made. Aspects that require further investigation include:
- a) The simplification of some referral systems and the expansion of others to include the interests of additional agencies;
 - b) The improvement of some referral systems with respect to quality and quantity of information circulated so that recipients can make informed judgments;
 - c) The addition of increased resources and analytical capabilities of some of the participants in referral systems, in order that these agencies can give adequate consideration to referrals.

- v) The identification, in cooperation with the above activities, of the role and orientation that research should take in the coastal zone. Areas requiring further collaborative investigation include:
- a) The design of a system to identify the biological and physical variables that should be routinely monitored in specified coastal resource systems;
 - b) The identification of specific proposed or ongoing developments suitable for monitoring experiments applicable to future impact prediction;
 - c) The assessment of the application of advanced technology to coastal zone management (e.g. the Landsat satellite for reconnaissance inventories and for monitoring of B.C. coastal environment);
 - d) The assessment of existing governmental and university data banks (in cooperation with agencies and experts in this field) with the view to assessing integrated data sets and options for developing an integrated, computerized data management system (storage, retrieval and analysis) for the coastal zone;
 - e) The assessment of existing and future fundamental research needs with respect to biological and physical processes, system interrelations, etc..
- vi) The development of programs for public information, and the education of governmental personnel in the field of coastal zone management. Number of options could be pursued;
- a) Educational programs (lectures, courses, multimedia presentations and field demonstrations, etc.) emphasizing: - the significance of the coastal zone, its resources and its problems; - the necessity of establishing a biophysical basis for coastal resource management decisions. (For example, current efforts to communicate

these concepts to coastal regional districts, key coastal municipalities, key provincial agencies, coastal oriented private industry and public interest groups should be expanded).

- b) Encouraging interdisciplinary programs for resource management. Scholarships for graduate students interested in coastal resources should be offered and provision should be made for study leaves for government employees to take courses and degree programs in this field.
- c) Procedures for expediting the communication of research results and management experience elsewhere should be enhanced. These should be implemented in addition to training programs, and would involve provisions for reporting on contract research, for mounting and attending conferences, and for visiting other agencies of government.

vii) Consistent with the various management decisions to be made, existing socio-economic data should be collected, analyzed, and specific data needs should be identified. Future study programs should include the development of methodologies for generating socio-economic information and for integrating it with biophysical data.

- 2. The initial focus for the above initiatives should be in the Strait of Georgia region, and more specifically should concentrate on the southeast coast of Vancouver Island, the Lower Mainland and Howe Sound.
- 3. Existing biophysical data and socio-economic data (as it is generated) should be made available to local jurisdictions in a readily usable form, (e.g. guidelines for the use of biophysical data in decisions regarding land and resource use management should be developed). In addition, such methods as the provision of technical expertise to assist coastal municipalities and regional districts with the zoning and development control processes should be considered. Similarly, general policy and management guidelines for the coastal zone should also be developed and distributed to development oriented agencies (government and private) to guide them

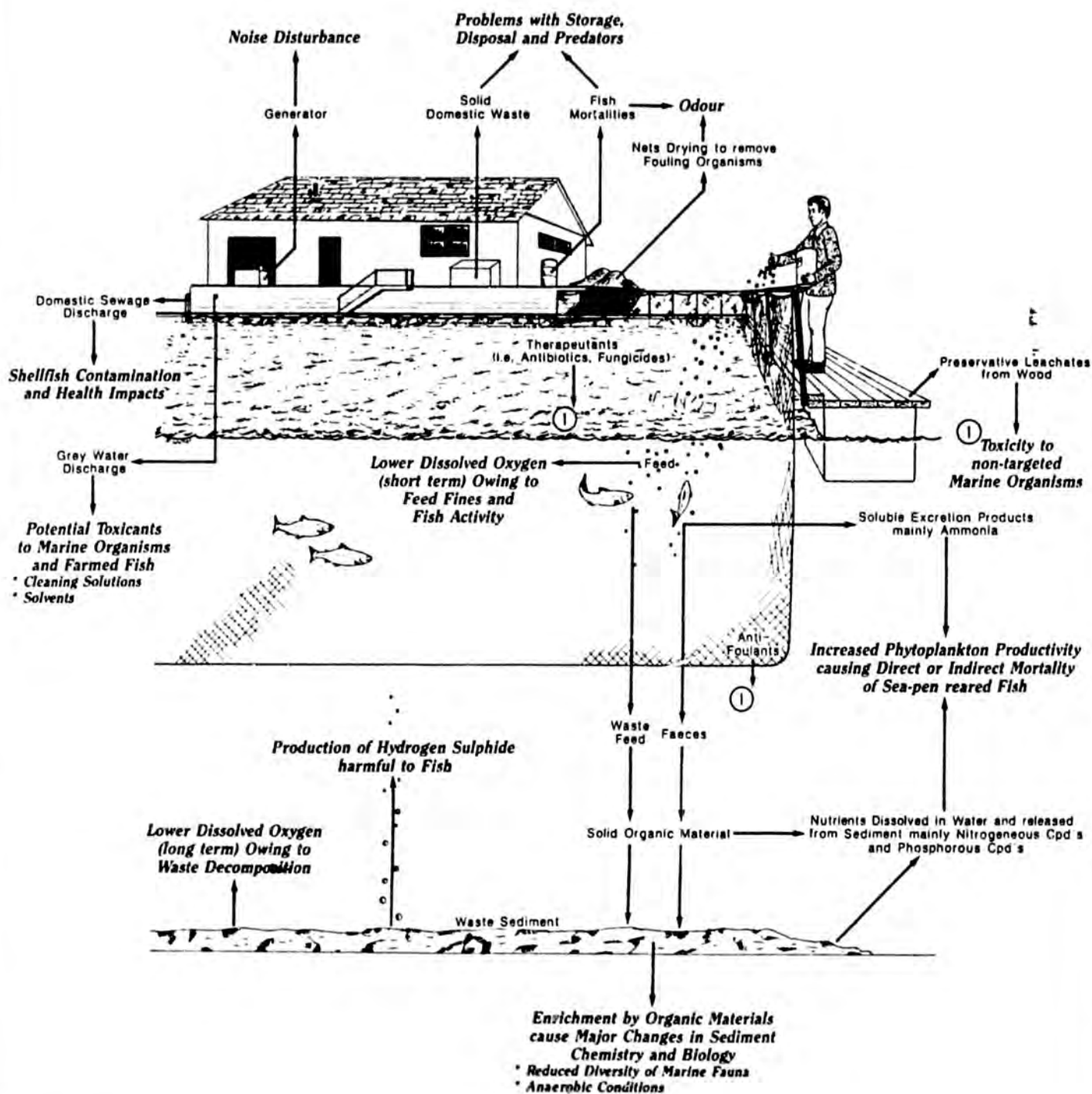
in planning the location and scale of proposed facilities. For example, consideration should be given to the desirability of developing an impact assessment policy for the coastal zone along the lines of the recent provincial order-in-council made in respect of Sturgeon and Roberts Banks and Boundary and Semiahmoo Bay.

4. Coastal resource management plans which designate the uses of land and water resources should be developed. Since the formulation and implementation of such plans would be greatly facilitated by the provision of background information - biophysical, social, economic - in a form which allows resource use options including their benefits and costs to be easily identified and assessed, there is an obvious need to establish a close-working relationship between this management function and the function of information generation and dissemination as identified in Recommendation No. 1 above.
5. Ongoing financial and administrative mechanisms at both the federal and provincial levels should be considered to facilitate the acquisition of lands and features which merit conservation but are not protectable through existing mechanisms.
6. The public should have the opportunity to participate in coastal resource use decisions. Approaches suggested for ensuring the representation of an informed public and decision-making include:
 - A) The establishment of a central and/or regional information centre(s) on coastal resource management;
 - B) The provision that those agencies or government which reflect the range of public interests have an opportunity to participate in the decision-making process;
 - C) The provision of an opportunity for affected interests to participate directly in the decision-making process;
 - D) The provision of funding to public interest groups in order that they may develop position papers and education programs.
7. There are a number of initiatives that can and should be pursued on an individual agency basis. Those identified to date include: the incorporation of ecological criteria into the resolution of problems associated with accreted

lands, particularly with respect to acquired private property rights and land use; and the controlling of unauthorized long-term use of Crown lands (trespass).

12. Possible impacts of a salmon farm upon the marine environment (courtesy Ministry of Environment and Parks)

POSSIBLE IMPACTS OF A SALMON FARM UPON THE MARINE ENVIRONMENT



13. Commentary on Washington State Timber, Fish, Wildlife Agreement.

Appendix 13

Commentary on Washington State Timber, Fish, Wildlife Agreement

The origin of the TFW agreement can be traced to a recent U.S. federal court decision upholding certain Indian treaty rights which caused the forest industry to be concerned to the point that it looked for creative options in order to alleviate the risk of a potential loss in higher courts. The result, through application of principles of consensual dispute resolution, was an agreement hammered out through hundreds of hours of meetings among representatives who were committed to achieving their own positive objectives, rather than attaining absolute victory over those interests they perceived to be adverse to their own. The process recognized the inherent limitations of legislation in the control of human conduct. While this office is of the opinion, and recommends, that public management systems have their bases in legislation, wise management of the physical environment must recognize the human component as critical to achieving the legislative objectives. The TFW process did just that.

The process began with informal discussions that included all known interest groups and agencies. Out of those discussions, "which eventually involved all the appropriate State agency people, industry, environmental folks and tribal representatives," came an agreement for an exploratory meeting.

The purpose of the exploratory meeting lasting two and half days was to define positive goals for each group: "We agreed that anybody who stayed in the process after the two and a half days, had to be committed to achieving all of the goals. If you couldn't subscribe to that, you took yourself out of the process. And if you stayed, agreeing to abide by the goals, decisions would be made by consensus, not by vote."

Thus was achieved a fundamental shift in the orientation of public resource regulation - rather than a series of commands from courts or government agencies, the participative process

by which regulatory goals were defined gave each group a personal stake in the success of the program. Jim Waldo, a Seattle attorney who was one of the key architects of the TFW agreement, has described it as follows:

"It took six arduous months to complete the building of the TFW process. The entire premise of forest management in the state of Washington was changed from a regulation based system (in other words if it's in the regulation you're going to have to do it, but if it's not in the regulations you don't have to do it). From this we went to a system that is based on managing towards certain goals and far more sensitive to site-specific situations, location by location. Regulations are still there, but only as a stop-gap where the parties find it impossible to find any other way to conduct their business."

"We also set up a priority matrix where we have concerns about how an operation is conducted. And instead of trying to deal with it by regulation, we identified where those conditions are likely to occur and through a series of fundings at the state level and agreements between industry, environmental groups, the tribes, and state agencies, we have interdisciplinary teams that go out and have a look at those proposed timber cuts. And they don't start with a set of regulations. They start with a set of concerns, or issues about those cuts, and they tailor how that cut is going to occur. We've been at this process informally for about five months now, with eight or nine of these interdisciplinary teams in the field."

The ultimate goal of the TFW process was to create a management environment in which cooperative relationships based on mutual respect and understanding supercede the former system based on fractious, adversarial postures and continual attempts to crush opponents' interests through legislation and litigation. As Jim Waldo expressed it: "Ultimately, it means developing a system where relationships improve over time so that pretty soon the way you solve problems is to pick up the telephone."

It should be remembered that legislation did have its part in the TFW process. The ultimate agreement forged out among all of the groups involved, and specifying a process involving scientific, managerial, and policy input, with a research and monitoring component, and the previously

mentioned "inter-disciplinary teams", passed into legislation through the State Legislature and Senate with no opposing votes.

It should again be stated that American experience with negotiated dispute resolution, as with coastal management, has not been utopian. Differences in governance systems between the U.S. and Canada must be considered in any attempt to "institutionalize" consensual dispute resolution mechanisms. As with coastal management, this report attempts to isolate the principles of fairness within specific contexts. Dorcey and Riek in a paper entitled "Negotiation-based Approaches to the Settlement of Environmental Disputes in Canada" have observed a number of differences between Canadian and American governance systems which are worth reviewing:

- Property rights and due process [apart from criminal matters] are not enshrined in the constitution in Canada.
- The constitutional division of responsibilities for natural resources gives the provinces a much bigger role than states in the Canadian federal system.
- Federal and provincial government executives (i.e. Cabinets) in Canada have much greater freedom to act; they are not so constrained by the courts and legislatures as in the U.S.
- The discretionary nature of Canadian legislation and the weak development of administrative compliance legislation have resulted in much less use of the courts in Canada.
- The courts in the U.S. have historically taken a more interventionist role and this is only slowly evolving in Canada under the influence of the new Charter of Rights and Freedoms.
- There is a greater tradition of self-governance and litigation that grew out of the revolution in the U.S., in contrast to the tradition in Canada that the government has always been there and the Crown can do no wrong nor be sued.

Dorcey and Riek take note of two phenomena peculiar to the different legislative environments in Canada and the U.S.: firstly, in Canada there is much less use of bargaining and negotiation "that is stimulated by a desire to avoid the courts". (This can be seen to have been the major impetus toward success in the Timber, Fish, Wildlife Agreement; unfortunately it was a stumbling block to a similar agreement to enable aquaculture development to proceed in Washington State - the court system was perfectly acceptable for some parties who believed they would prevail in a legal contest.) At the same time, Dorcey and Riek note that smaller Canadian bureaucracies, operating under "highly discretionary legislation" with relatively weak powers of administrative compliance, have likely increased the feasibility of useful, productive bargaining and negotiation.

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LAWS OF ALASKA

1990

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CSHB 432(Res)

Chapter No.

91

AN ACT

Prohibiting finfish farming; and providing for an effective date.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

THE ACT FOLLOWS ON PAGE 1, LINE 9

Permitted to become law without signature
Actual Effective Date: July 1, 1990

AN ACT

Prohibiting finfish farming; and providing for an effective date.

* Section 1. FINDINGS. Based on a legislative examination of the potential effects of allowing finfish farming in the state on the common property resources and on the overall economic well-being of the state; the number of serious concerns associated with finfish farming and the need for study of finfish farming that has caused the legislature to enact two moratoriums on finfish farming and establish a nonlegislative task force to study the issue and to report its findings and recommendations to the legislature; a review of the final report of the Alaska Finfish Farming Task Force which notes several possible benefits and some serious risks of finfish farming; the need for the legislature to take action before the current moratorium on finfish farming expires on July 1, 1990; the recommendation of the task force that the legislature not extend the moratorium, but make a final determination to either allow or prohibit finfish farming; and the testimony and evidence received; the legislature finds that

(1) the state has the healthiest stocks of wild salmon and other wild finfish in the world and benefits from thriving commercial, sport, and subsistence fisheries for these fish and a growing tourism industry related to sport fishing;

(2) the people, economy, and environment of the state are dependent in large measure upon the continued health of the state's wild finfish resources;

Chapter 91

(3) serious risks are posed by commercial finfish farming, including the spread of disease among wild fish by farmed fish, genetic intermingling of wild fish stocks with genetically manipulated farmed fish, degradation of water quality near finfish farms, and land use conflicts over the siting of commercial finfish farms;

(4) the state has invested significantly in marketing efforts to promote Alaskan finfish as wild and natural fish products, and this investment in developing the reputation of Alaskan finfish would be lost by allowing commercially farmed finfish to be produced and marketed from Alaska;

(5) the cost to the state to regulate the commercial finfish farming industry would be high;

(6) few jobs would be generated by a commercial finfish farming industry in the state;

(7) the state is responsible for ensuring the protection and wise use of the renewable natural resources of Alaska and providing a framework for a sound economy;

(8) a long-term decision must be made regarding the future of commercial finfish farming in the state;

(9) avoiding harm to the state's wild finfish, land, and water resources must take precedence over the development of a new speculative and potentially harmful commercial finfish farming industry;

(10) the best interests of the state are served by prohibiting commercial finfish farming.

* Sec. 2. AS 16.40 is amended by adding a new section to read:

Sec. 16.40.210. FINFISH FARMING PROHIBITED. (a) A person may not grow or cultivate finfish in captivity or under positive control for commercial purposes.

(b) This section does not restrict

1 (1) the fishery rehabilitation, enhancement, or development
2 activities of the department;

3 (2) the ability of a nonprofit corporation that holds a
4 salmon hatchery permit under AS 16.10.400 to sell salmon returning
5 from the natural water of the state, as authorized under AS 16.10.450,
6 or surplus salmon eggs, as authorized under AS 16.10.420 and 16.10.-
7 450;

8 (3) rearing and sale of ornamental finfish for aquariums or
9 ornamental ponds provided that the fish are not reared in or released
10 into water of the state.

11 (c) In this section "ornamental finfish" means fish commonly
12 known as "tropical fish," "aquarium fish," or "goldfish," that are
13 imported, cultured, or sold in the state customarily for viewing in
14 aquaria or for raising in artificial systems, and not customarily used
15 for sport fishing or human consumption purposes.

16 * Sec. 3. This Act takes effect July 1, 1990.
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11/18/91

Dear Senator Eliason:

I came across this item
in the International Herald Tribune
last week about the Norwegian
government bailing out fish
farmers. makes it tough on Alaska
fishermen! Thought you'd be
interested in seeing this.

Regards
Drake Kaplan

EUROPEAN TOPICS

U.K. Health Drink Pulled From Stores

The British police ordered all bottles of Lucozade, a popular brand of health drink, to be withdrawn from stores and returned to suppliers Wednesday.

The police arrested seven men and three women during raids in four cities after uncovering allegations that suspected animal rights activists had plotted to contaminate bottles of the orange-colored effervescent drink.

SmithKline Beecham, the manufacturer, said it estimated that more than 5 million bottles would be withdrawn on Wednesday. The company said the alleged contamination plan affected only bottles on shelves, not those with wholesalers, in warehouses, in the distribution chain or at factories. Both the police and SmithKline said they were uncertain what contaminant might have been used.

SmithKline Beecham, a pharmaceuticals group, is believed to be a target for animal rights activists because it uses animals for laboratory research. The incident was described as the latest in a series of "consumer terrorism" cases to hit British companies.

A police spokesman said: "It is extremely unlikely that contaminated bottles have already been placed on shelves, but other people not yet arrested may still try to plant contaminated bottles."

European Snowcaps Face Warming Trend

Global warming could leave many European mountains snowless by 2100, environmental experts said this week. David Pitt and Sten Nilsson, authors of the book "Mountain

World in Danger," said tourism would be the first casualty of a change in climate.

"The predictions on global warming indicate that more and more villages as you move up in altitude would be affected by loss of snow," Mr. Pitt said at a press conference in Geneva. "Many resorts which have built their industries around skiing could be affected."

The authors, whose study was backed by the United Nations Environment Program and the UN-sponsored Alp Action group, predicted that a northward move in European rainfall patterns would destroy the ice-covered area of the Earth.

Around Europe

Norway's government and banks have agreed to rescue fish farmers from bankruptcy in a deal that may let East European countries buy a 32,000-ton surplus of frozen salmon at rock-bottom prices. The government is to provide a loan of 400 million kroner (\$65 million), while a consortium of 10 banks — huge creditors of the fish farmers — will provide 335 million kroner. The frozen salmon "will be sold to noncommercial markets, possibly to East Europe and the Soviet Union," a Fisheries Ministry spokesman said.

The waters of Belgium's Schelde estuary must be getting less polluted, because seals have returned to it for the first time in more than 30 years. A couple of seals and their pups have settled in the river northeast of Antwerp, offering an indication that the waters contain more oxygen and less heavy metals than in the past, according to Belgian scientists. But their new home is already threatened, because the area has been earmarked as a dumping site for toxic dredging sludge, according to the Dutch newspaper De Stem.

Sytske Looijen



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APRN

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DRAFT

MEMO

TO: Governor Walter Hickel

THRU: Commerce Commissioner Paul Fuhs

FROM: Donna Parker

RE: WORLD SALMON SUMMIT

Over the past decade the world salmon supply has increased while markets for salmon have remained relatively static. This has caused prices for both wild and farmed salmon to plummet. A WORLD SALMON SUMMIT, hosted by the Governor of Alaska, could be used to forge agreements between the international salmon players that would expand market opportunities and increase the price paid to salmon fishermen, farmers and processors.

Enhancement programs in Alaska have enjoyed spectacular success at the same time salmon farmers in Norway, Scotland, Canada, Chile, and Japan have dramatically increased production. Some have concluded that the Alaskan salmon industry should take on the salmon farmers and battle to win back their market share. Such a battle would be a tragic mistake.

All salmon, both wild and farmed, are a wonderful source of protein. Unfortunately, American consumers have yet to be convinced of its outstanding value. U.S. per capita consumption of all meat, poultry and fish products is currently 175 pounds per year. Consumption of salmon is about 1.5 pounds per year. It is a misdirected effort for salmon fishermen and farmers to scrap in the corner for a measly 0.8% of the market. It also confuses the consumer and further erodes salmon market shares.

If we really want the amount of market share necessary to sustain a healthy salmon industry, we have to join forces with the salmon farmers. By pooling our financial resources, we can butt heads with the big boys in the chicken, beef and pork industries.

Only through aggressive promotional campaigns can we persuade more Americans to eat salmon. We can do this by supporting a generic promotion program for all salmon.

The legal mechanism to do this already exists. Under the Fish and Seafood Promotion Act we can form a SALMON MARKETING COUNCIL. This would be funded by a levy on both foreign imports and domestic production and have as a single goal, the promotion of salmon in the American marketplace. More than 40 other commodity groups have found such promotion works including our competitors. In the beef and pork industry which now reap the benefits of having national marketing councils.

This does not reduce the need for the Alaska Seafood Marketing Institute or private company promotion. While a SALMON MARKETING COUNCIL would work to convince American consumers to "Eat Salmon," ASMI could follow-up with an "Eat Alaskan Salmon" campaign.

But no matter how good or healthful our product is, it will not sell itself. If the international players can agree to support the funding of such an effort, we will have gone a long way toward gaining our rightful market share. By increasing the domestic demand for salmon, the state's salmon industry will become less dependent on the Japanese market. By increasing the global demand for salmon, prices will return to levels that will help sustain our economy in a time of reduced oil revenues.

If a WORLD SALMON SUMMIT were hosted in Alaska, it would gain domestic and international prestige for the Alaskan seafood industry. It would also allow the state to wield additional clout in a global market that helps drive the state's economy. Associated press coverage would not only provide marketing leverage, but would help educate state residents on the importance of the seafood industry to the Alaskan economy. And finally, if the major international players are able to forge joint marketing efforts, it may lay the foundation for OPEC-style production agreements which would further help stabilize the price and insure the future high value of salmon.

ALASKA STATE LEGISLATURE · SENATE

SENATOR RICHARD I. ELIASON

LABOR & COMMERCE COMMITTEE, CHAIRMAN

RESOURCES COMMITTEE

RULES COMMITTEE

SPECIAL COMMITTEE ON HIGH SEAS
SALMON INTERCEPTION

SELECT COMMITTEE ON
LEGISLATIVE ETHICS



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TO: Alaska Finfish Farming Task Force

FROM: Senator Dick Eliason

DATE: December 13, 1989

RE: Comments on the Alaska Finfish Farming Task Force's
Draft "Report to the Alaska Legislature"

I would like to commend the Task Force for its dedication and hard work. The job of studying so much in such a short time is a tough assignment. The draft report seems well done and without glaring factual errors. I am concerned however about a few items that need some clarification, and a few that are a bit misleading. I appreciate this opportunity to comment on some of my concerns about the report.

DISEASE

In recommendation number 1 on page 5, the statement that the industry can be accommodated without significant threat of disease to existing stocks if the State continues to meet its responsibilities concerns me. It is true that that will REDUCE the risk of disease problems, but there are always risks remaining due to problems with enforcement of laws and regulations. With fish farms in operation there will always be the potential for lack of compliance which could bring devastation to natural stocks. Unless you can positively guarantee that laws and regs will not be violated, there IS a risk. Furthermore, in dealing with all the variables of biology, pathology, weather conditions, and so on which are beyond human control, foresight, and regulation, there are even more risks. We simply cannot truthfully state that current state regulatory systems eliminate disease risks. I suggest that this recommendation be amended to state that, "The risk of disease can be REDUCED if the State.... ."

GENETICS

I have several comments on the section on genetics. First, it would seem appropriate and useful in the findings section to

provide information on just how many fish typically do escape from farm net pens. The report states that it happens, but the size of the problem is not revealed. There is statistical information, particularly regarding Norway's experience, which would be a valuable addition to this section of the report.

Secondly, the treatment of the concept of "genetic sanctuaries" in the report is troubling. After presenting a long list of serious genetics concerns in the findings section, the report only concludes that we should stick to the state's current genetics policies, and form a committee to make sure those policies are followed. It also "concurs" with the notion of establishing genetic sanctuaries. This seems to be a placebo, and not a real solution to the potential destruction of wild stock genetic material.

After years of experience with fish farming, Norway has found that escaped farm fish spawn in rivers up to 20 kilometers away, and they have declared that fish farms will not be located within 20 kilometers of salmon rivers. In the areas being considered for fish farming in Alaska, primarily Southeast, distances between salmon streams are short. Setting aside areas which are isolated enough to be truly protected from intermingling would be difficult at best. It also seems that even if such sanctuaries could be useful in preservation of some genetic stocks, there is no recognition in the report of the importance of determining which stocks are most crucial, designating the necessary sanctuary areas, and making them off-limits, as a **THE VERY FIRST STEP** in the process of site selection for a fish farm industry. In order to even make the idea of sanctuaries a constructive suggestion, it needs to include details, conditions, and a timeframe. It is misleading to suggest that it is really a solution to the problems and risks recognized in the report's findings.

A further point on the suggested ad hoc committee on genetics: It would be useful to have the report elaborate on the idea; Who will be on the committee? How will it function? And most importantly, will it have some enforcement power? It will need to have some enforcement abilities, and be set up to operate without pressures and influence from those with political and economic interests in the fish farming industry. The committee must have the expertise and clout to make and carry out sound biological decisions.

USER CONFLICTS

On page 14, recommendation number 2 should be revised to state that there should be a state law which clearly spells out that no finfish farming will be allowed in or adjacent to State and federal parks, monuments, and wilderness areas. There is no point to not being definite about whether it should be allowed, or leaving it to some agency to arbitrarily decide on

a case by case basis. The fact is that fish farming is simply NOT compatible with parks, monuments and wilderness areas. Those areas have been given those designations for a reason, and commercial fish farming ventures DO NOT belong there.

COST OF REGULATION

On page 15, the discussion of the cost of regulation should clearly note that since state revenues are on the decline and state expenses are ever increasing, the costs incurred by state government in the start-up, regulation, and monitoring of the finfish farming industry will have to come out of something else. There is no extra money around to simply add money to the budget to cover the new expense. It is most likely that agencies with responsibilities for this new industry (such as Fish and Game and D.E.C.) will be forced to cover the added work out of their own programs. This is particularly distressing as the funding will probably come from trimming the very programs that will need strengthening if fish farming is permitted.

COSTS AND BENEFITS

One serious shortcoming in this section of the report probably stems from the fact that some things have become so well known to you that they seem obvious and were not spelled out in the report for the benefit of those who are not aware of them. It is the lack of anything in the report explaining where the money for fish farming in Alaska would come from. The report does say that since insurance is not likely to be available, it is also unlikely that traditional lending institutions will be willing to finance these ventures. I understand that at your last teleconference you discussed the statement in your report (page 18, (f)) that, "Non-Alaskan investment in the finfish farming industry would lead to the exportation of profits." That only implies that IF there were any non-Alaska investment, some profits would leave the state. It doesn't say whether much or any non-Alaskan investment could be expected.

It is clear from your teleconference discussion that the task force members realize that indeed a very large percentage, perhaps virtually all, of the financing and ownership of any fish farming ventures in Alaska will either be by out-of-state or foreign investors. But nothing in your report would indicate to the reader that this is the case. It does seem that the report is incomplete without acknowledgement of the fact that the only likely source of large-scale investment and ownership in fish farming in Alaska will be large out-of-state corporations, and such groups as the Norwegian fish farming industry which has already expressed eagerness to move into Alaska. I don't believe your report presents all of the most pertinent factors for making a decision about legalization of

fish farming without spelling out who is going to finance and own the industry here.

On page 18, benefit (a) states that, "for every 25,000 pounds of fish, one job is created." I believe that this is a factual error. All of the information I have seen suggests that the average fish farm will employ from two to four people. Perhaps your figures are based on a scenario where fish farms are established in areas with no existing fisheries infrastructure, and where you could assume that a large number of support services jobs, such as fish processing jobs, would be created. This is simply not the case in Alaska. I believe your numbers are far too optimistic about the number of new jobs that could be created.

Also, if you are going to discuss numbers of jobs involved, it would be more useful to use figures to explain it in terms of actual numbers of jobs per farm, rather than per pound of fish. And how well are such jobs likely to pay?

MARKETABILITY OF ALASKA SALMON

Page 24 (a): The word "only" seems inaccurate. It would be better to say that there are three "major" factors. There are others. For example, marketability is also affected by such things as public perception, the image the consumer has of our fish. This was clearly a concern after the Exxon oil spill and for a period of time after the botulism incident in canned salmon several years ago.

GENERAL FINDINGS AND RECOMMENDATIONS

One final comment: I understand that the Task Force may discuss the possibility of recommending an "incremental start-up" of fish farming in Alaska, a sort of "compromise position." I believe that approach by the state would be a cop out. If we have enough reservations about this industry to fear full-scale development of it, then there is simply too much at stake to even begin to dabble in it.

We have the healthiest natural salmon runs in the world here, and thriving commercial, sport and subsistence fisheries which are vitally important to the economy of the state and the lives of many of our citizens. Why jeopardize all that? Furthermore, even incremental start-up would require huge investments of time and money for regs, siting work, pathology and biology, monitoring, etc. We should have learned from past experiences in such things as agricultural development, that there is a tendency to throw good money after bad once you've ventured into something, even if it is ultimately not viable.

This is not a case where free enterprise can be allowed to simply give something a try on its own without affecting anything else. State money would be spent, new threats of disease and genetic intermingling are introduced, markets are affected, siting conflicts begin. With just one farm here, we would never again be able to advertise that if you buy Alaskan salmon you can be sure it is wild, unadulterated salmon. We stand to lose a lot, and calling it "incremental" does not mask the fact that it has begun.

Alaska State Legislature

Senate Resources Committee

Senator Bettye Fahrenkamp, Chairman
Senator Jay Kertula, Vice Chairman
Senator Dick Eliason
Senator Steve Frank
Senator Rick Halford
Senator Arliss Sturgulewski
Senator Fred Zharoff

P.O. Box V
Juneau, Alaska 99811
(907) 465-4907



MEMORANDUM

TO: All Senators

FROM: Senator Bettye Fahrenkamp

DATE: May 1, 1990

RE: Finfish Farming Compromise

I have developed legislation that would ban most forms of commercial finfish farming, including farming in marine waters or natural lakes and ponds. The measure also would prohibit the farming of salmon in salt water pumped to land-based farms.

The effect of this bill is to fully authorize the form of finfish farming already endorsed by the legislature. The current moratorium provides an exemption for fish farming in "a privately owned freshwater body that has no outlet to state water." This language was drafted in consultation with Senator Eliason who later authored a letter of intent urging the Board of Fisheries and Alaska Department of Fish and Game to implement the provision.

This legislation is designed to provide policy clarifications requested by the Board of Fisheries and to impose a tight regulatory regime on upland tank finfish farming.

This is the narrowest of possible alternatives to a total ban on finfish farming, and alleviates any concern about the biological, environmental and economic issues raised during the four-year legislative debate. Under the terms of the bill, Alaska would have the most restrictive finfish farming program in the world.

While the measure would eliminate many of the most promising opportunities for Alaska in finfish farming, it would allow the private sector to proceed with the tank farming of arctic char, kokanee (landlocked sockeyes), rainbow trout and pan-sized coho salmon. This bill provides no hidden subsidies and would extract a fair level of taxation for the state to recover regulatory costs.

The three-year moratorium on finfish farming is scheduled to lapse on July 1, and this undoubtedly will lead to litigation

because of the vague nature of existing laws. While I prefer to avoid this unfortunate situation, my offer to draw both sides into negotiations have been rebuffed.

A full copy of the draft bill is attached. Following are highlights of the measure.

Prohibition of Marine Finfish Farming

The measure would prohibit the net pen rearing of all finfish. This is a straight forward ban with no moratorium or sunset clause, and would be coupled with a deletion of existing statutes which the Department of Law says would authorize finfish farming in the absence of a moratorium.

Prohibition of Land-based Salmon Farms Producing Full-Sized Salmon

Farmers would not be allowed to pump salt water to land-based salmon farms, virtually eliminating the ability to produce full-sized salmon competing with markets of commercial fishermen. Pacific salmon could be farmed only in fresh water, land-based farms, which produce "pan-sized" salmon. These products compete in separate market niches than Alaska salmon harvested by commercial fishermen.

Prohibition of Finfish Farming in Natural Lakes or Ponds

The farming of finfish in natural lakes or ponds would be prohibited. This would prevent any intermingling of farmed and wild stocks.

Authorization of "Tank Farming" of Finfish

Finfish farming would be restricted to tanks or artificial ponds and "raceways." The Alaska Department of Fish and Game would have authority to regulate the structural integrity of fish farming structures and to require facilities be outside of the influence of tidal zones and floodplain.

Prohibition of Exotic Species

The existing statutory ban on importation of Atlantic salmon is extended to all non-indigenous stocks of salmon. The Board of Fisheries' existing authority to authorize the importation of non-indigenous species of shellfish and aquatic plants for stocking aquatic farms is extended to other species of finfish. ADFG believes this is a fundamental protection against the spread of disease to native stocks from aquatic farms.

Protection of Native Stocks

ADFG is provided open-ended authority to impose any conditions necessary to aquatic farming permits to protect natural stocks, including requirements for the treatment of wastewater discharges

to prevent the spread of disease to natural stocks and the pollution of fish and wildlife habitats.

By adding finfish to the statutory definitions of aquatic farms and aquatic farm products, ADFG is directed to develop a comprehensive disease management and control program for finfish farms and hatcheries. The statute also provides ADFG with authority to inspect finfish farms and hatcheries and requires the destruction and disposal or quarantine as necessary to protect native stocks.

The Department of Environmental Conservation is authorized to restrict the use of chemicals and establish requirements as necessary to protect human health.

Common Property Ownership of Broodstock

One of the most complex sections of the draft legislation would provide finfish farmers with limited property rights of broodstock. The state would be provided with continued ownership of the finfish genetic pool and farmers would be prevented from obtaining patents on genetically developed farm stocks.

The farmers would be allowed to sell eggs, smolt and live fish only to other farmers or the state, but would have full property rights to the sale of fish for human consumption or related purposes. Farmers would not be allowed to export live broodstock for use in non-Alaska farms, or to "patent" a genetic strain.

Penalties

Farmers who culture species prohibited by statute (Atlantic salmon and non-indigenous Pacific salmon) or not specifically authorized by the Board of Fisheries would be subject to class C felony penalties. Other offenses would be subject to class B misdemeanor penalties.

Taxation

The draft legislation also clarifies that aquatic farm products are subject to the Fisheries Business Tax.

Labeling

All farmed finfish produced in Alaska would be required to be labeled as "aquatic farm products" at the point of first sale to eliminate any confusion with fish harvested by commercial fishermen.

Original sponsor(s):

1 IN THE SENATE

2 CS FOR SENATE BILL NO. ()

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 SIXTEENTH LEGISLATURE - SECOND SESSION

5 A BILL

6 For an Act entitled: "An Act prohibiting the aquatic farming of finfish in
7 marine or estuarine water of the state and natural
8 freshwater lakes and ponds; relating to commercial
9 finfish farming and aquatic farm and hatchery per-
0 mits, the fishery business tax, and commercial cul-
1 ture of fish for exhibition or aquarium purposes; and
2 providing for an effective date."

3 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

4 * Section 1. FINDINGS AND POLICY. (a) Based on a legislative exami-
5 nation of the potential effects of allowing finfish farming in the state on
6 the common property resources and on the overall economic well-being of the
7 state; the number of serious concerns associated with finfish farming and
8 the need for study of finfish farming that has caused the legislature to
9 enact two moratoriums on finfish farming and establish a nonlegislative
0 task force to study the issue and to report its findings and recommenda-
1 tions to the legislature; a review of the final report of the Alaska
2 Finfish Farming Task Force which notes several possible benefits and some
3 risks of finfish farming; the need for the legislature to take action
4 before the current moratorium on finfish farming expires on July 1, 1990;
5 the recommendation of the task force that the legislature not extend the
6 moratorium, but make a final determination to either allow or prohibit
7 finfish farming; and the testimony and evidence received; the legislature
8 finds that

(1) the state has the healthiest stocks of wild salmon and other

1 wild finfish in the world and benefits from thriving commercial, sport, and
2 subsistence fisheries for these fish and a growing tourism industry related
3 to sport fishing;

4 (2) the people, economy, and environment of the state are depen-
5 dent in large measure upon the continued health of the state's wild finfish
6 resources;

7 (3) risks are posed by commercial finfish farming in open fin-
8 fish farming facilities and systems in marine, estuarine, and fresh water
9 of the state, including the spread of disease among wild fish by farmed
10 fish, genetic intermingling of wild fish stocks with genetically manipulat-
11 ed farmed fish, degradation of water quality near finfish farms, and land
12 use conflicts over the siting of commercial finfish farms;

13 (4) the state has invested significantly in marketing efforts to
14 promote Alaskan finfish as wild and natural fish products, and this invest-
15 ment in developing the reputation of Alaskan finfish would be undermined by
16 allowing commercially competitive farmed finfish to be produced and mar-
17 keted from Alaska;

18 (5) the cost to the state to regulate a marine-based commercial
19 finfish farming industry would be high;

20 (6) the state is responsible for ensuring the protection and
21 wise use of the renewable natural resources of Alaska and providing a
22 framework for a sound economy;

23 (7) a long-term decision must be made regarding the future of
24 commercial finfish farming in the state;

25 (8) avoiding harm to the state's wild finfish, land, and water
26 resources must take precedence over the development of a new commercial
27 finfish farming industry in the natural marine, estuarine, or fresh water
28 of the state;

29 (9) the best interests of the state are served by prohibiting