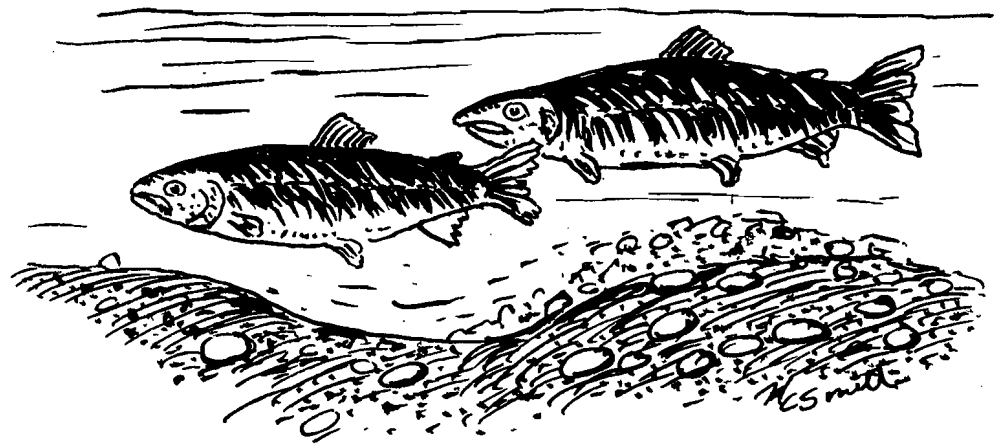


Environmental Investigations

NORTH COAST BASIN Supplement

FISH AND WILDLIFE RESOURCES AND THEIR WATER REQUIREMENTS



OREGON STATE GAME COMMISSION

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SUPPLEMENT
to
THE FISH AND WILDLIFE RESOURCES OF THE
NORTH COAST BASIN, OREGON, AND
THEIR WATER REQUIREMENTS, APRIL 1968

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A Report with Recommendations to the
OREGON STATE WATER RESOURCES BOARD

From the
Oregon State Game Commission
John W. McKean, Director

FEDERAL AID TO FISH RESTORATION
Completion Report
Fisheries Stream Flow Requirements
Project 69409, Job Number 14

Portland, Oregon

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FOREWARD

The Oregon State Game Commission report entitled, "The Fish and Wildlife Resources of the North Coast Basin, Oregon, and Their Water Requirements" and this supplement to that report are designed to assist the State Water Resources Board with the task of programming Oregon's water resources. This supplement reviews some recreational use and economic considerations of the Basin's fish and wildlife resources. Shellfish and commercial harvest data are provided by the Fish Commission of Oregon.

Inasmuch as ORS 536.310 (7) directs the Board to consider "The maintenance of minimum perennial stream flows sufficient to support aquatic life...", minimum flows have been recommended which would support a reasonable level of fish production. These flows, however, are substantially less productive for game fish than the stream course is potentially capable of supporting. Although coastal stream systems have high annual water yields, low flows of summer critically restrict natural fish production.

The minimum flow regimen recommended in Appendix 1 of this supplement are the result of intensive field studies

utilizing the Game Commission's most refined techniques and replace the recommendations presented in the 1968 report for the North Coast Basin. Although based on all known biological requirements of salmonids, these recommended flows do not consider some significant effects of fluctuating, natural stream flows. High flows are generally believed necessary to stimulate upstream migration of adult salmon and steelhead, to remove silt which settles into spawning gravels during low discharge periods, and to help maintain a proper freshwater - salt-water balance in estuaries. But, because these occurrences are not thoroughly understood, natural peak flow regimen during the fall and winter have not been recommended at this time.

The recommended minimum stream flows are principally designed to accommodate the environmental requirements of salmon and steelhead because these fish receive primary management emphasis in Oregon's coastal streams by fishery agencies. Summer flow requirements of anadromous fish and resident trout are essentially the same, but anadromous fish have higher flow requirements during the migration and spawning seasons.

Optimum flow recommendations, even though far lower than natural flows during the fall, winter, and spring seasons,

are considerably higher than natural stream flows during the summer. Optimum flows are designed to achieve optimum productivity for fish life according to those aspects of their water requirements currently understood.

To maximize sport and commercial fishing opportunities, juvenile salmon and steelhead are stocked throughout North Coast River systems. The best survival is achieved when juvenile fish are stocked as smolts, principally during the spring. Young fish migrate to the ocean almost immediately and return as adults to utilize the stream systems primarily during fall and winter freshets when adequate flows are naturally available. This stocking schedule not only avoids subjecting stocked fish to the critical elements of low summer flows, but reduces their competition with young native salmon and steelhead rearing in the stream. Streams, such as Big Creek and Klaskanine River, where hatcheries are located, often are heavily stocked to create large returning runs of adult fish that can be artificially spawned to supply the hatchery with eggs. The North Coast Basin has six fish hatcheries: Gnat Creek, Big Creek, North Fork Klaskanine, North Fork Nehalem, Trask River and Cedar Creek (Three Rivers).

Because the sale of angling licenses in Oregon is expected

to increase more than threefold within 30 years, not only will it be extremely important to maintain stream flows for natural production of game fish, but also to accommodate an expanding hatchery program. To meet future demands for outdoor recreation, hatcheries will play an increasingly important role. Fishery agencies are allocating large expenditures to modernize existing hatchery facilities and expand their production capabilities.

Many land and water uses have been at the expense of stream productivity. Without recognizing the importance of land and water planning and programming, the ability to meet future demands for fish resources will be increasingly difficult. The data in this supplement was selected to indicate some of the inherent values in the North Coast Basin's fish and wildlife resources.

FISH AND WILDLIFE VALUES

Freshwater Game Fish

Abundance and Distribution

North Coast Basin streams contain excellent habitat for Pacific salmon, steelhead, and sea-run cutthroat trout. All major river systems receive use from several forms of these anadromous salmonids. Table 1 gives estimated spawning escapement of anadromous salmonids for the Basin. Variation in population composition between river systems is the result of different biological requirements of species and races, plus hatchery release programs. Anadromous fish use over 550 North Coast Basin streams, many being small tributaries (Table 2).

Resident cutthroat and rainbow trout inhabit nearly all streams which maintain perennial flows as well as most lakes, reservoirs, and ponds. Their numbers have not been estimated, but of the two species cutthroat are most abundant and widespread. Hatchery releases of both species are made to supplement natural production for sport fishing.

Warm-water game fish populations are primarily limited to a series of coastal lakes and sloughs along the lower Columbia River. Species include largemouth bass, yellow

Table 1. Estimated number of adult anadromous salmonids spawning in North Coast Basin River systems /1 /2

Stream	Chinook		Coho	Chum	Steelhead		Sea-run Cut-throat
	Spring	Fall			Winter	Summer	
Neskowin Cr.	---	180	180	500	350	---	400
Little Nestucca R.	90	1,215	1,080	1,000	1,290	100	800
Nestucca R.	1,800	19,350	17,500	1,000	36,000	5,500	5,000
Tillamook R.	540	2,970	1,890	500	300	50	2,500
Trask R.	3,150	17,325	23,275	1,000	11,000	200	5,000
Wilson R.	1,800	9,900	6,300	1,500	33,600	2,000	5,000
Kilchis R.	540	2,970	1,890	4,050	4,000	100	3,000
Miami R.	90	540	270	2,850	675	50	2,500
Nehalem R.	--	4,000	21,840	200	11,000	---	8,000
Necanicum R.	--	--	3,780	100	2,000	---	2,000
Lewis & Clark R.	--	50	3,000	50	750	---	500
Youngs R.	--	50	200	50	50	---	200
Klaskanine R.	--	400	14,500	100	2,000	---	300
Big Cr.	--	12,000	14,000	100	4,500	---	1,000
Clatskanie R.	--	100	1,600	50	2,000	---	500
Subtotal	8,010	71,050	111,305	13,050	109,515	8,000	36,700
Other Streams	--	1,800	7,400	1,700	3,000	---	7,600
Grand Total	8,010	72,850	118,705	14,750	112,515	8,000	44,300

/1 Estimates by Oregon State Game Commission and Fish Commission of Oregon.

/2 Estimates include hatchery contributions.

Table 2. Number of streams used by anadromous fish and streams with Game Commission flow recommendations, North Coast Basin /1

River system	Streams used by anadromous fish	Streams with OSGC Minimum Flow Recommendations
Columbia		
Lewis & Clark	9	1
Youngs Bay	8	3
Big Creek	7	1
Clatskanie	14	2
Others	<u>27</u>	<u>3</u>
	65	10
Necanicum	30	5
Nehalem	189	29
Tillamook Bay		
Miami	16	4
Kilchis	12	6
Wilson	41	9
Trask	37	10
Tillamook	22	6
Others	<u>12</u>	<u>0</u>
	140	35
Nestucca Bay		
Nestucca	64	21
Little Nestucca	<u>26</u>	<u>5</u>
	90	26
Neskowin Creek	11	1
Pacific Ocean tributaries	17	4
Sand Lake	7	1
Netarts Bay	<u>8</u>	<u>0</u>
GRAND TOTAL	557	111

/1 Includes only streams with known anadromous fish use.

perch, white and black crappie, bluegill, pumpkinseed, and warmouth bass.

Nearly all streams with year-around flows support at least one species of freshwater game fish. A comprehensive water-use program will help guarantee future generations of a continuing fishery resource. Minimum and optimum stream flow recommendations have been developed by the Oregon State Game Commission for 111 important fish production streams (Appendices I and II). Minimum flow recommendations are designed to maintain a minimum desirable level of natural production. Optimum flow recommendations are designed to completely satisfy currently understood aspects of fish production. But, because water requirements of fish are complex and not entirely understood, optimum flow recommendations may not allow maximum fish production.

Harvest

Sport Sport anglers annually expend over 440,000 angler-days in the North Coast Basin in pursuit of freshwater game fish, with a gross expenditure of about \$14,170,000. No satisfactory method exists to convert gross angler expenditures to total value to the economy. The majority of angler effort is expended on anadromous salmonids. Sport angling for salmon occurs on the Pacific Ocean, in seven estuaries, and on many streams (Table 3).

Table 3. Estimated annual harvest, angler-days, and gross expenditures for salmon, North Coast Basin /1

	Harvest	Angler -days	Gross expenditures
Ocean	112,801	94,796	\$8,347,274
Estuaries	12,560	57,240	929,440
Streams	<u>14,821</u>	<u>59,284</u>	<u>1,096,754</u>
Totals	140,182	211,320	\$10,373,468

/1 Source: Oregon State Game Commission salmon-steelhead punch card data. (Appendix 6).

Table 3 shows that about 30% of the salmon angling and 10% of gross expenditures occur in the Basin's streams. The five top streams for instream salmon harvest are Nestucca, Trask, Wilson, and Klaskanine Rivers, and Big Creek.

Anglers find steelhead distributed throughout the Basin, with about 30 streams open for angling.

Table 4. Estimated annual steelhead harvest, angler-days, and gross expenditures, North Coast Basin /1

Harvest	Angler-days	Gross expenditures
41,508	165,232	\$3,071,592

/1 Source: Oregon State Game Commission salmon-steelhead punch card data. (Appendix 6).

Angling for sea-run cutthroat is most productive within

estuaries. However, several stream systems yield good catches in freshwater areas. Harvest data indicate that about 25,950 angler-days are spent in harvesting 11,640 fish, with a gross expenditure by cutthroat fishermen of \$480,075. Popular fishing waters include Tillamook, Nestucca, and Nehalem Bays and Nestucca, Trask, Wilson, Kilchis and Nehalem Rivers.

Resident trout and warm-water game fish angling is minor when compared to the fishing effort for anadromous species. Estimates of angler pressure and gross expenditures for the resident species are 40,150 angler-days and \$240,900 respectively.

More people with more leisure time will demand an increase in angling opportunities. As one measure of this future pressure, the sale of angling licenses is predicted to increase 50% by 1980 and possibly as much as 350% by 2000. Stream flow levels are vital not only for maintaining desirable fish populations, but also to provide proper water conditions for recreational angling. Therefore, the Oregon Game Commission has developed recreational angling flow recommendations designed to insure stream flows which, if adopted, will accommodate the growing demand for more sport fishing opportunities on North Coast Basin streams (Appendix 4).

Commercial North Coast Basin streams annually provide about 685,000 salmon to the commercial fishery (includes hatchery contribution). These fish are taken in the ocean from San Francisco to Alaska and the catch is made up of about 62% coho and 38% chinook. The average annual value of these fish to fishermen is estimated at \$3,860,000. No satisfactory method now exists to convert "value to fishermen" to "total value to the economy". However, discussions with industry suggest a two-fold increase in fishermen value would be a reasonable approximation.

There are four ports in the Basin which receive landings of commercially caught salmon. These ports received nearly 1,810,000 pounds of salmon in 1970, primarily coho and chinook, with a value to fishermen of about \$1,000,000 (excludes Columbia River catch).

Other Resources

Estuaries

Seven estuaries, including Youngs Bay, Necanicum Bay, Nehalem Bay, Tillamook Bay, Netarts Bay, Sand Lake, and Nestucca Bay are located in the North Coast Basin. Estuaries are very complex ecological systems where freshwater and saltwater mix. This delicate balance between fresh and saltwater is just beginning to be understood. We have no present means to assess potential

disruptions in the intricate fresh-saline balance. Each estuary is unique with its own complement of salinities, temperatures, currents, shape and size, and distinct seasonal variations.

Estuaries are rich bodies of water, partly because of nutrients brought in by streams. They are the home for an amazing variety of animals and plants ranging from the lowest to the highest forms. Several important fish species, such as herring, need estuaries for successful spawning. Estuaries with their peculiar saline balance are important to the survival of young salmon and steelhead by providing them an opportunity to adjust to full seawater conditions. Likewise, estuaries play an important part in the adjustment of adults to freshwater. Most of Oregon's important bottom fishes are dependent on estuaries during some part of their life.

Estuaries provide much commercial and recreational value to man. Ninety percent of Oregon's oysters are grown in Tillamook Bay. Under optimum conditions, oyster production is valued at up to \$5,000 an acre per year (Table 5). Highly productive estuarine clam beds have substantial value to both sport and commercial interests.

Table 5. Commercial landings of oysters and clams at North Coast Basin ports in pounds round weight and estimated value to fishermen in 1970 /1

Port	Oysters		Clams	
	Landings	Value	Landings	Value
Tillamook	241,929	\$236,000	7,819	\$1,000
Netarts Bay	122	119	2,210	283
Nehalem Bay	---	---	258	33

/1 Source: Fish Commission of Oregon commercial landing records.

Certain estuaries are heavily utilized for sport fishing, clamming, and crabbing. Salmon and steelhead angling use and gross expenditures are given in Tables 3 and 4. Other fish species caught by anglers include flounder, sole, surfperch, rockfish, herring, anchovie, and sculpin. Catch and use figures for these species are given in Table 6.

Table 6. Estimated angler catch and effort on North Coast Basin estuaries for non-game bay fish in 1970 /1

Estuary	Catch	Effort
	(No. of fish)	(Angler-days)
Necanicum Bay	9,000	1,800
Nehalem Bay	12,000	5,000
Tillamook Bay	24,500	6,000
Netarts Bay	5,000	1,000
Nestucca Bay	3,000	400

/1 Source: Estimates by Oregon State Game Commission.

In Tillamook Bay in 1963, 9,000 diggers took 171,000 clams from a 16 acre area. Use and harvest data for clamming are presented in Table 7.

Table 7. Estimated average annual number of clam digger-days and harvest in North Coast Basin estuaries /1

Bay	Digger days	Number of clams
Nehalem	900	27,000
Tillamook	18,000	540,000
Netarts	20,000	60,000
Nestucca	400	12,000

/1 Source: Estimates by Fish Commission of Oregon.

Oregon has significantly fewer estuarine areas than other coastal states. For example, all of Oregon's estuaries could fit into Willapa Bay, Washington. Oregon's 56,000 acres of estuaries make up less than one-tenth of one percent of the total land area of the state.

Wildlife

Composition, relative abundance, and distribution of the Basin's wildlife resources are discussed in the report to which this statement is appended.

Hunters annually expend considerable time and money in pursuit of game animals (Table 8).

Table 8. Estimated hunting data for the North Coast Basin, 1970 /1

	Harvest	Hunter-days	Gross expenditure
Big game	2,313 deer	67,287 deer	\$1,352,469
	<u>1,625 elk</u>	<u>49,778 elk</u>	<u>1,324,095</u>
	3,938	117,065	\$2,676,564
Upland game	28,300	18,795	112,770
Waterfowl	<u>42,700</u>	<u>27,680</u>	<u>221,440</u>
TOTAL			\$2,890,185

/1 Source: Oregon State Game Commission annual hunter questionnaire. (Appendix 6).

In addition to hunting, wildlife resources contribute about \$30,000 annually to revenues from furbearer trapping.

Most game species do not have the precise and demanding stream flow requirements of fish. However, stream flows of adequate quantity and quality are essential to maintain game animal numbers and assure proper game distribution.

Recreation and Esthetics

The North Coast Basin annually provides millions of days of outdoor recreation. One indication of this use is provided by Oregon State Highway Department statistics which show that state parks and waysides in the Basin

received over 2 million day-visitors in fiscal year 1969-1970. Many of these visits are directly related to fish and wildlife and water-based recreation; therefore, adequate stream flows which contribute significantly to the esthetic appeal of the area must be protected to assure these values (Table 9).

Table 9. Sections of selected North Coast Basin streams that should have flow protection because of their esthetic values

<u>Stream</u>	<u>Area</u>
Wilson River	Entire
North Fork Trask River	Entire
Kilchis River	Above Mapes Creek
Nestucca River	Entire
North Fork Nehalem River	Above Soapstone Cr.
Salmonberry River	Entire
Trask River	Above Green Creek
Little North Fork Wilson River	Entire
Three Rivers	Entire
Miami River	Above Prouty Creek
Neskowin Creek	Entire
Clatskanie River	Above Keystone Creek

Summary

North Coast Basin presently supports over \$14,000,000 in annual gross expenditures by sport anglers seeking anadromous

salmonids, resident trout, and warm-water game fish. Indirectly, the Basin's waterways contribute an annual gross expenditure of \$2,975,385 for sport harvest of estuarine animals (excluding clams) and hunting of game animals. In addition, the commercial value of estuarine animals and revenues from furbearer trapping exceeded \$265,000 in 1970. Anadromous fish produced in the Basin are also caught by sport and commercial fishermen in other coastal areas. Another consideration is the use of the Basin for other types of recreation for which adequate stream flows have esthetic importance.

Demand for use of fish and wildlife resources will continue to increase. A comprehensive minimum flow program will protect the Basin's fish and wildlife resources and water-connected recreation and insure that future water rights are appropriated only in the best interest of all natural resources.

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A P P E N D I C E S

Appendix 1. Recommended minimum stream flows for fish life, North Coast Basin 1/ 2/ 3/ 4/

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Columbia River Tributaries													
Beaver Creek	1.8 mi. above Stewart Cr.	52	52	52	52	30	15	8	8	8	8	30/52	52
Clatskanie River	Below Perkin Cr.	81	81	81	81	50	30	15	15	15/50	93	93	93
Clatskanie River	Above Little Clatskanie River	34	34	34	34	20	8	4	4	4/20	34	34	34
Carcus Creek	Mouth	10	10	10	10	7	4	2	1	1	5/10	10	10
Plympton Creek	0.3 mi. above mouth	20	20	20	20	15	10	7	4	15/20	20	20	20
Big Creek	1.1 mi. above mouth	78	78	78	78	50	30	20	20	50/90	90	78	78
Bear Creek	0.7 mi. above mouth	15	15	15	15	10	7	5	3	10/15	15	15	15
(Klaskanine River)													
N.Fk. Klaskanine R.	Mouth	46	46	46	46	30	12	8	8	30/70	70	46	46
S.Fk. Klaskanine R.	Mouth	65	65	65	65	40	20	10	10	40/80	80	65	65
Youngs River	Below Wawa Creek	122	122	122	122	70	40	15	15	70/138	138	122	122
Lewis & Clark River	Below Klickitat Creek	74	74	74	74	50	30	15	15	50/80	80	74	74
Ocean Tributaries													
Necanicum River	Below Klootchie Creek	75	75	75	75	50	35	20	20	20/50	75	75	75
" "	Above Bergsvik Creek	30	30	30	30	20	10	4	4	4/20	30	30	30
Klootchie Creek	Mouth	28	28	28	28	15	10	4	4	4/15	28	28	28
S.Fk. Necanicum R.	Mouth	61	61	61	61	40	20	12	12	12/40	61	61	61
N.Fk. Necanicum R.	Mouth	31	31	31	31	20	8	4	4	4/20	31	31	31
Bergsvik Creek	Mouth	15	15	15	15	10	4	2	2	2	10/15	15	15
Elk Creek													
N.Fk. Elk Creek	Mouth	36	36	36	36	20	10	5	5	5	20/36	36	36
W.Fk. Elk Creek	Mouth	33	33	33	33	20	10	5	5	5	20/33	33	33
Arch Cape Creek	Head of tidewater	25	25	25	25	15	8	6	4	4/18	25	25	25
Short Sand Creek	Mouth	20	20	20	20	3	2	2	2	2/15	20	20	20

Appendix 1. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
59752- Nehalem River	USGS Gage 14-3010	265	265	265	265	200	150	100	100	100/200	265	265	265
① " "	Below E.Fk. Nehalem R.	113	113	113	113	80	40	20	20	20/80	113	113	113
" "	Above Wolf Creek	29	29	29	29	20	10	6	6	6/20	40	40	29
N.Fk. Nehalem River	Below Soapstone Cr.	128	128	128	128	80	50	30	30	30/80	135	135	128
" " "	Below Little N. Fk.	68	68	68	68	40	20	15	15	15	40	68	68
Soapstone Creek	Mouth	65	65	65	65	40	20	12	12	12	40	65	65
Gods Valley Cr.	Mouth	22	22	22	22	15	8	4	4	4	15	22	22
Foley Creek	Mouth	46	46	46	46	30	20	10	10	10	30/55	55	55/46
Roy Creek	Mouth	15	15	15	15	6	2	1	1	1	10/15	15	15
Peterson Creek	Mouth	15	15	15	15	7	3	1	1	1	10/15	15	15
Anderson Creek	Mouth	20	20	20	20	10/5	3	1	1	1	8/15	20	20
Cook Creek	Mouth	52	52	52	52	30	20	12	12	12	30/52	52	52
21 Lost Creek	Mouth	20	20	20	20	15	6	3	2	2	10/20	20	20
Salmonberry River	Mouth	70	70	70	70	50	40	30	25	25	50/70	70	70
Cronin Creek	Mouth	36	36	36	36	25	12	6	6	6	25/47	47	47
Spruce Run Creek	Mouth	20	20	20	20	10	3	1	1	1	10	20	20
Humbug Creek	Below Big Creek	78	78	78	78	50	25	15	15	15	50/95	95	95
E.Fk. Humbug Creek	Mouth	25	25	25	25	15	8	2	2	2	15/25	25	25
W.Fk. Humbug Creek	Mouth	40	40	40	40	25	12	3	3	3	25/40	40	40
Quartz Creek	Mouth	30	30	30	30	20	10	4	2	2	20/30	30	30
Cow Creek	Mouth	15	15	15	15	7	3	1	1	1	8/15	15	15
Buster Creek	Mouth	43	43	43	43	30	15	5	5	5	30/51	51	51
Walker Creek	Above Fishhawk Creek	47	47	47	47	30	15	8	8	8	30/54	54	54
Fishhawk Creek	Mouth	75	75	75	75	50	25	12	12	12	50/90	90	90
Northrup Creek	Mouth	20	20	20	20	15	5	2	2	2	15/20	20	20
Deep Creek	Mouth	15	15	15	15	10	3	1	1	1	10/15	15	15

① Established IWR (converted MPS) (1973) generally @/ > min rec. flow.

Appendix 1. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fishhawk Creek (RM 65.7)	Mouth	25	25	25	25	15	8	4	4	4	15/25	25	25
Beaver Creek (RM 66)	Mouth	10	10	10	10	6	2	1	1	1	5	10	10
Oak Ranch Creek	Mouth	15	15	15	15	5	3	1	1	1	10/15	15	15
E.Fk. Nehalem River	Mouth	15	15	15	15	10	5	1	1	1	10	15	15
Rock Creek	Mouth	77	77	77	77	50	25	12	12	12	50/87	87	87
Wolf Creek	Mouth	36	36	36	36	25	12	6	6	6	25/46	46	46
Miami River	Above Moss Cr.	98	98	98	98	60	30	15	15	15	60/130	130	130
Moss Creek	Mouth	25	25	25	25	15/6	2	2	1	1	15/25	25	25
Peterson Creek	Mouth	12	12	12	12	6	2	2	1	1	8/12	12	12
Prouty Creek	Mouth	12	12	12	12	6	2	1	1	1	8/12	12	12
Kilchis River	Below Myrtle Creek	180	180	180	180	100	60	25	25	25	100/225	225	225
Kilchis River	Above Little S.Fk.	175	175	175	175	100	50	20	20	20	100/190	190	190
Coal Creek	Mouth	8	8	8	8	8	2	1	1	1	6/8	8	8
Clear Creek	Mouth	30	30	30	30	15	5	3	2	2/15	30	30	30
Little S.Fk. Kilchis R.	Mouth	50	50	50	50	30	15	10	5	5	20/50	50	50
N.Fk. Kilchis River	Mouth	50	50	50	50	30	15	12	6	6	30/50	50	50
S.Fk. Kilchis River	Mouth	40	40	40	40	30	12	8	5	5	30/40	40	40
Wilson River	Below Little N.Fk.	300	300	300	300	300/200	150	100	100	300	300	300	300
✓ Wilson River	Below Cedar Creek	145	145	145	145	145/100	80	50	50	145	145	145	145
Little N.Fk. Wilson R.	Mouth	100	100	100	100	75	50	25	25	125	125	125	125
Fall Creek	Mouth	10	10	10	10	7	5	3	2	2	6/10	10	10
Jordan Creek	Mouth	35	35	35	35	20	20	15	10	35	35	35	35
Cedar Creek	Mouth	30	30	30	30	20	12	10	8	4	15	30	30
N.Fk. Wilson River	Mouth	63	63	63	63	50	30	15	15	95	95	95	95
Elk Creek	Mouth	30	30	30	30	15	5	4	4	30	30	30	30

Appendix 1. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
S.Fk. Wilson River	Mouth	68	68	68	68	40	25	12	12	79	79	79	79
Devils Lake Fork	Mouth	40	40	40	40	30	30	10	6	40	40	40	40
Trask River	Below N. & S. Forks	265	265	265	265	265/200	150	90	90	265	265	265	265
Green Creek	Mouth	8	8	8	8	5/2	1	1	1	5	8	8	8
S.Fk. Trask River	Mouth	142	142	142	142	142/100	60	30	30	155	155	155	155
S.Fk. Trask River	Below Edwards Creek	68	68	68	68	68/40	25	15	15	68	68	68	68
E.Fk. of S.Fk.	Mouth	40	40	40	40	40/30	20	15	15	40	40	40	40
Edwards Creek	Mouth	32	32	32	32	20	10	4	4	36	36	36	36
N.Fk. Trask River	Below Bark Shanty Cr.	167	167	167	167	167/100	70	40	40	190	190	190	190
Bark Shanty Creek	Mouth	18	18	18	18	12	8	6	4	18	18	18	18
Clear Creek	Mouth	25	25	25	25	15	6	4	4	25	25	25	25
N.Fk. of N.Fk.	Mouth	40	40	40	40	40/30	15	5	5	5	30/49	49	49
Mid.Fk. of N.Fk.	Below Elkhorn Creek	80	80	80	80	80/60	40	16	16	16	60/80	80	80
Tillamook River	Below Beaver Creek	80	80	80	80	60	40	25	25	95	95	95	95
Bewley Creek	Mouth	15	15	15	15	10	6	2	2	2	2/10	15	15
Killam Creek	Mouth	15	15	15	15	10	5	1	1	1	10/15	15	15
Fawcett Creek	Mouth	25	25	25	25	15	10	2	2	2	15/25	25	25
Simmons Creek	Mouth	20	20	20	20	13	4	1	1	1	13/20	20	20
Munson Creek	Mouth	20	20	20	20	12/6	3	1	1	1	12/20	20	20
Sand Creek	Above Jewell Creek	30	30	30	30	20/8	4	3	2	2	2/20	30	30
Nestucca River	Below Beaver Creek	258	258	258	258	258/200	150	90	90	258	258	258	258
Nestucca River	Above East Creek	183	183	183	183	183/140	100	60	60	183	183	183	183
Nestucca River	Below Elk Creek	111	111	111	111	111/80	60	20	20	111	111	111	111
Clear Creek	Mouth	20	20	20	20	20/8	4	3	2	2	12/20	20	20
Three Rivers	Below Cedar Creek	86	86	86	86	60	40	18	18	94	94	94	94
" "	Above Alder Creek	40	40	40	40	40/20	12	8	6	6	25/40	40	40
Alder Creek	Mouth	35	35	35	35	20	10	5	5	5	20/46	46	46

Appendix 1. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Farmer Creek	Mouth	25	25	25	25	25/15	6	4	4	4	15/25	25	25
Beaver Creek	Below E. Beaver Creek	75	75	75	75	60	40	18	18	83	83	83	83
E. Beaver Creek	Above Bear Creek	52	52	52	52	40	20	10	10	10	40/63	63	63
Bear Creek	Mouth	8	8	8	8	8	2	2	1	1	6/8	8	8
W. Beaver Creek	Mouth	18	18	18	18	18/10	6	2	2	2	15/18	18	18
Wolfe Creek	Mouth	10	10	10	10	10/6	3	3	2	2	8/10	10	10
Bays Creek	Mouth	20	20	20	20	20/10	5	4	3	3	12/20	20	20
East Creek	Above Moon Creek	35	35	35	35	35/20	10	7	4	3	25/35	35	35
Moon Creek	Mouth	43	43	43	43	30	20	5	5	49	49	49	49
Powder Creek	Mouth	20	20	20	20	20/10	5	3	2	2	10/20	20	20
Niagara Creek	Mouth	30	30	30	30	30/25	25	5	3	30	30	30	30
Clarence Creek	Mouth	15	15	15	15	15/6	2	1	1	1	6	15	15
Slick Rock Creek	Mouth	15	15	15	15	15/6	3	2	1	1	10/15	15	15
Bible Creek	Mouth	15	15	15	15	15/6	2	2	2	2	10	15	15
Testament Creek	Mouth	15	15	15	15	15/8	4	3	3	3	12	15	15
Bear Creek	Mouth	20	20	20	20	20/15	7	6	3	3	15/20	20	20
Elk Creek	Mouth	20	20	20	20	20/12	8	4	4	4	15	20	20
Little Nestucca River	Below Fall Creek	133	133	133	133	100	60	25	25	25	100/133	133	133
" " "	Below Louie Creek	75	75	75	75	60	30	9	9	85	85	85	85
Fall Creek	Mouth	10	10	10	10	10/6	3	2	1	1	6	10	10
Bear Creek	Mouth	15	15	15	15	15/6	3	2	1	1	10/15	15	15
S.Fk. Little Nestucca River	Mouth	18	18	18	18	18/12	7	5	3	3	12/18	18	18
Louie Creek	Mouth	15	15	15	15	15/10	3	2	1	1	10/15	15	15
Neskowin Creek	Below Prospect Creek	62	62	62	62	40	20	10	10	10/40	88	88	88

- 1/ Flows are expressed in cubic feet per second.
- 2/ Recommended flows should arrive at the point of recommendation and continue to the mouth, or to the next point for which a different flow is recommended.
- 3/ Recommended minimum flows are designed to provide instream conditions capable of maintaining a minimum desirable level of natural production. No consideration is given to the requirements of estuaries or to beneficial impacts of winter freshets.
- 4/ These recommendations are the result of intensive field studies utilizing refined techniques and replace those presented in the 1968 report.

① Cont # 64; (3/28/90) = min flow
 ② N 64746 (") = " "

Appendix 2. Recommended optimum stream flows for fish life, North Coast Basin 1/ 2/ 3/

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Columbia River Tributaries													
Beaver Creek	1.8 mi. above Stewart Cr.	88	88	88	88	52	35	35	35	35	35	52/88	88
Clatskanie River	Below Perkin Cr.	147	147	147	147	81	54	54	54	54/81	160	160	160
" "	Above Little Clatskanie R.	57	57	57	57	34	23	23	23	23/34	57	57	57
Carcus Creek	Mouth	17	17	17	17	14	12	10	7	7	12/17	17	17
Plympton Creek	0.3 mi. above mouth	34	34	34	34	34	28	23	18	13	28/34	34	34
Big Creek	1.1 mi. above mouth	130	130	130	130	78	52	52	52	78/130	130	130	130
Bear Creek	0.7 mi. above mouth	26	26	26	26	22	18	14	10	18/26	26	26	26
Klaskanine River													
N.Fk. Klaskanine R.	Mouth	86	86	86	86	46	31	31	31	46/86	86	86	86
S.Fk. Klaskanine R.	Mouth	100	100	100	100	65	44	44	44	65/100	100	100	100
Youngs River	Below Wawa Cr.	190	190	190	190	122	82	82	82	122/190	190	190	190
Lewis & Clark River	Below Klickitat Cr.	115	115	115	115	74	50	50	50	74/115	115	115	115
Ocean Tributaries													
Necanicum River	Below Klootchie Cr.	140	140	140	140	75	50	50	50	50/75	140	140	140
" "	Above Bergsvik Cr.	45	45	45	45	30	20	20	20	20/30	45	45	45
① Klootchie Creek	Mouth	45	45	45	45	28	19	19	19	19/28	45	45	45
S.Fk. Necanicum R.	Mouth	125	125	125	125	61	40	40	40	40/61	125	125	125
N.Fk. Necanicum R.	Mouth	47	47	47	47	31	21	21	21	21/31	47	47	47
② Bergsvik Creek	Mouth	26	26	26	26	22	18	14	10	10	17/26	26	26
Elk Creek													
N.Fk. Elk Creek	Mouth	60	60	60	60	36	24	24	24	24	36/60	60	60
W.Fk. Elk Creek	Mouth	56	56	56	56	33	22	22	22	22	33/56	56	56
Arch Cape Creek	Head of tidewater	43	43	43	43	36	30	23	17	17/30	43	43	43
Short Sand Creek	Mouth	34	34	34	34	28	23	18	13	13/28	34	34	34

Appendix 2. (continued)

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Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Nehalem River	USGS Gage 14-3010	400	400	400	400	265	178	178	178	178/265	400	400	400
" "	Below E.Fk. Nehalem R.	180	180	180	180	113	76	76	76	76/113	180	180	180
" "	Above Wolfe Cr.	47	47	47	47	29	19	19	19	19/29	40	40	40
N.Fk. Nehalem River	Below Soapstone Cr.	250	250	250	250	128	86	86	86	86/135	250	250	250
" " "	Below Little N.Fk.	110	110	110	110	68	46	46	46	46	68	110	110
Soapstone Creek	Mouth	120	120	120	120	65	44	44	44	44	65	120	120
Gods Valley Creek	Mouth	32	32	32	32	22	15	15	15	15	22	32	32
Foley Creek	Mouth	63	63	63	63	46	31	31	31	31	46/65	65	65
Roy Creek	Mouth	26	26	26	26	22	18	14	10	14	20/26	26	26
Peterson Creek	Mouth	26	26	26	26	22	18	14	10	10	17/26	26	26
Anderson Creek	Mouth	34	34	34	34	20	13	13	13	13	13/20	34	34
Cook Creek	Mouth	100	100	100	100	52	35	35	35	35	52/100	100	100
Lost Creek	Mouth	34	34	34	34	20	13	13	13	13	20/34	34	34
Salmonberry River	Mouth	119	119	119	119	70	47	47	47	47	70/119	119	119
Cronin Creek	Mouth	65	65	65	65	36	24	24	24	24	36/65	65	65
Spruce Run Creek	Mouth	34	34	34	34	20	13	13	13	13	20/34	34	34
Humbug Creek	Below Big Cr.	130	130	130	130	78	52	52	52	52	95/130	130	130
E.Fk. Humbug Creek	Mouth	43	43	43	43	25	17	17	17	17	25/43	43	43
W.Fk. Humbug Creek	Mouth	68	68	68	68	40	27	27	27	27	40/68	68	68
Quartz Creek	Mouth	51	51	51	51	35	20	20	20	20	35/51	51	51
Cow Creek	Mouth	26	26	26	26	18	10	10	10	10	18/26	26	26
Buster Creek	Mouth	64	64	64	64	43	29	29	29	29	51/64	64	64
Walker Creek	Above Fishhawk Creek	82	82	82	82	47	31	31	31	31	54/82	82	82
Fishhawk Creek	Above Walker Cr.	147	147	147	147	75	50	50	50	50	90/147	147	147
Northrup Creek	Mouth	34	34	34	34	25	13	13	13	13	25/34	34	34
Deep Creek	Mouth	26	26	26	26	18	10	10	10	10	18/26	26	26

Appendix 2. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Fishhawk Creek (RM 65.7)	Mouth	43	43	43	43	35	17	17	17	17	35/43	43	43
Beaver Creek (RM 66)	Mouth	17	17	17	17	10	7	7	7	7	10	17	17
Oak Ranch Creek	Mouth	26	26	26	26	18	10	10	10	10	18/26	26	26
E.Fk. Nehalem River	Mouth	26	26	26	26	18	10	10	10	10	18/26	26	26
Rock Creek	Mouth	100	100	100	100	77	52	52	52	52	77/100	100	100
Wolf Creek	Mouth	60	60	60	60	36	24	24	24	24	46/60	60	60
Miami River	Above Moss Cr.	175	175	175	175	98	66	66	66	66	130/183	183	183
Moss Creek	Mouth	43	43	43	43	35	17	17	17	17	35/43	43	43
Peterson Creek	Mouth	20	20	20	20	12	8	8	8	8	12/20	20	20
Prouty Creek	Mouth	20	20	20	20	12	8	8	8	8	12/20	20	20
Kilchis River	Below Myrtle Cr.	300	300	300	300	180	120	120	120	120	225/300	300	300
Kilchis River	Above Little S.Fk.	300	300	300	300	175	115	115	115	115	190/300	300	300
Coal Creek	Mouth	14	14	14	14	10	5	5	5	5	10/14	14	14
Clear Creek	Mouth	51	51	51	51	35	20	20	20	20/35	51	51	51
Little S.Fk. Kilchis River	Mouth	85	85	85	85	50	35	35	35	35	50/85	85	85
N.Fk. Kilchis River	Mouth	85	85	85	85	50	35	35	35	35	50/85	85	85
S.Fk. Kilchis River	Mouth	68	68	68	68	40	27	27	27	27	40/68	68	68
Wilson River	Below Little N.Fk.	450	450	450	450	450/240	160	160	160	520	520	520	520
" "	Below Cedar Cr.	320	320	320	320	320/145	97	97	97	320	320	320	320
Little N.Fk. Wilson R.	Mouth	160	160	160	160	100	67	67	67	160	160	160	160
Fall Creek	Mouth	17	17	17	17	12	7	7	7	7	12/17	17	17
Jordan Creek	Mouth	60	60	60	60	35	23	23	23	60	60	60	60
Cedar Creek	Mouth	51	51	51	51	30	20	20	20	20	30	51	51
N.Fk. Wilson River	Mouth	130	130	130	130	130/63	42	42	42	130	130	130	130
Elk Creek	Mouth	51	51	51	51	30	20	20	20	51	51	51	51

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Appendix 2. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
S.Fk. Wilson River	Mouth	110	110	110	110	68	46	46	46	110	110	110	110
Devils Lake Fork	Mouth	68	68	68	68	40	27	27	27	68	68	68	68
Trask River	Below N. & S. Forks	500	500	500	500	500/235	157	157	157	500	500	500	500
Green Creek	Mouth	14	14	14	14	8	5	5	5	8	14	14	14
S.Fk. Trask River	Mouth	245	245	245	245	245/142	114	114	114	245	245	245	245
" " "	Below Edwards Cr.	105	105	105	105	105/68	46	46	46	105	105	105	105
E.Fk. of S.Fk.	Mouth	68	68	68	68	68/40	27	27	27	68	68	68	68
Edwards Creek	Mouth	53	53	53	53	32	21	21	21	53	53	53	53
N.Fk. Trask River	Below Bark Shanty Cr.	265	265	265	265	265/167	112	112	112	265	265	265	265
Bark Shanty Creek	Mouth	31	31	31	31	18	12	12	12	31	31	31	31
Clear Creek	Mouth	43	43	43	43	25	17	17	17	43	43	43	43
N.Fk. of N.Fk.	Mouth	63	63	63	63	63/40	27	27	27	27	40/63	63	63
Mid.Fk. of N.Fk.	Mouth	200	200	200	200	200/80	54	54	54	54	80/200	200	200
Tillamook River	Below Beaver Cr.	143	143	143	143	80	54	54	54	143	143	143	143
Bewley Creek	Mouth	26	26	26	26	15	10	10	10	10	10/15	26	26
Killam Creek	Mouth	26	26	26	26	15	10	10	10	10	15/26	26	26
Fawcett Creek	Mouth	43	43	43	43	25	17	17	17	17	25/43	43	43
Simmons Creek	Mouth	34	34	34	34	20	13	13	13	13	20/34	34	34
Munson Creek	Mouth	34	34	34	34	20	13	13	13	13	20/34	34	34
Sand Creek	Above Jewell Cr.	51	51	51	51	30	20	20	20	20	20/30	51	51
Nestucca River	Below Beaver Cr.	350	350	350	350	350/250	168	168	168	350	350	350	350
" "	Above East Cr.	250	250	250	250	250/183	123	123	123	250	250	250	250
" "	Below Elk Cr.	136	136	136	136	136/111	74	74	74	136	136	136	136
Clear Creek	Mouth	34	34	34	34	34/20	13	13	13	13	20/34	34	34
Three Rivers	Below Cedar Cr.	150	150	150	150	86	58	58	58	150	150	150	150
" "	Above Alder Cr.	68	68	68	68	68/40	27	27	27	27	40/68	68	68

Appendix 2. (continued)

Stream	Location	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Alder Creek	Mouth	60	60	60	60	35	24	24	24	24	35/60	60	60
Farmer Creek	Mouth	43	43	43	43	43/25	17	17	17	17	25/43	43	43
Beaver Creek	Below E. Beaver Cr.	150	150	150	150	75	50	50	50	150	150	150	150
E. Beaver Creek	Above Bear Cr.	85	85	85	85	52	35	35	35	35	52/85	85	85
Bear Creek	Mouth	34	34	34	34	23	13	13	13	13	23/34	34	34
W. Beaver Creek	Mouth	31	31	31	31	31/22	12	12	12	12	22/31	31	31
Wolfe Creek	Mouth	17	17	17	17	17/10	7	7	7	7	10/17	17	17
Bays Creek	Mouth	34	34	34	34	34/20	13	13	13	13	20/34	34	34
East Creek	Above Moon Cr.	60	60	60	60	60/35	24	24	24	24	35/60	60	60
Moon Creek	Mouth	78	78	78	78	43	29	29	29	80	80	80	80
• Powder Creek	Mouth	34	34	34	34	34/20	13	13	13	13	20/34	34	34
• Niagara Creek	Mouth	51	51	51	51	51/30	20	20	20	51	51	51	51
• Clarence Creek	Mouth	26	26	26	26	26/15	10	10	10	10	15	26	26
• Slick Rock Creek	Mouth	26	26	26	26	26/15	10	10	10	10	15/26	26	26
• Bible Creek	Mouth	26	26	26	26	26/15	10	10	10	10	15	26	26
• Testament Creek	Mouth	26	26	26	26	26/15	10	10	10	10	15	26	26
• Bear Creek	Mouth	34	34	34	34	34/20	13	13	13	13	20/34	34	34
• Elk Creek	Mouth	34	34	34	34	34/20	13	13	13	13	20	34	34
Little Nestucca River	Below Fall Cr.	230	230	230	230	230/133	89	89	89	89	155/230	230	230
" " "	Below Louie Cr.	115	115	115	115	115/75	50	50	50	125	125	125	125
Fall Creek	Mouth	17	17	17	17	17/10	7	7	7	7	10	17	17
Bear Creek	Mouth	26	26	26	26	26/15	10	10	10	10	15/26	26	26
S.Fk. Little Nestucca River	Mouth	31	31	31	31	31/18	12	12	12	12	18/31	31	31
Louie Creek	Mouth	26	26	26	26	26/15	10	10	10	10	15/26	26	26
Neskowin Creek	Below Prospect Cr.	113	113	113	113	62	41	41	41	41/88	126	126	126

- 1/ Flows are expressed in cubic feet per second.
- 2/ Recommended flows should arrive at the point of recommendation and continue to the mouth, or to the next point for which a different flow is recommended.
- 3/ Recommended optimum flows are designed to provide instream conditions capable of maintaining optimum levels of natural production. No consideration is given to the requirements of estuaries or to beneficial impacts of winter freshets.

Appendix 3. Miscellaneous flow and temperature measurements, North Coast Basin 1970 and 1971.

Stream	Location	Date	Time	Water Temp.°F	Flow
Columbia River Tributaries					
Beaver Creek	Above Stewart Cr.	1-8-71	11:30 AM	42	95
		3-23-71	3:40 PM	49	122
		4-6-71	1:10 PM	48	91
		4-27-71	12:15 PM	53	42
		5-4-71	12:05 PM	55	24
		7-20-71	11:25 AM	64	5.4
Clatskanie River	Below Perkin Cr.	1-8-71	10:30 AM	44	240
		4-6-71	2:05 PM	47	225
		4-27-71	1:30 PM	52	97
		5-4-71	12:50 PM	54	65
		5-11-71	5:45 PM	63	56
		5-25-71	11:50 AM	56	57
		6-8-71	11:30 AM	54	35
		6-22-71	12:20 PM	60	28
Clatskanie River	Above Little Clatskanie R.	1-8-71	12:45 PM	41	46
		3-23-71	5:00 PM	46	98
		4-6-71	11:45 AM	46	34
		4-27-71	11:30 AM	50	23
		5-4-71	11:15 AM	54	12
		7-20-71	10:45 AM	64	2.3
Big Creek	River Mile 1.1	1-8-71	9:00 AM	44	302
		4-6-71	3:40 PM	46	220
		4-27-71	2:30 PM	50	145
		5-4-71	1:45 PM	51	100
		5-11-71	6:45 PM	58	79
		5-25-71	12:45 PM	51	128

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Big Creek (cont.)	River Mile 1.1	6-8-71	12:20 PM	51	92
		6-22-71	1:30 PM	58	68
		7-20-71	12:30 PM	61	48
		8-6-71	1:20 PM	59	40
		8-20-71	12:15 PM	60	33
Klaskanine River					
North Fork Klaskanine R.	Mouth	1-7-71	4:45 PM	44	120
		3-23-71	11:45 AM	47	190
		4-6-71	5:45 PM	48	87
		4-27-71	4:00 PM	51	64
		5-4-71	3:10 PM	52	47
		6-8-71	1:30 PM	54	44
		6-22-71	2:30 PM	60	27
		7-20-71	1:30 PM	66	19
South Fork Klaskanine R.	Mouth	8-6-71	11:45 AM	62	12
		1-7-71	3:45 PM	44	110
		3-23-71	1:30 PM	47	356
		4-7-71	8:50 AM	45	105
		4-27-71	4:55 PM	50	68
		5-4-71	3:45 PM	53	50
		6-22-71	3:15 PM	60	23
		7-20-71	1:40 PM	67	16
Youngs River	Below Wawa Cr.	8-6-71	11:40 AM	62	11
		1-7-71	2:45 PM	44	155
		3-23-71	10:30 AM	46	277
		4-7-71	9:50 AM	46	173
		4-27-71	5:45 PM	52	95
		5-4-71	4:20 PM	55	64
		6-22-71	4:00 PM	63	54
		7-20-71	2:15 PM	71	33
	8-6-71	11:20 AM	64	16	

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Lewis & Clark River	Below Klickitat Cr.	1-7-71	1:30 PM	44	220
		3-23-71	9:00 AM	47	220
		4-7-71	11:00 AM	46	152
		4-28-71	8:10 AM	48	90
		5-4-71	5:15 PM	55	70
		5-12-71	8:15 AM	55	50
		6-8-71	2:15 PM	57	60
		6-22-71	4:30 PM	64	53
		7-20-71	2:50 PM	70	40
		8-6-71	10:50 AM	64	19
Ocean Tributaries					
Necanicum River	Below Klootchie Cr.	4-7-71	1:10 PM	47	231
		4-23-71	8:00 AM	45	240
		4-28-71	9:20 AM	48	162
		5-5-71	7:50 AM	50	108
		5-12-71	9:15 AM	54	82
		5-25-71	2:00 PM	53	180
		6-8-71	2:50 PM	55	91
		6-23-71	9:00 AM	56	100
		7-6-71	3:30 PM	56	101
		7-20-71	3:40 PM	67	68
		8-5-71	4:00 PM	67	40
		8-21-71	11:00 AM	63	21
Necanicum River	Above Bergsvik Cr.	1-7-71	9:10 AM	43	55
		4-7-71	3:20 PM	45	44
		4-23-71	9:30 AM	47	40
		4-28-71	1:15 PM	48	25
		5-5-71	9:30 AM	48	22
		5-12-71	9:45 AM	53	16
		7-20-71	5:00 PM	65	14
		8-5-71	2:35 PM	60	6.6

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Klootchie Creek	Mouth	1-7-71	11:15 AM	43	20
		2-19-71	2:30 PM	44	46
		4-7-71	5:30 PM	47	21
		4-14-71	4:50 PM	50	37
		4-23-71	8:10 AM	46	24
		4-28-71	9:40 AM	49	19
		5-5-71	8:10 AM	50	12
		7-20-71	4:15 PM	66	4.5
		11-16-71	9:00 AM	50	80
South Fork Necanicum River	Mouth	1-7-71	10:30 AM	43	61
		3-24-71	10:10 AM	44	185
		4-7-71	2:50 PM	46	51
		4-14-71	4:20 PM	50	89
		4-15-71	7:45 AM	46	78
		4-23-71	8:30 AM	44	56
		4-28-71	10:15 AM	48	38
		5-5-71	8:45 AM	48	29
		7-20-71	4:30 PM	64	12
North Fork Necanicum River	Mouth	11-16-71	10:00 AM	51	145
		3-24-71	9:15 AM	45	64
		4-7-71	4:40 PM	47	36
		4-23-71	8:45 AM	45	34
		4-28-71	10:45 AM	48	24
		5-5-71	9:15 AM	48	14
Elk Creek	Mouth	7-20-71	4:45 PM	72	4.7
		4-14-71	6:05 PM	49	65
		4-22-71	7:00 PM	48	40
		4-28-71	6:00 PM	50	30
		5-5-71	6:30 PM	50	24
		6-8-71	6:00 PM	55	16
North Fork Elk Creek	Mouth	8-5-71	4:30 PM	63	9.2

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
West Fork Elk Creek	Mouth	1-6-71	9:00 AM	42	48
		1-28-71	11:50 AM	46	180
		4-14-71	5:20 PM	49	63
		4-22-71	6:30 PM	50	51
		4-28-71	5:30 PM	51	38
		5-5-71	7:00 PM	50	26
		6-8-71	5:45 PM	56	18
		8-5-71	4:20 PM	62	8.1
Nehalem River	Above Cronin Cr.	6-9-71	10:15 AM	56	448
		6-23-71	2:00 PM	65	338
		7-21-71	11:30 AM	74	244
		8-5-71	11:30 AM	70	153
		8-20-71	9:45 AM	70	109
Nehalem River	Below East Fork Nehalem R.	5-25-71	4:15 PM	56	215
		6-2-71	1:20 PM	50	198
		6-9-71	12:30 PM	56	133
		6-23-71	11:10 AM	62	121
		7-21-71	2:30 PM	76	58
		8-5-71	1:30 PM	70	39
Nehalem River	Above Wolfe Cr.	3-22-71	1:30 PM	43	150
		4-29-71	3:35 PM	48	70
		5-5-71	12:05 PM	47	40
		5-12-71	4:00 PM	52	39
		6-2-71	11:30 AM	47	31
		6-9-71	2:30 PM	51	22
		7-21-71	4:00 PM	64	9.7
North Fork Nehalem River	Below Soapstone Cr.	2-19-71	9:55 AM	42	821
		4-23-71	2:00 PM	49	267
		4-28-71	4:10 PM	51	240

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
North Fork Nehalem River (cont.)	Below Soapstone Cr.	5-6-71	10:00 AM	49	148
		5-12-71	10:30 AM	56	129
		6-2-71	5:00 PM	52	150
		6-8-71	4:10 PM	56	143
		6-23-71	3:30 PM	61	165
		7-6-71	4:15 PM	57	151
		7-21-71	9:10 AM	60	122
		8-5-71	9:45 AM	57	71
		11-19-71	2:10 PM	50	460
North Fork Nehalem River	Below Little North Fork	1-6-71	4:15 PM	43	90
		1-28-71	1:15 PM	45	290
		2-19-71	11:20 AM	42	194
		3-19-71	3:45 PM	47	115
		4-7-71	4:00 PM	46	74
		4-23-71	10:00 AM	45	57
		4-28-71	1:45 PM	49	43
		5-5-71	10:00 AM	49	34
		7-20-71	5:50 PM	64	27
		8-5-71	3:00 PM	61	13
Soapstone Creek	Mouth	1-6-71	3:00 PM	43	75
		2-19-71	9:25 AM	42	196
		3-19-71	2:30 PM	47	104
		4-15-71	8:45 AM	45	110
		4-23-71	10:50 AM	46	54
		4-28-71	2:20 PM	51	33
		5-6-71	9:00 AM	48	29
		7-21-71	8:00 AM	56	25
Gods Valley Creek	Mouth	1-6-71	2:15 PM	43	50
		4-15-71	9:15 AM	46	76
		4-23-71	11:50 AM	47	34

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Gods Valley Creek (cont.)	Mouth	4-28-71	3:00 PM	54	25
		5-6-71	9:30 AM	48	15
		6-8-71	3:30 PM	58	12
		7-21-71	8:00 AM	60	8.2
Foley Creek	Mouth	1-6-71	10:15 AM	41	153
		3-19-71	10:00 AM	47	134
		4-15-71	12:05 PM	50	155
		4-22-71	3:30 PM	52	96
		4-28-71	4:45 PM	51	65
		5-6-71	10:30 AM	52	48
		5-12-71	11:00 AM	54	43
		6-1-71	5:30 PM	51	45
		6-8-71	4:55 PM	59	34
		6-23-71	3:00 PM	58	57
		7-16-71	5:00 PM	60	50
		7-21-71	9:40 AM	57	35
		8-5-71	9:05 AM	56	21
		8-12-71	1:00 PM	64	17
Cook Creek	Mouth	1-6-71	11:55 AM	41	213
		4-22-71	5:30 PM	48	200
		5-5-71	5:20 PM	49	131
		5-12-71	11:40 AM	52	93
		6-9-71	9:00 AM	50	66
		6-23-71	2:30 PM	55	84
		7-21-71	10:10 AM	55	71
		8-5-71	10:20 AM	56	38
		8-20-71	8:40 AM	57	32
Cronin Creek	Mouth	1-6-71	11:30 AM	43	63
		3-19-71	11:50 AM	45	117
		4-15-71	11:30 AM	46	98
		4-22-71	4:50 PM	48	45

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Cronin Creek (cont.)	Mouth	5-5-71	4:45 PM	48	27
		6-2-71	4:00 PM	50	22
		7-21-71	10:45 AM	55	10
		8-5-71	10:45 AM	56	8.7
Humbug Creek	Below Big Cr.	1-5-71	5:10 PM	40	175
		3-22-71	5:05 PM	47	170
		4-8-71	8:45 AM	45	125
		4-14-71	3:50 PM	48	205
		4-28-71	11:30 AM	48	75
		5-5-71	10:50 AM	50	41
		6-9-71	10:30 AM	54	34
		7-21-71	12:05 PM	64	18
39 Buster Creek	Mouth	1-5-71	4:10 PM	40	116
		4-8-71	9:50 AM	44	88
		4-29-71	12:30 PM	49	38
		5-5-71	3:40 PM	50	33
		6-2-71	2:45 PM	50	21
		7-21-71	1:00 PM	60	6.7
Walker Creek	Above Fishhawk Cr.	4-8-71	11:50 AM	46	137
		4-29-71	11:45 AM	49	65
		5-5-71	2:40 PM	50	33
		5-12-71	1:40 PM	56	29
		6-9-71	11:30 AM	52	34
		6-23-71	10:30 AM	57	22
		7-21-71	1:35 PM	64	5.7
Fishhawk Creek	Mouth	1-5-71	3:10 PM	39	173
		3-22-71	3:10 PM	45	198
		4-8-71	10:45 AM	45	130
		4-29-71	11:10 AM	48	63
		5-5-71	3:10 PM	50	38
		6-9-71	11:20 AM	51	25
		7-21-71	1:30 PM	65	8.9

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Rock Creek	Mouth	4-29-71	9:55 AM	49	164
		5-5-71	1:20 PM	50	120
		5-12-71	2:50 PM	58	108
		6-2-71	12:30 PM	50	100
		6-9-71	1:30 PM	56	70
		6-23-71	11:45 AM	59	56
		7-21-71	3:00 PM	72	15
		8-5-71	1:10 PM	66	21
Wolf Creek	Mouth	1-5-71	12:00 NOON	40	99
		3-22-71	2:20 PM	43	137
		4-8-71	2:10 PM	46	109
		4-29-71	2:10 PM	48	43
		5-5-71	11:30 AM	48	30
		5-12-71	3:30 PM	54	24
		5-25-71	3:00 PM	51	28
		6-9-71	2:00 PM	52	15
		7-21-71	3:30 PM	64	5.9
Miami River	Above Moss Cr.	11-20-70	10:55 AM	50	270
		3-19-71	8:45 AM	44	300
		4-15-71	12:40 PM	50	178
		4-22-71	2:30 PM	52	158
		5-6-71	11:20 AM	52	74
		5-13-71	9:30 AM	51	64
		6-1-71	5:00 PM	52	80
		6-9-71	6:10 PM	56	52
		8-5-71	8:30 AM	56	37
		8-12-71	9:45 AM	58	23
Kilchis River	Below Myrtle Cr.	11-20-70	8:40 AM	49	860
		4-22-71	12:45 PM	48	314
		5-6-71	12:45 PM	54	189
		5-13-71	8:20 AM	52	150
		6-1-71	4:20 PM	51	138

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Kilchis River (cont.)	Below Myrtle Cr.	6-10-71	9:15 AM	54	100
		6-23-71	4:30 PM	59	240
		7-23-71	9:10 AM	58	139
		8-4-71	4:00 PM	62	62
		11-19-71	11:00 AM	48	450
Kilchis River	Above Little South Fork	11-20-70	10:00 AM	49	587
		4-22-71	1:30 PM	48	230
		5-6-71	1:30 PM	54	132
		5-13-71	9:00 AM	52	106
		6-10-71	9:45 AM	54	89
		8-4-71	5:00 PM	62	56
		11-19-71	11:45 AM	48	353
Wilson River	Below Little North Fork	4-30-71	10:00 AM	48	824
		5-6-71	5:30 PM	55	635
		5-13-71	10:20 AM	53	575
		6-2-71	8:40 AM	50	476
		6-9-71	5:00 PM	58	344
		6-16-71	2:30 PM	58	433
		6-23-71	5:30 PM	62	433
		7-6-71	1:15 PM	56	430
		7-23-71	9:40 AM	61	285
		8-4-71	2:15 PM	66	187
Wilson River	Below Cedar Cr.	8-19-71	6:00 PM	68	153
		4-29-71	5:30 PM	50	530
		5-6-71	4:00 PM	56	493
		6-2-71	9:30 AM	49	275
		6-9-71	4:00 PM	56	230
		7-21-71	5:45 PM	69	207
		8-4-71	12:10 PM	62	129
		8-19-71	5:00 PM	68	88

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Little North Fork Wilson River	Mouth	1-5-71	9:45 AM	39	160
		3-18-71	4:45 PM	48	231
		4-14-71	1:05 PM	48	193
		4-22-71	10:30 AM	47	101
		4-30-71	8:40 AM	48	84
		5-6-71	5:00 PM	57	61
		5-12-71	6:15 PM	54	46
		8-13-71	2:00 PM	62	28
North Fork Wilson River	Mouth	4-22-71	9:30 AM	44	225
		4-29-71	4:40 PM	49	168
		5-6-71	3:30 PM	55	170
		5-12-71	5:30 PM	54	122
		6-2-71	10:00 AM	48	90
		6-9-71	3:30 PM	56	65
		7-21-71	5:00 PM	62	61
		8-19-71	4:00 PM	64	25
South Fork Wilson River	Mouth	1-4-71	4:40 PM	41	129
		2-18-71	3:00 PM	43	179
		3-18-71	3:15 PM	45	133
		4-14-71	2:00 PM	48	152
		4-22-71	8:40 AM	42	103
		4-29-71	4:00 PM	48	78
		5-6-71	2:40 PM	54	70
		5-12-71	5:00 PM	52	56
		6-2-71	10:40 AM	48	35
		7-21-71	4:30 PM	70	14
		8-4-71	1:20 PM	62	12
Trask River	Below Hatchery Cr.	4-30-71	2:45 PM	50	668
		5-6-71	2:00 PM	58	465
		5-13-71	10:45 AM	54	397
		6-1-71	11:10 AM	50	356

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Trask River (cont.)	Below Hatchery Cr.	6-10-71	10:30 AM	56	331
		6-16-71	2:00 PM	58	323
		6-24-71	8:20 AM	56	244
		7-6-71	12:30 PM	56	280
		7-23-71	10:15 AM	63	173
		8-4-71	10:30 AM	66	158
		8-19-71	12:10 PM	64	113
South Fork Trask River	Below East Fork of South Fork	4-30-71	11:30 AM	48	265
		5-7-71	9:45 AM	50	181
		6-1-71	3:10 PM	50	200
		6-10-71	12:05 PM	52	166
		7-23-71	11:30 AM	58	110
		8-19-71	2:00 PM	60	61
		11-19-71	2:10 PM	50	460
South Fork Trask River	Below Edwards Cr.	4-21-71	1:20 PM	50	115
		4-30-71	11:00 AM	48	96
		5-7-71	9:15 AM	49	70
		6-1-71	2:50 PM	50	80
		6-10-71	11:30 AM	52	59
		6-24-71	9:20 AM	50	56
		7-23-71	11:05 AM	56	43
		8-4-71	11:00 AM	58	40
Edwards Creek	Mouth	8-19-71	1:30 PM	60	23
		1-4-71	12:15 PM	41	64
		3-18-71	1:30 PM	48	98
		4-21-71	11:55 AM	50	52
		5-7-71	9:00 AM	49	24
		6-24-71	9:15 AM	50	22
		7-23-71	11:00 AM	56	10

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
North Fork Trask River	Below Bark Shanty Cr.	4-30-71	1:00 PM	50	336
		5-7-71	12:30 PM	54	263
		6-1-71	2:30 PM	50	193
		6-10-71	12:45 PM	54	160
		6-24-71	9:45 AM	53	138
		7-23-71	12:05 PM	64	88
		8-19-71	2:30 PM	66	64
North Fork of North Fork Trask River	Mouth	1-4-71	2:10 PM	40	98
		4-21-71	4:30 PM	46	102
		5-7-71	11:55 AM	52	78
		6-1-71	1:20 PM	49	36
		6-10-71	1:30 PM	54	28
		7-23-71	1:10 PM	64	13
Middle Fork of North Fork Trask River	Mouth	4-21-71	4:00 PM	46	185
		5-7-71	11:30 AM	52	116
		6-1-71	12:50 PM	49	81
		6-10-71	2:00 PM	54	62
		7-23-71	1:30 PM	67	39
		8-19-71	2:50 PM	66	27
Tillamook River	Below Beaver Cr.	11-20-70	1:00 PM	50	305
		4-21-71	10:50 AM	48	154
		4-28-71	3:55 PM	50	118
		5-6-71	6:30 PM	57	80
		5-13-71	11:30 AM	54	61
		6-2-71	12:30 PM	50	65
		6-10-71	8:45 AM	53	53
		7-22-71	9:00 AM	58	42
		8-6-71	7:30 AM	57	32

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Nestucca River	Below Beaver Cr.	4-28-71	2:15 PM	48	648
		5-7-71	9:15 AM	52	475
		5-13-71	12:45 PM	54	497
		6-2-71	10:30 AM	50	352
		6-10-71	9:30 AM	54	335
		6-16-71	12:05 PM	56	307
		6-24-71	10:45 AM	56	271
		7-6-71	11:30 AM	56	287
		7-22-71	11:00 AM	62	193
		8-5-71	3:50 PM	66	155
		8-19-71	10:30 AM	64	115
Nestucca River	Above East Cr.	4-20-71	5:30 PM	46	425
		5-7-71	10:55 AM	51	287
		6-2-71	1:20 PM	50	221
		6-10-71	10:30 AM	53	163
		6-16-71	1:00 PM	56	166
		8-6-71	8:40 AM	62	71
		8-19-71	11:00 AM	63	71
Nestucca River	Below Elk Cr.	4-20-71	4:10 PM	46	168
		4-29-71	8:00 AM	43	138
		5-7-71	11:50 AM	51	93
		6-2-71	2:40 PM	48	51
		7-22-71	12:05 PM	63	18
		8-6-71	9:30 AM	57	19
Three Rivers	Below Cedar Cr.	11-19-70	1:05 PM	50	345
		4-20-71	1:20 PM	48	270
		4-28-71	12:45 PM	47	215
		5-6-71	5:30 PM	--	145
		5-13-71	1:00 PM	51	138
		6-2-71	9:50 AM	48	109
		6-9-71	4:20 PM	52	79

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Three Rivers (cont.)	Below Cedar Cr.	6-16-71	11:15 AM	51	97
		6-24-71	11:00 AM	50	96
		7-6-71	11:15 AM	52	113
		7-22-71	10:30 AM	56	69
		8-5-71	3:10 PM	60	35
		8-19-71	9:50 AM	56	57
Alder Creek	Mouth	11-19-70	2:00 PM	50	59
		1-4-71	10:30 AM	41	72
		3-18-71	9:45 AM	43	70
		4-20-71	12:15 PM	48	38
		4-28-71	12:15 PM	47	32
		5-6-71	4:45 PM	55	21
		7-21-71	4:40 PM	63	6.6
		8-5-71	2:50 PM	60	7.2
Beaver Creek	Mouth	11-19-70	3:00 PM	50	270
		3-18-71	11:55 AM	46	295
		4-21-71	9:10 AM	46	148
		4-28-71	2:45 PM	49	96
		5-6-71	5:55 PM	57	60
		5-13-71	12:30 PM	53	58
		6-2-71	11:30 AM	50	52
		7-22-71	10:05 AM	57	51
		8-5-71	4:15 PM	63	26
East Fork Beaver Creek	Above Bear Cr.	11-19-70	4:00 PM	50	151
		2-18-71	1:30 PM	45	161
		4-21-71	9:45 AM	46	81
		4-28-71	3:15 PM	48	57
		5-7-71	8:45 AM	48	49
		7-22-71	9:40 AM	55	22
		8-5-71	4:45 PM	62	19

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
East Creek	Above Moon Cr.	4-20-71	2:45 PM	50	61
		4-29-71	9:45 AM	45	43
Moon Creek	Mouth	11-20-70	2:15 PM	49	78
		3-18-71	11:30 AM	45	110
		4-20-71	2:40 PM	50	52
		4-29-71	9:30 AM	46	32
		6-10-71	10:00 AM	50	18
		7-22-71	11:30 AM	55	9.2
		8-6-71	8:25 AM	55	7.5
		9-16-71	---	--	16
Little Nestucca River	Below Fall Cr.	11-19-70	10:40 AM	50	408
		4-14-71	11:50 AM	48	520
		4-28-71	11:10 AM	47	218
		5-6-71	3:30 PM	54	135
		6-2-71	8:45 AM	49	111
		6-9-71	4:00 PM	56	77
		6-16-71	10:45 AM	52	70
		7-6-71	10:45 AM	53	94
		7-21-71	3:55 PM	63	62
Little Nestucca River	Below Louie Cr.	8-5-71	1:50 PM	62	40
		11-19-70	9:40 AM	50	197
		3-18-71	9:30 AM	42	234
		4-20-71	11:15 AM	47	85
		4-28-71	12:05 PM	48	69
		5-6-71	4:20 PM	45	45
		6-2-71	9:15 AM	48	35
		7-6-71	10:15 AM	52	32
		8-5-71	2:30 PM	61	9.6

Appendix 3. (continued)

Stream	Location	Date	Time	Water Temp. °F	Flow
Neskowin Creek	Below Prospect Cr.	2-18-71	11:45 AM	47	200
		4-14-71	11:00 AM	48	98
		4-20-71	10:20 AM	46	88
		4-28-71	10:25 AM	47	46
		5-6-71	2:45 PM	53	25
		6-9-71	---	--	15
		7-21-71	3:00 PM	--	25
		11-15-71	2:45 PM	52	234
		11-16-71	12:30 PM	51	160

Stream flows and temperatures measured in 1965-1966 are published in the report to which this is a supplement.

Appendix 4. Recommended angling flows for selected North
Coast Basin streams /1 /2

Stream	April-October	November-March
Neskowin Creek	30	125
Little Nestucca River	50	200
Nestucca River	300	1,600
Three Rivers	50	150
Tillamook River	50	200
Trask River	300	1,200
North Fork Trask River	80	300
South Fork Trask River	50	200
Wilson River	300	1,600
Little North Fork Wilson River	30	150
Devils Lake Fork (Wilson River)	50	200
Kilchis River	70	400
Miami River	50	200
Nehalem River	300	2,500
North Fork Nehalem River	80	500
Cook Creek	30	150
Salmonberry River	50	250
Rock Creek	50	200
Necanicum River	60	250
Lewis & Clark River	50	200
North Fork Klaskanine River	30	100
South Fork Klaskanine River	30	100

Appendix 4. (continued)

Stream	April-October	November-March
Big Creek	40	200
Clatskanie River	50	250

/1 Flows are expressed in cubic feet per second.

/2 All flows are to reach the mouth of the stream.

Appendix 5. Some reservoir sites presently thought compatible with fishery resources, North Coast Basin /1

Stream	Location
Columbia River Tributaries	
Beaver Creek	T7N-R4W-S12
Clatskanie River	T5N-R3W-S36
North Fork of North Fork of Klaskanine River	T7N-R8W-S17
Youngs River	T7N-R9W-S27
Necanicum River	
South Fork Necanicum River	T5N-R9W-S29
Nehalem River	
Nehalem River	T3N-R6W-S27
North Fork Nehalem River	T4N-R9W-S1
" " " "	T4N-R9W-S14
Salmonberry River	T3N-R6W-S17
Foley Creek	T2N-R10W-S23
Tillamook River	
Beaver Creek	T2S-R10W-S3
Sutton Creek	T2S-R10W-S14

/1 Detailed studies should be conducted to determine total impact on fish and wildlife before any of the above sites are considered for development.

Appendix 6. Values used in preparation of Tables 3, 4, and 8 and parts of the text

Daily gross expenditures by sportsmen /1

Species	Expenditure per day
Sea-run cutthroat	\$18.50
Resident fish	6.00
Nongame marine fish	6.00
Deer (black-tailed)	20.10
Elk (Roosevelt)	26.60
Waterfowl	8.00
Small game	6.00

Gross expenditure per animal harvested /1

Species	Expenditure per animal harvested
Coho	\$74.00
Chinook	74.00
Steelhead	74.00

Ratios of commercial harvest to spawning escapement /2

Species	Ratio
Ocean Tributaries	
Coho	3:1
Chinook	3:1
Columbia River Tributaries	
Coho	5:1
Chinook	4.5:1
Steelhead	1:4

Commercial fish values /2

Species	Average weight (lbs.)	Fishermen value per pound
Ocean		
Coho	8	\$0.50
Chinook	12	.70
Columbia		
Coho	9	.40
Chinook	15	.60
Steelhead	10	.30

/1 Source: Oregon State Game Commission.

/2 Source: Fish Commission of Oregon.

Appendix 7. Streams which should be protected from gravel removal

Stream	Reach of stream
Clatskanie River	Above Swedetown
Lewis & Clark River	Above South Fork
Necanicum River	Above Meyer Creek
Nehalem River Tributaries	Above Vernonia
North Fork Nehalem River	Above Highway 53
Humbug Creek	Entire
Salmonberry River	Entire
Cook Creek	Entire
Miami River	Above Prouty Creek
Miami River Tributaries	All
Kilchis River	All River Mile 4.0
Kilchis River Tributaries	All
Wilson River	Above River Mile 8.5
Wilson River Tributaries	All
Trask River	Above Hanenkrat Creek
Trask River Tributaries	All
Tillamook River	Above River Mile 7.0
Tillamook River Tributaries	All
Nestucca River	Above River Mile 12.5
Nestucca River Tributaries	All
Little Nestucca River	Above River Mile 3.5
Little Nestucca River Tributaries	All
Neskowin Creek	Above River Mile 2.0
Neskowin Creek Tributaries	All

