

QUEETS-QUINAULT BASIN

Water Resource Inventory Area 21

The Queets-Quinault basin contains all the tributaries to the Pacific Ocean from, and including, Kalaloch Creek south to near Point Brown at the north entrance to Grays Harbor. Major watersheds included are the Queets, Raft, Quinault, Moclipis, and Copalis rivers as well as a number of smaller independent drainages which also enter the Pacific Ocean in this area. All of these streams provide suitable spawning and rearing habitat for salmon. There are 780 rivers and streams providing 1,500 linear stream miles within this basin.

The Olympic Mountain Range serves as the source of the Queets and the Quinault rivers while smaller streams head in the low foothills at the base of this range. The headwaters of the Queets and Quinault rivers and their upper tributaries are generally quite steep, but their middle and lower reaches contain many miles of moderate gradient stream channel. The smaller independent drainages generally have a moderate gradient throughout their lengths except in their extreme headwaters. Stream flows are provided by the abundant rainfall in this area with snow-pack runoff becoming important in the summer to those streams that flow from the Olympic Mountains.

Fish Inventory and Distribution

All five species of Pacific salmon (chinook, coho, chum, pink, and sockeye) are present in the drainages of the Queets-Quinault basin.

This area, less the Quinault Indian Reservation, provides over 373 miles of streams in which salmon migrate, spawn, and rear. Adult coho and chum salmon can be expected in the smaller streams from October through mid-January. The Queets and Quinault rivers have runs of spring and summer chinook while sockeye spawn and rear in the Quinault watershed. These two streams have adult salmon virtually the entire year. Timing of salmon residence in the rivers and streams of this basin is shown in Table 21-1.

Chinook Salmon — Fall chinook utilize many miles of the Queets River system. The most heavily spawned section of the mainstem extends from the mouth of Matheny Creek upstream to Tshletshy Creek. Spawners can be expected on all suitable riffles from tidewater upstream to Hee Hee Creek. The Clearwater River, the largest Queets tributary, also has a significant run of chinook salmon that spawn from near the mouth upstream to near mile 30.0. Several tributaries to the Clearwater River may support chinook runs, including Snahapish and Solleks rivers and Stequaleho and Shale creeks. Other Queets River tributaries known to be utilized by chinook include the Salmon River, Matheny Creek, Sams River, and Tshletshy Creek.

Spring and summer chinook spawning occurs mainly in the upper reaches of the Queets River with the majority of these fish probably spawning upstream from the Sams River.



PHOTO 21-1. Limited estuary areas of many coastal streams restrict the "transition zone" for juvenile salmon (Queets River).



PHOTO 21-2. Typical spring and summer chinook spawning area in the Queets River above Tshletshy Creek.

Some spring and summer chinook spawning is known to also take place in the lower reaches of Matheny Creek and in the upper Clearwater system.

The Quinault River has an excellent run of fall chinook. These fish utilize the mainstem of the Quinault River below Lake Quinault and that reach of the upper river between the mouth of the North Fork and the lower end of the canyon above Graves Creek. Many of the riffle areas downstream from Lake Quinault are heavily spawned while tributary spawning occurs in several streams below the lake and in Big and Graves creeks above the lake. This species has not been seen in the North Fork Quinault River; however, this stream does have potential for chinook spawning. The Quinault River between Lake Quinault and the North Fork Quinault River supports a few spawning chinook.

Most of the spring and summer chinook spawning is confined to the Quinault River between its North Fork and the lower end of the canyon, a short distance above Graves Creek. These races may also utilize the middle reaches of the North Fork.

During the period of 1966 through 1971 the spawning escapement of chinook in the Queets-Quinault basin ranged from 6,000 to 50,000 fish and averaged 18,000 annually with all of these being the product of natural propagation.

Coho Salmon — Coho spawning occurs in all accessible streams containing suitable spawning material. Most of these streams support significant coho runs, but spawning is generally confined to the smaller tributary streams with little spawning activity taking place in the larger mainstem channels.

The Queets River tributaries upstream to Kilkelly Creek are heavily spawned by coho, but they are able to utilize only lower gradient channels in the mainstem valley above Tshletshy Creek because the upper channels are too precipitous. Lower gradient streams flowing into the Queets from the south below Tshletshy Creek are generally accessible to coho for greater distances than those upstream. Those flowing into the Queets from the north, except the Clearwater River, are typically quite steep and provide suitable

spawning habitat only in their lower extremities.

Coho spawning occurs in the Clearwater River, the largest Queets tributary, nearly to its headwaters. Its tributaries upstream from the Solleks River are generally quite steep and only short sections of their lower reaches are utilized by this species. Many tributaries below, and including the Solleks, provide suitable coho habitat considerable distances above their mouths.

The Quinault River and its tributaries upstream to the narrow canyon above Graves Creek are utilized by coho where cascades in this canyon apparently prevent coho from progressing further upstream. Most tributaries to the river below Lake Quinault provide extensive potential coho production area while tributaries to Lake Quinault and most of the tributaries upstream from the lake are too steep for coho migration except in their lower reaches. Big Creek and the North Fork Quinault are the only notable exceptions, although production in the North Fork and its tributaries is apparently quite low.

The remaining independent drainages in this area are typically accessible and spawned by coho well above their mouths. Some of the streams are choked with logging debris which may prevent full use of the stream's productive area.

Coho escapements during the period of 1966 through 1971 fell in the range of 15,000 to 120,000 annually with the average escapement estimated at 45,000 fish. This production was the result of natural spawning and rearing since very few coho were released from artificial production facilities.

Chum Salmon — The Quinault River formerly supported excellent runs of chum salmon while smaller runs entered the Queets, Raft, and Moclips rivers. Chum runs are presently found in tributaries to the Quinault River downstream from Lake Quinault and in the mainstem of the Quinault River below the lake. A few chums utilize the tributaries above the lake upstream to the North Fork, but spawning areas have not been located in the other drainages.

Chum spawning escapements ranged from 1,000 to



PHOTO 21-3. Sockeye and coho spawning section at the old hatchery rack site on Big Creek (Quinault River).

Table 21-1. Timing of salmon fresh-water life phases in Queets-Quinault Basin WRIA 21

Species	Fresh-water Life Phase	Month											
		J	F	M	A	M	J	J	A	S	O	N	D
Spring Chinook	Upstream migration												
	Spawning												
	Intragravel develop.												
	Juvenile rearing												
	Juv. out migration												
Summer-Fall Chinook	Upstream migration												
	Spawning												
	Intragravel develop.												
	Juvenile rearing												
	Juv. out migration												
Coho	Upstream migration												
	Spawning												
	Intragravel develop.												
	Juvenile rearing												
	Juv. out migration												
Pink	Upstream migration												
	Spawning												
	Intragravel develop.												
	Juvenile rearing												
	Juv. out migration												
Chum	Upstream migration												
	Spawning												
	Intragravel develop.												
	Juvenile rearing												
	Juv. out migration												
Sockeye	Upstream migration												
	Spawning												
	Intragravel develop.												
	Juvenile rearing												
	Juv. out migration												

10,000 fish and averaged 4,000 fish annually from 1966 to 1971.

Sockeye Salmon — Lake Quinault serves as a maturation area for sockeye salmon as well as providing over 3,700 acres of rearing area for juveniles. Spawning is confined primarily to the tributaries of Lake Quinault and the river above the lake. Several old river channels provide excellent spawning habitat for this species as do Big and Fletcher creeks and some spawning may occur in the North Fork and in the mainstem above the North Fork.

Limited numbers of sockeye reportedly spawn in the Clearwater River, but juveniles must rear in the main channel as there are no lakes accessible for this species. Little information is presently available on annual spawning escapements in this basin.

Pink Salmon — Small numbers of pink salmon spawn annually on the riffles near tidewater on the Queets and Quinault rivers and have been found on the Clearwater

River also. The annual spawning escapement is estimated to be less than 1,500 fish.

Salmon Production

A six-year period, 1966 through 1971, has been selected for the presentation of all salmon production figures. This span of years is used for both natural and artificially produced fish, as well as escapement and harvest figures.

The production of salmon within the Queets-Quinault basin has been almost entirely dependent upon the natural spawning and rearing habitat in the past. These waters produce an average of approximately 280,000 salmon to the various sport and commercial fisheries annually. A federal hatchery was operated on Lake Quinault until 1949 when the artificial spawning of sockeye salmon was terminated.

A federally-financed salmon hatchery was constructed on Cook Creek, a tributary of the Quinault River, on the Quinault Indian Reservation in 1971. This station when in full production will have a production capacity of 5.0 million chinook and 2.5 million coho yearlings, and 1.0 million

chum fry annually. Most fish produced here will be released in streams flowing through Indian net-fishing areas.

Some plants into this area have been made from other federally operated hatcheries while few plants have been released into these waters from state operated stations. During the 1966 through 1971 period, only 37,000 coho fingerlings were planted from state hatcheries.

Harvest

Salmon produced or reared in the Queets-Quinault basin contribute to the U.S. and Canadian, Pacific Ocean sport and commercial fisheries. These coastal drainages contribute heavily to the Pacific Coast troll fishery from the Columbia River to the Queen Charlotte Islands. The Canadian and Washington net fisheries at the mouth of the Strait of Juan de Fuca also harvest adult salmon from the Queets-Quinault basin.

There are presently no facilities in the Queets-Quinault basin suited for a marine sport fishing base. Boats fishing out of Grays Harbor frequently ply the southerly marine waters of this area north to Cape Elizabeth so salmon harvested here are landed in the Chehalis basin ports of Ocean Shores and Westport and are included in the Chehalis basin landings.

A number of the rivers in the coastal area flow through Indian reservation and many of these are fished annually by the Indians. Indians also claim fishing rights on several non-reservation streams. The salmon are harvested with gill nets, which are either drifted with the current or staked out in quieter pools, dip nets, drag seines, and traps since most fishing effort occurs in the limited estuarial areas of these streams where these types of gear are most effective. These fisheries are subject to tribal regulation only on reservation and to state regulation off reservation for conservation purposes. Tribal regulations are also applied to certain off-reservation waters.

Over half of the ocean coastline in the Queets-Quinault basin is in the Quinault Indian Reservation. These Indians fish the Queets and Quinault rivers intensively, but the Raft and Modlips rivers were also formerly fished. In recent years,

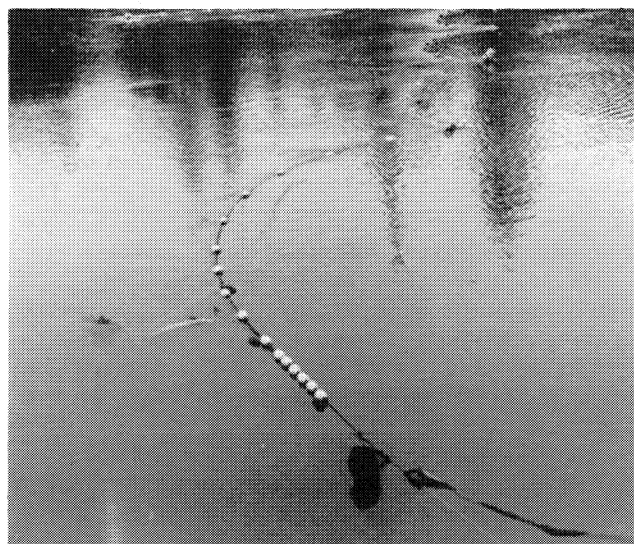


PHOTO 21-4. Indian set nets on the Queets River are intensively fished for salmon.

TABLE 21-2. Salmon Escapement Level for the Queets-Quinault Basin WRIA 21.

Species	1966-1971 Escapements	
	Range	Average
Chinook	6,000— 50,000	18,000
Coho	15,000—120,000	45,000
Chum	1,000— 10,000	4,000

however, only an occasional landing has been made from these two rivers which have been closed by tribal regulation. Average annual Indian catch of salmon from the waters of this basin is 67,201.

Freshwater salmon angling is allowed in the Queets-Quinault basin in the Clearwater, Copalis, Queets, Quinault, and Salmon rivers and in Joe and Kalaloch creeks. Angling in Lake Quinault is subject to regulations of the Quinault Indian tribal council while state regulations authorize the harvest of adult salmon in Queets, Quinault, and Copalis rivers and in Joe Creek. Angling in other streams is restricted to the taking of jack salmon only. The average annual catch from these streams is about 695 fish with most of the harvest consisting of chinook and coho jack salmon. The Queets River is noted for its fine chinook fishing with a number of large adult chinook taken annually.

Limiting Factors

Limiting factors refer to conditions that lead to a complete loss or reduction of the environment's fish production potential, excluding harvest or exploitation. They include only those conditions presently considered alterable. Major limiting factors include stream flow, physical barriers, water quality, limited spawning and rearing areas, and watershed development.

Stream flow — Seasonal flooding occurs in most of the drainage areas of this basin. This flooding does not normally result in excessive damage to the fisheries resources except on the upper Quinault River and some smaller, more precipitous stream where such flooding may result in unstable streambeds.

Seasonal low flows occur in virtually all of the streams, but are most detrimental to fish life in the smaller tributaries by limiting the amount of rearing area available. These low flows are generally from natural causes since stream diversions for other water uses are presently limited to a small number of courses. Some smaller streams go dry during extensive rainless periods in the summer while some tributaries in the Quinault River drainage go underground for varying distances, except during high winter flow.

Physical barriers — A number of streams in this basin have physical barriers which inhibit or delay salmon migration to potential spawning and rearing areas. Most of these barriers are natural features consisting of falls, cascades, and beaver dams. Log jams, composed of both natural and logging debris, are problems in many streams.

Some barriers have resulted from construction activities, but only one dam blocking significant spawning area is



PHOTO 21-5. Low flow conditions on coastal streams restrict adult migrations and impact juvenile rearing (Clearwater River).

known. A number of small tributary streams are blocked by improper culverts on county, state, and private roads. Culverts not properly installed can create outfall drops and velocities sufficient to prevent upstream passage of adults.

Barriers on larger streams in the Queets-Quinault basin which prevent salmon from utilizing upstream spawning and rearing area include falls on Stequaleho and Manor creeks and on the Sams River in the Queets drainage. Falls on the upper reaches of the Quinault River above Graves Creek prevent salmon from utilizing potential production area upstream. A number of barriers exist on smaller streams which, if accessible, would be excellent salmon production areas. A number of streams on the Quinault Indian Reservation have serious log and debris jams.

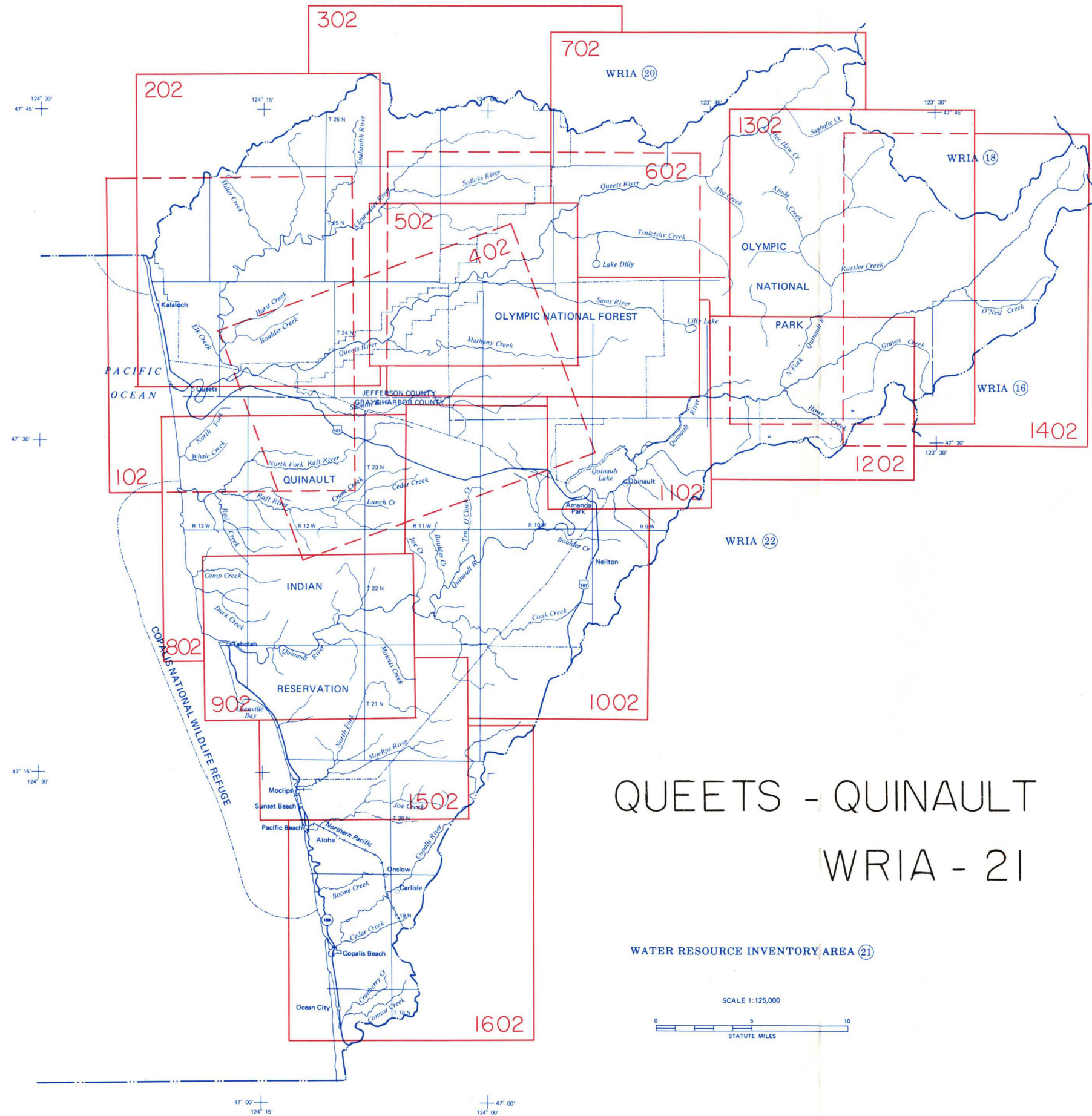


PHOTO 21-6. Many streams have steep gradients that curtail salmon production (Quinault River).

Water quality — Water quality is generally good throughout this basin although excessive siltation occurs in streams where extensive logging and road construction have denuded stream bank areas. Domestic wastes are discharged into many of the streams of the basin; however, present waste levels are not known to be detrimental to salmon production.

QUEETS-QUINAULT BASIN WRIA 21 **Index to Key Maps**

Map Title	Stream Numbers	Page
QUEETS RIVER (Lower Mainstem)	(21.0001—21.0023) (21.0134—21.0138) (21.0156—21.0164) (21.0331—21.0336)	Queets-Quinault— 102
CLEARWATER RIVER (Lower Mainstem)	(21.0024—21.0086)	Queets-Quinault— 202
CLEARWATER RIVER (Headwaters)	(21.0087—21.0133)	Queets-Quinault— 302
SALMON RIVER	(21.0139—21.0155)	Queets-Quinault— 402
QUEETS RIVER (Queets Campground Area)	(21.0198—21.0204) (21.0233—21.0239)	Queets-Quinault— 502
MATHENY CREEK-SAMS RIVER	(21.0165—21.0197) (21.0205—21.0232)	Queets-Quinault— 602
QUEETS RIVER (Headwaters)	(21.0240—21.0330)	Queets-Quinault— 702
RAFT RIVER	(21.0337—21.0397)	Queets-Quinault— 802
QUINAULT RIVER (Lower Mainstem)	(21.0398—21.0426)	Queets-Quinault— 902
QUINAULT RIVER (Cook Creek-Amanda Park)	(21.0427—21.0459)	Queets-Quinault—1002
QUINAULT LAKE	(21.0460—21.0495)	Queets-Quinault—1102
QUINAULT RIVER (Big Creek Area)	(21.0496—21.0531) (21.0626—21.0631)	Queets-Quinault—1202
NORTH FORK QUINAULT RIVER	(21.0532—21.0625)	Queets-Quinault—1302
QUINAULT RIVER (Headwaters)	(21.0632—21.0710)	Queets-Quinault—1402
MOCLIPS RIVER	(21.0711—21.0739)	Queets-Quinault—1502
COPALIPS RIVER	(21.0740—21.0780)	Queets-Quinault—1602



QUEETS - QUINALT BASIN

WRIA - 21

WATER RESOURCE INVENTORY AREA (21)

SCALE 1:125,000



QUEETS RIVER

Lower Mainstem

This section discusses the Queets River from its mouth upstream to and including Mud Creek at mile 13.3. Six independent drainages are also included. There are 11 tributaries of the lower Queets River providing an additional 48.1 linear miles of stream drainage. Clearwater and Salmon rivers, tributaries of the Queets River in this section, are discussed in sections 200 and 500 respectively. Those drainages entering directly into the Pacific Ocean have 43.6 miles of stream length.

Stream Description

The entire reach of the Queets River lies either within the Quinault Indian Reservation or the Olympic National Park. The Queets River originates high in the Olympic Mountain range. Within this section the river has a moderate gradient and meanders through a broad river valley. The river has a winter width of 50 yards and a summer width of 35 yards as it courses through a gravel flood plain area. The streambed is composed of gravel and rubble with deep pools and short riffle areas and is bordered by mixed timber and brush. The left bank tributaries have very low to moderate gradients and their streambeds are composed of sand, silt, and gravel. These streams have winter widths in their lower reaches of less than 5 yards. During the summer months these streams have average widths ranging from 1 to 3 yards. Stream bank cover is good except in certain sections which have been clearcut logged in recent years.

Kalaloch Creek is the major independent drainage in this section. This stream originates in a low mountainous area. The lower mile of Kalaloch Creek is in the Olympic National Park; however, the remainder of the watershed lies primarily in state forest land. Lower Kalaloch Creek is approximately 12 yards in width during the winter and 8 yards during the summer months. These widths diminish to 3 yards and 1 yard respectively in the upper reaches of salmon use. The stream is well shaded by mixed timber throughout most of its length and has a low to moderate gradient in the lower 8 miles. The streambed consists principally of gravel and sand. Tributaries are generally less than 6 yards in width in their lower reaches during the winter months and average less than 4 yards wide in the summer. Bottom composition and stream bank cover of the tributary streams is similar to that of Kalaloch Creek.

The Whale Creek watershed lies entirely within the boundaries of the Quinault Indian Reservation. The Department of Fisheries has not conducted surveys on this independent drainage.

Salmon Utilization

This section of the Queets River provides spawning, transportation, and rearing waters for runs of chinook, coho, pink, sockeye and chum. Pink spawning has been observed downstream from the confluence of the Clearwater River. Chinook spawn on all suitable riffles within this section. Coho production occurs primarily in the tributary streams.

Kalaloch Creek provides suitable habitat for chinook, chum, and coho. Only the latter species is presently known to utilize this watershed. Good coho spawning areas are

found in many reaches of upper Kalaloch Creek and its tributaries. The lower 1.5 miles of Kalaloch Creek may support small runs of chinook and chum. Chum may also utilize the lower reaches of several tributaries.

Whale Creek reportedly supports runs of coho salmon as may the other independent drainages. The 13 miles of mainstem Queets River and 24 linear miles of tributaries are presently utilized by salmon species. An estimated 20 linear miles of independent streams also are accessible to salmon production.

Limiting Factors

The salmon production in this portion of the Queets drainage is limited primarily by access to coho spawning areas in tributary streams. Logging activities on the upper reaches of tributary streams outside the boundaries of the Olympic National Park have resulted in degradation of spawning and rearing habitat. Log and debris jams are common in several streams.

Kalaloch Creek provides good spawning and rearing habitat for coho salmon. Certain sections, however, have been adversely affected by logging and road construction activities. Areas of inadequate stream bank cover exist.

Beneficial Developments

No beneficial development has occurred in this section.

Habitat Needs

Additional steps must be taken during logging activities outside of the Olympic National Park to protect the salmon production habitat in these watersheds. Stream bank cover must be preserved in these areas. Log and debris accumulations and siltation of stream channels must be avoided.



PHOTO 21-7. Lower Queets River near Salmon River.

QUEETS RIVER Lower Mainstem

SYMBOLS PASSABLE - BARRIERS - IMPASSABLE

	Falls		Cascades
	Beaver Dams		Log Jams
	Dams		Dams

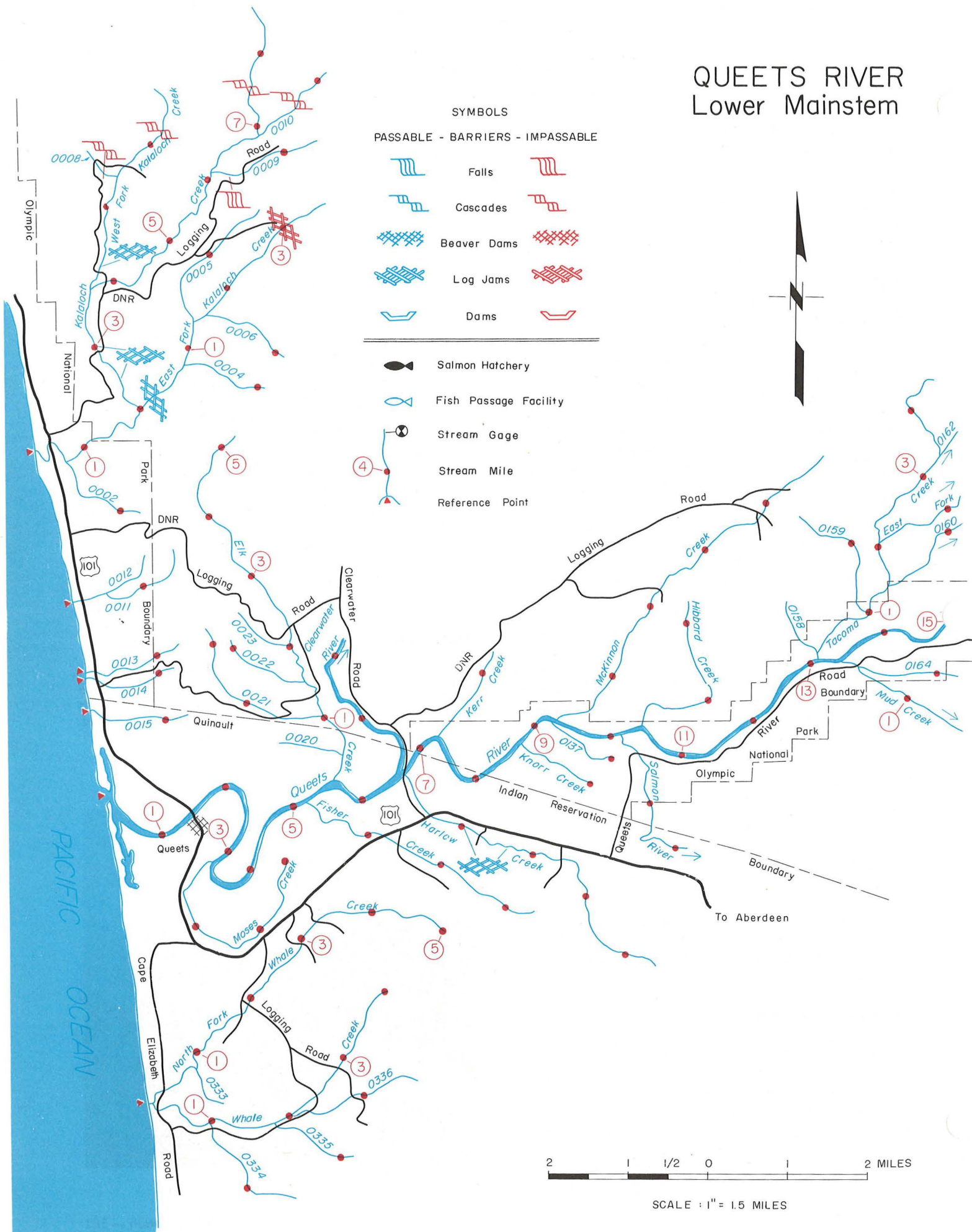
Salmon Hatchery

Fish Passage Facility

Stream Gage

Stream Mile

Reference Point



SCALE : 1" = 1.5 MILES

QUEETS RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0001	Kalaloch Creek	S1/2,Sec4, T24N,R13W	8.6	—	Coho, Chum
0002	Unnamed	LB-0.7	1.2	—	Coho
0003	E. F. Kalaloch Cr.	LB-2.0	3.6	—	Coho, Chum
0004	Unnamed	LB-0.8	1.1	—	Unknown
0005	Unnamed	RB-1.4	1.8	—	Unknown
0006	Unnamed	LB-1.6	1.1	—	Unknown
0007	W. F. Kalaloch Cr.	RB-3.7	2.8	—	Coho
0009	Unnamed	LB-6.1	1.4	—	Coho
0010	Unnamed	LB-6.9	1.1	—	Coho
0011	Unnamed	SW1/4,Sec15, T24N,R13W	1.7	—	Unknown
0013	Unnamed	N1/2,SW1/4,Sec22, T24N,R13W	1.3	—	Unknown
0014	Unnamed	S1/2,SW1/4,Sec22, T24N,R13W	1.2	—	Unknown
0015	Unnamed	NW1/4,Sec27, T24N,R13W	1.3	—	Unknown
0016	Queets River	NW1/4,Sec34, T24N,R13W	51.4	—	Chin.,Coho,Chum, Sockeye, Pink
0017	Moses Creek	LB-3.2	3.0	—	Coho
0018	Fisher Creek	LB-5.2	3.3	—	Coho
0019	Elk Creek	RB-5.6	5.2	—	Coho
0021	Unnamed	RB-1.0	2.2	—	Coho
0022	Unnamed	RB-1.5	1.1	—	Coho
0024	Clearwater River	RB-6.5	36.7	153.0	
	(See Queets-Quinault 203)				
0134	Harlow Creek	LB-6.61	4.4	—	Coho
0135	Kerr Creek	RB-7.2	1.3	—	Unknown
0136	Knorr Creek	LB-8.7	1.0	—	Coho
0137	Unnamed	LB-9.25	1.0	—	Coho
0138	McKinnon Creek	RB-9.3	4.9	—	Coho
0139	Salmon River	LB-10.1	17.2	—	
	(See Queets-Quinault 403)				
0156	Hibbard Creek	RB-10.4	2.3	—	Coho
0157	Tacoma Creek	RB-13.1	4.6	—	Coho
0159	Unnamed	RB-1.0	1.8	—	Coho

QUEETS RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0160	Unnamed	LB-1.5	1.7	—	Coho
0161	E. F. Tacoma Cr.	LB-2.0	3.2	—	Coho
0163	Mud Creek	LB-13.3	2.7	—	Coho
	(Cont. Queets-Quinault 503)				
0331	Whale Creek	NW¼, Sec16, T23N, R13W	4.0	13.2	Coho
0332	N. F. Whale Cr.	RB-0.05	5.0	—	Coho
0334	Unnamed	LB-0.9	1.6	—	Coho
0335	Unnamed	LB-1.8	1.1	—	Unknown
0336	Unnamed	LB-2.0	1.7	—	Unknown

CLEARWATER RIVER

Lower Mainstem

This section, Clearwater River from its confluence with the Queets upstream to the confluence of Manor Creek, contains 20.3 miles of mainstem Clearwater. In addition there are 18 tributaries providing an additional 105.2 miles of stream drainage. The remainder of the watershed is discussed in section 400.

Stream Description

The Clearwater heads in the foothills of the Olympic Mountain Range. In this section of the watershed the river maintains a meandering southwesterly course for approximately 11 miles. The course then flows in a southerly direction to its confluence with the Queets. At the upper end of this section the Clearwater first breaks out of the steep-sided narrow valley and enters the broader Clearwater Valley. Most of this watershed is state-owned timberland with some agricultural activity in the lower several miles. The community of Clearwater, consisting of scattered residences and a logging camp, is located on the lower river.

The Clearwater during the winter months ranges from an average width of 40 yards near its confluence with the Queets to 20 yards near the confluence of Manor Creek. During the summer months the stream has an average width of 30 yards in the lower reaches and 12 yards in the upper area. The gradient is low to moderate throughout with a streambed composed of rubble and gravel. The stream is composed primarily of pool area with relatively short riffle sections.

There are a number of tributaries within this reach, the largest being Snahapish River. This moderate gradient stream has a width of 12 and 8 yards in its lower reaches during the winter and summer months, respectively. The upper reaches above Octopus Creek are 4 yards wide during the winter with some stretches going dry during the summer months. Most of the river length is well shaded by conifer and deciduous vegetation. The streambed is composed of rubble and gravel in its lower and middle reaches and gravel and sand above. Tributaries of the Snahapish have a moderate gradient in their lower and middle reaches and steep gradient above. These are composed of gravel and sand streambeds with alternating pools and riffles.

Other larger Clearwater tributaries include Hurst, Miller, Christmas, and Shale creeks. During the winter months these streams have average widths of 10 yards or less with average widths of 5 yards or less in the summer. Fair to good cover exists on most of these tributaries except in areas of recent clear-cut logging. The Clearwater also has a number of smaller tributaries which are generally less than 3 miles in length. The upper reaches are steep, but moderate to low gradient channels are found in their lower and middle sections. These streams are composed of sand and gravel with adequate stream bank cover in most areas.

Salmon Utilization

The Clearwater watershed provides spawning, rearing, and transportation area for runs of all five species of Pacific salmon. Chinook, chum, and pink are known to spawn in the Clearwater. Chinook spawning occurs on all suitable riffle areas while spawning of chum and pink appears to be

confined to those riffle areas in the lower reaches. Sockeye are reported to spawn primarily in the Clearwater above this section. Coho production occurs principally in the tributary streams; however, the Clearwater forms an important part of the summer rearing area utilized by this species. Chinook salmon utilize Snahapish River, and Christmas, Miller, Shale and Boulder creeks. Fair to excellent coho production occurs in most of the accessible tributary streams. The better coho production areas are found on the Snahapish River and Hurst Creek drainages. It is estimated that approximately 58 linear miles of tributary streams are presently utilized by salmon species.

Limiting Factors

Low summer stream flow is a factor limiting the salmon production throughout this section. These low stream flows influence the production of coho smolt and hinder the upstream migration of early chinook. Extensive damage from road construction and logging activities has been documented on a number of tributaries. This damage has seriously decreased the salmon production potential of Christmas Creek, East Fork Miller Creek, and several small tributaries of the Snahapish River. Log and debris jams are common on many of the tributaries and periodically impede up-stream migration of salmon. Clearwater River has received damaging quantities of silt from road construction and logging activities in the upper Clearwater watershed.

Beneficial Developments

The Department of Fisheries has modified the configuration of cascades in the lower Snahapish to assure adequate transportation conditions at all flow stages. Log and debris jams have been removed from several streams in this watershed.

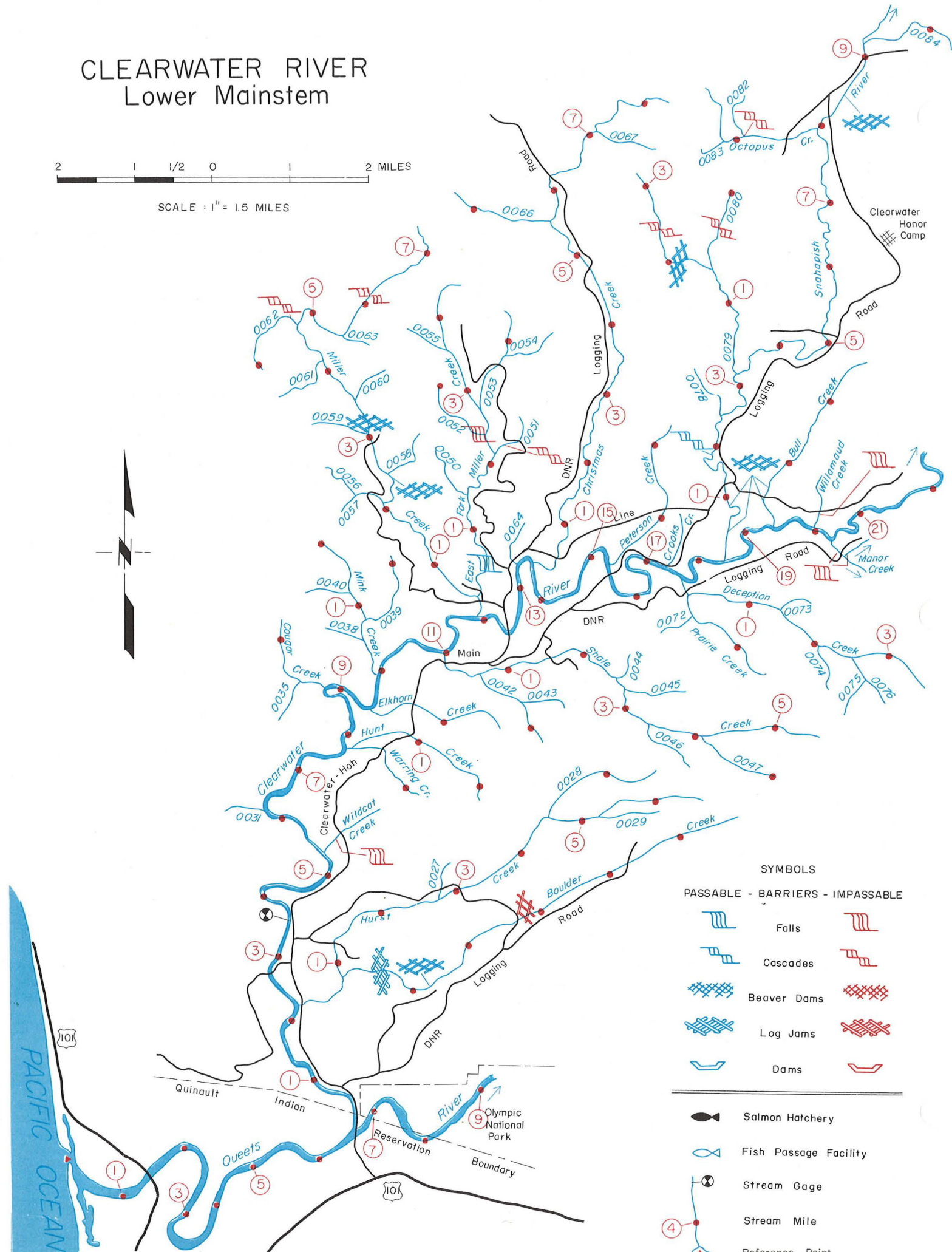
Habitat Needs

Major requirements for maintaining the fish production in this drainage system include preserving the existing stream bank cover and the incorporation of adequate control during logging and road construction activity to prevent degradation of the stream production habitat. Stream channel clearance work may be required on some of the more recently logged tributary systems.

CLEARWATER RIVER Lower Mainstem

2 1 1/2 0 1 2 MILES

SCALE : 1" = 1.5 MILES



SYMBOLS

PASSABLE - BARRIERS - IMPASSABLE



Falls



Cascades



Beaver Dams



Log Jams



Dams



Falls



Cascades



Beaver Dams



Log Jams



Dams



Salmon Hatchery



Fish Passage Facility



Stream Gage



Stream Mile



Reference Point

CLEARWATER RIVER
Lower Main Stem
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0016	Queets River				Chin.,Coho,Chum, Sockeye, Pink
0024	Clearwater River	RB-6.5	36.7	153.0	Coho,Chin.,Chum, Sockeye, Pink
0025	Hurst Creek	LB-2.2	6.6	—	Coho
0026	Boulder Creek	LB-0.8	5.8	—	Coho
0028	Unnamed	RB-4.6	1.7	—	Coho
0032	Hunt Creek	LB-7.8	2.2	—	Coho
0033	Waring Creek	LB-0.1	1.2	—	Coho
0034	Cougar Creek	RB-8.8	1.2	—	Coho
0036	Elkhorn Creek	LB-9.5	1.9	—	Coho, Chinook
0037	Mink Creek	RB-9.9	2.0	—	Coho
0039	Unnamed	LB-0.8	1.1	—	Unknown
0041	Shale Creek	LB-11.0	5.6	—	Coho, Chinook
0042	Unnamed	LB-0.6	1.2	—	Unknown
0047	Unnamed	LB-4.1	1.0	—	Unknown
0048	Miller Creek	RB-11.9	7.3	13.1	Coho
0049	E.F. Miller Cr.	LB-0.3	4.6	—	Coho
0052	Unnamed	RB-2.4	1.0	—	Coho
0053	Unnamed	LB-2.7	1.4	—	Coho
0062	Unnamed	RB-4.7	1.1	—	Coho
0065	Christmas Creek	RB-13.5	8.3	9.49	Coho, Chinook
0066	Unnamed	RB-5.6	1.3	—	Coho
0068	Peterson Creek	RB-15.3	2.3	—	Coho
0070	Deception Creek	LB-17.5	3.6	—	Coho
0071	Prairie Creek	LB-0.21	1.5	—	Coho
0077	Snahapish River	RB-18.4	10.4	19.9	Coho, Chinook

CLEARWATER RIVER

Headwaters

This section discusses the entire Clearwater River watershed upstream from and including Manor Creek. The watershed contains 16.4 miles of the Clearwater River channel and 18 tributaries providing an additional 72.0 miles of stream drainage. The lower Clearwater River watershed is discussed in section 200.

Stream Description

The Clearwater River originates in the foothills of the Olympic Mountain range and courses in a west and southwesterly direction to the confluence of Manor Creek. This watershed is almost entirely within state-owned timber production land. The stream in this area flows through a narrow, steep-sloped valley with no residential or agricultural development. The stream channel varies in width during the winter months from 5 to 20 yards. During the summer the average width is 12 yards and narrows to 3 yards in the upper reaches. The gradient is moderate in the lower half of this section and moderate to moderately steep in the upper half. Adequate stream bank cover is found throughout this reach and is provided primarily by conifer timber. The streambed is composed of gravel and rubble.

Solleks River is the largest tributary in this section of the Clearwater watershed. This stream varies in width in its lower reaches from 9 to 15 yards. These widths narrow from 2 to 4 yards in the upper reaches of salmon use. The stream has a moderate to moderately steep gradient through most of its distance and is composed of nearly equal pool and riffle area with some rapids present. The stream is well shaded by conifer timber as it flows through a narrow, steep-sided valley. The streambed is composed primarily of rubble and gravel. The tributaries of the Solleks are quite steep; however, several have moderate gradient sections which are suited for salmon production in their lower reaches.

Stequaleho Creek is the only other major tributary in this section of the Clearwater River. The stream has an average width of 4 yards during the summer and 10 yards during the winter months in that reach accessible for anadromous fish. The streambed is composed primarily of rubble and gravel and excellent shade and cover are provided by deciduous and conifer vegetation on the stream margin. The stream through most of its length is confined to a narrow valley in steep-sloped terrain.

Virtually all of the other tributaries of the Clearwater upstream from and including Manor Creek have steep gradients in all but their lower reaches. Manor Creek, the largest of these, has a winter width of approximately 8 yards and a summer width of 3 yards. These tributaries have streambed material consisting primarily of gravel and sand. Most of these streams have fair to good stream bank cover and shade provided by deciduous vegetation and conifer timber.

Salmon Utilization

This portion of the Clearwater River supports runs of chinook, sockeye, and coho salmon. Chinook spawn on all suitable riffles in the Clearwater River to near mile 34. This species also utilizes Solleks River and the lower reaches of

Manor and Stequaleho Creeks. Sockeye salmon reportedly spawn in the mainstem of the Clearwater River and several tributary streams. Coho utilize all accessible reaches of the Clearwater watershed. Coho spawning occurs in the Solleks and Stequaleho Creek as well as other streams where the gradient and streambed material provide suitable habitat. Solleks River appears to be the primary coho-producing area along with the mainstem of the Clearwater River in this section. An estimated 15 miles of the mainstem Clearwater and at least 12.5 linear miles of tributary streams are presently utilized by salmon.

Limiting Factors

Logging and road construction activities have resulted in serious degradation of the salmon production habitat in the upper Clearwater watershed. Serious damage has been noted on Stequaleho and Solleks River as well as on several tributary drainages. The effects of this damage are also felt in the Clearwater River downstream from this section. Low stream flows in many of the tributary streams, along with their steep gradients, limit the habitat suited for coho production. Falls located on Manor Creek at mile 0.25 and Stequaleho Creek at mile 2.1 prevent coho from reaching potential production area upstream. A number of falls exist on other small tributaries.

Beneficial Developments

There have been no beneficial developments for salmon in this section.

Habitat Needs

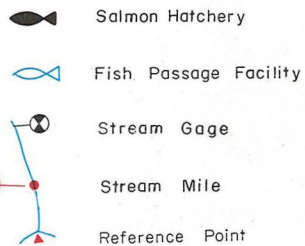
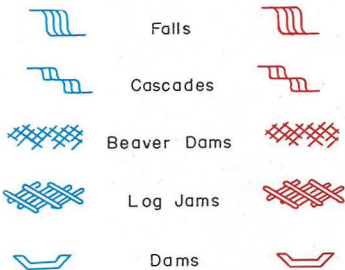
The major requirement for maintaining the fish production capabilities of this drainage is the observation of logging and road construction practices which will minimize damage to the stream and streambeds.



PHOTO 21-8. Clearwater River near mouth of Stequaleho Creek.

SYMBOLS

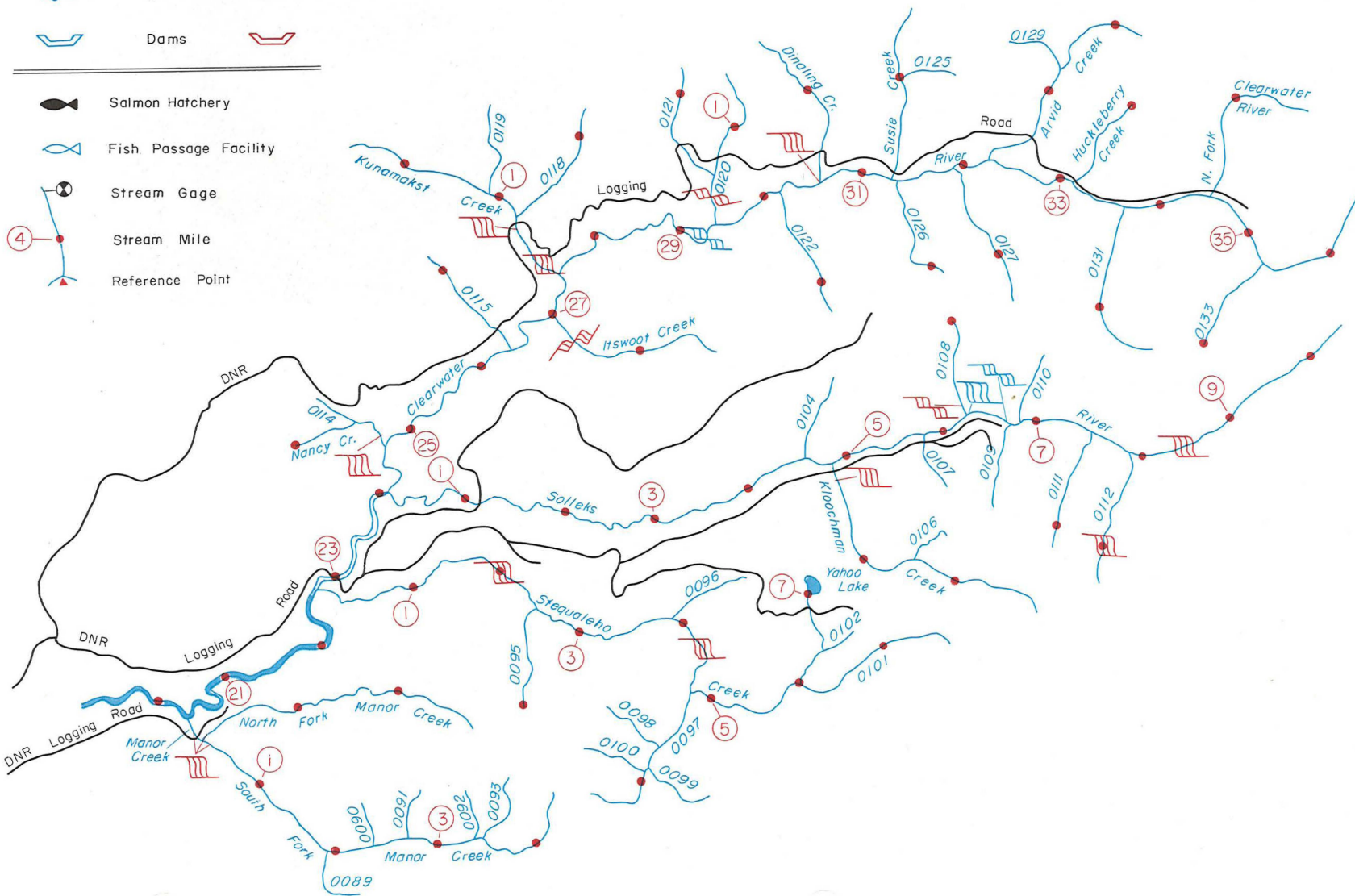
PASSABLE - BARRIERS - IMPASSABLE



CLEARWATER RIVER Headwaters



SCALE : 1" = 1.5 MILES



CLEARWATER RIVER
Headwaters
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0016	Queets River				
0024	Clearwater River				Coho, Chin., Chum Sockeye, Pink
0087	Manor Creek	LB-20.3	4.5	—	Chinook, Coho
0088	N. F. Manor Cr.	RB-0.3	2.8	—	None
	Manor Cr. cont. as S.F. Manor Cr	@ mi. 0.31			
0094	Stequaleho Creek	LB-22.7	7.0	9.77	Coho, Chinook
0095	Unnamed	LB-2.5	1.0	—	None
0097	Unnamed	LB-4.8	1.6	—	None
0101	Unnamed	LB-6.1	1.7	—	None
	Yahoo Lake	Outlet-7.0	—	—	
0103	Solleks River	LB-24.1	10.4	15.7	Coho, Chinook
0105	Kloochman Creek	LB-4.8	2.9	—	Coho
0108	Unnamed	RB-6.3	1.0	—	None
0111	Unnamed	LB-7.5	1.2	—	None
0112	Unnamed	LB-7.9	1.3	—	Coho
0113	Nancy Creek	RB-24.7	1.0	—	Coho
0115	Unnamed	RB-26.3	1.2	—	Coho
0116	Itswoot Creek	LB-27.0	1.8	—	Coho
0117	Kunamakst Creek	RB-27.4	2.6	—	Coho
0118	Unnamed	LB-0.75	1.3	—	None
0120	Unnamed	RB-29.5	1.6	—	Coho
0121	Unnamed	RB-0.5	1.2	—	None
0122	Unnamed	LB-30.15	1.3	—	Coho
0123	Dinaling Creek	RB-30.6	1.5	—	Coho
0124	Susie Creek	RB-31.3	1.7	—	Unknown
0126	Unnamed	LB-31.35	1.1	—	Unknown
0127	Unnamed	LB-31.9	1.5	—	Unknown
0128	Arvid Creek	RB-32.2	2.3	—	Unknown
0130	Huckleberry Creek	RB-33.1	1.0	—	Unknown
0131	Unnamed	LB-33.7	1.7	—	Unknown
0132	N.F. Clearwater R.	RB-34.5	1.7	—	Unknown
0133	Unnamed	LB-35.3	1.0	—	Unknown
	(Cont. Queets-Quinault 403)				

SALMON RIVER

Salmon River is a major tributary of the Queets River. The entire watershed is discussed in this section. Salmon River is 12.1 miles in length and contains 11 tributaries with 23.0 linear miles of stream drainage.

Stream Description

The lower mile of Salmon River is located in the Olympic National Park. Above this point the stream meanders alternately through the Olympic National Forest, the Quinalt Indian Reservation, and state-owned timberland. With the exception of that reach in the Olympic National Park, much of the land bordering the river has been clear-cut logged in recent years. The stream has an average width during the winter months of 20 yards downstream from the North Fork and a summer width of 8 yards. The streambed material is composed of rubble and boulders with less than adequate stream bank cover in many reaches. The stream channel shows evidence of gravel shifting during flood flows.

Salmon River has three major branches; North, Middle, and South forks. All three of these streams have somewhat similar characteristics. They head in the foothills of the Olympic Mountains and flow alternately through clear-cut and old growth timber areas. Their lower reaches are 8 yards or less in average width during the winter months and 6 yards or less during the summer months. Stream widths diminish gradually to approximately 4 yards in width in their upper areas of salmon utilization during the winter months and 2 yards during the summer. Streambeds are composed of rubble and gravel and are confined to a narrow stream valley. All three contain suitable pool and riffle areas for salmon production and have moderate gradients in their lower and middle reaches. Steep gradients exist in their headwaters. Most of their tributaries are less than a mile in length and flow steeply off the side slopes. These tributaries are generally less than 3 yards in width in their lower reaches during the winter months and their streambeds are composed predominantly of gravel and rubble. Several of these have moderate gradient channels suitable for salmon production.

Salmon Utilization

Salmon River watershed supports runs of chinook and coho salmon. Chinook production occurs throughout its length on suitable spawning riffles. The majority of the spawning appears to occur in the lower 5 miles of the river. The lower reach of the Middle Fork is also suited for chinook production. Coho utilize all accessible reaches of the Salmon River. Some spawning occurs in the mainstem of the river near forks, but the primary production occurs in the tributary streams. The Middle and South forks and several tributaries to the latter are the main production areas for this species. Coho production in the North Fork is confined to the main channel with no tributaries accessible for use by this species. A limited number of chum salmon may still utilize the lower reaches of Salmon River; however, this species has not been observed in recent years. The entire mainstem Salmon River and an estimated 11 linear miles of tributaries presently provide salmon production in this watershed.

Limiting Factors

Salmon production in the Salmon River is limited by low stream flows in all reaches of the main river and its tributaries. These low flows affect coho rearing during the summer months and may impede entrance and upstream movement of chinook during the fall. The spawning gravels of the Salmon River have received excessive siltation from logging activities. There are several areas of extensive log and debris jams which result in additional bank erosion. Log jams are also evident on the North Fork Salmon River near mile 3.0 and are scattered intermittently along the South Fork. These log jams affect upstream migration of coho during certain flow regimes. Adequate stream bank cover has not been maintained in several of the clear-cut logging areas. A road culvert on the South Fork Salmon River at mile 12 may hinder upstream migration of coho. Most of the spawning activity must be confined to the Salmon River or its three forks since most tributary streams are quite steep and unsuited for salmon use.

Beneficial Developments

No beneficial developments have been undertaken in this section.

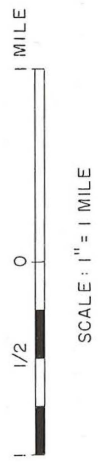
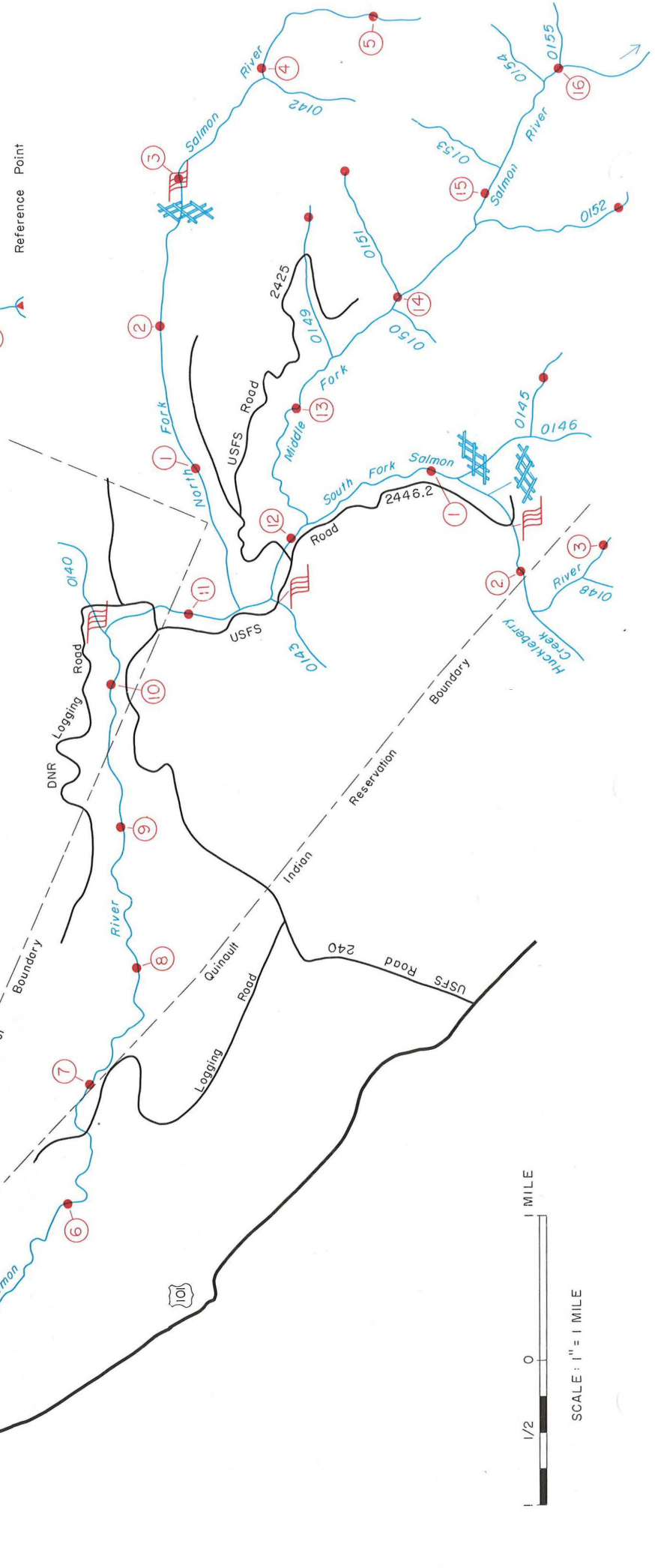
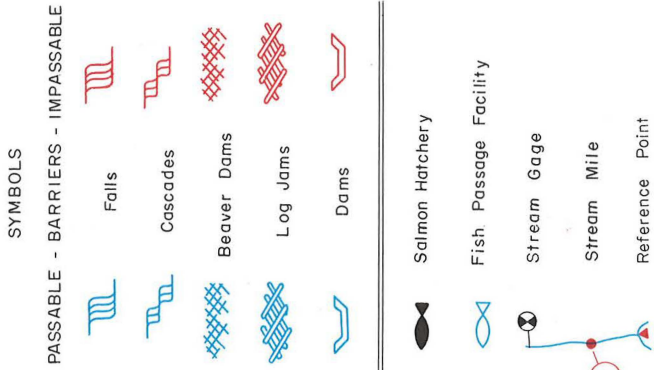
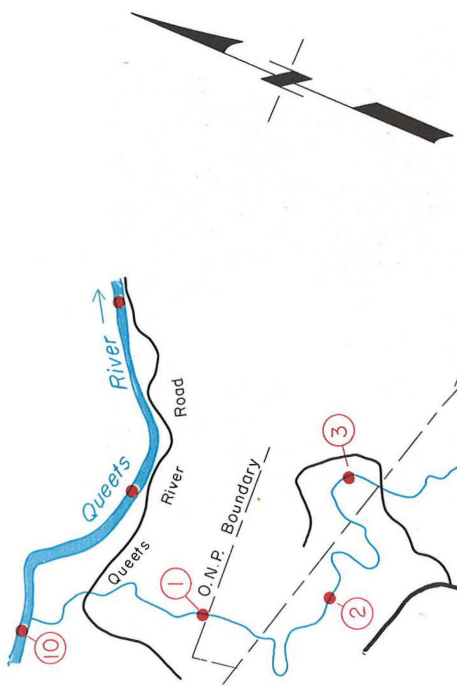
Habitat Needs

The restoration of stream bank cover along the mainstem of the Salmon River and certain reaches of its tributary streams will benefit salmon production. Logging and associated road construction activities, particularly in the steeper watersheds of the North, South and Middle forks, must be conducted with caution to avoid excessive siltation of the spawning and rearing habitat and blockages to migration. Following reforestation of the lands adjacent to Salmon River, gravel cleaning techniques could enhance the chinook spawning potential.



PHOTO 21-9. Chinook spawning riffle on lower Salmon River.

SALMON RIVER



SALMON RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0016	Queets River			—	
0139	Salmon River	LB-10.1	17.2	—	Coho,Chin.,Chum
0141	N. F. Salmon River	RN-11.4	5.3	—	Coho
0144	S. F. Salmon River	LB-12.1	3.1	—	Coho
0145	Unnamed	RB-1.2	1.2	—	Coho
	Salmon R. cont. as M.F. Salmon R.	@ mi. 12.1	5.1	—	Coho
0149	Unnamed	RB-13.4	1.1	—	Unknown
0151	Unnamed	RB-14.0	1.0	—	Coho
0152	Unnamed	LB-14.8	1.5	—	Coho

QUEETS RIVER

Queets Campgrounds Area

This section of the Queets River is bounded by Mud Creek on the downstream end and Tshletshy Creek on the upstream end. These two boundary streams are not included in this section. Matheny Creek and Sams River, the major tributaries to this section of the Queets River, are discussed in section 600. The upper Queets including Tshletshy Creek, are discussed in section 700. There are 17.3 miles of mainstem Queets River in this section, with 12 tributaries providing an additional 26.5 miles of stream drainage.

Stream Description

The Queets River flows in a southwesterly direction through a broad river valley in this section. The Queets corridor portion of the Olympic National Park borders the river. The upper reaches of several tributaries included in this section lie outside of the national park and are in the Olympic National Forest. The river has an average width of 45 yards during the winter months in the upper portion of this section and 30 yards in the lower. Stream flow during the summer months is fairly good and the channel width at this time averages 25 yards. The streambed is composed primarily of rubble and gravel. Conifer and deciduous timber line the river bank. A number of deep holes suited for the resting and maturation of adult salmon are present. Numerous broad riffles containing gravel and rubble are present in this reach.

Matheny Creek and Sams River are the only major tributaries of this reach of the Queets River. All other tributaries in this section are less than 4 miles in length. These smaller creeks have their source on the slopes of the paralleling ridges. The upper reaches of most of these streams are quite steep. Moderate to low gradient stream channel sections are found in their lower reaches where the streams course through the Queets valley floor. These small tributaries are generally less than 5 yards average width during the winter months and 2 yards during the summer. Their low and moderate gradient channel sections provide considerable pool area separated by short riffle sections. The streambeds are composed of sand and gravel. Excellent stream bank cover is generally present along these streams.

Salmon Utilization

This reach of the Queets River provides spawning, rearing, and transportation water for runs of chum, chinook, and coho salmon. Chinook spawning occurs on all suitable riffles within this section. Present utilization of these areas by chum is unknown. Juvenile coho rearing occurs throughout the year in the mainstem of the river. Juvenile chinook are present most of the year. Coho production occurs in all of the accessible tributary reaches. Suitable habitat is available to this species in the low to moderate gradient sections of an estimated 9.0 linear miles of tributaries along the Queets valley floor. Some chum may utilize these tributaries.

Limiting Factors

Exposure of outcroppings of clay in the Queets River results in coating of streambed areas with sediment. This clay sediment may reduce survival of incubating eggs and

limit production of food organisms. Certain reaches in this section are unstable and gravel shifting is common during the winter flood periods. Coho production is limited by low stream flows in the tributary streams as well as by limited accessibility. The steep gradients in the middle and upper reaches of most of these streams prevents salmon use. Boulder Creek and several unnamed streams are too steep for any coho use.

Beneficial Developments

There have been no beneficial developments for salmon production in this section.

Habitat Needs

Care must be taken in the logging of the headwaters of the tributary streams outside of the Olympic National Park to prevent excessive siltation to these streams and to the Queets River. If these steps are taken, the Queets River habitat should remain unaltered for the foreseeable future.

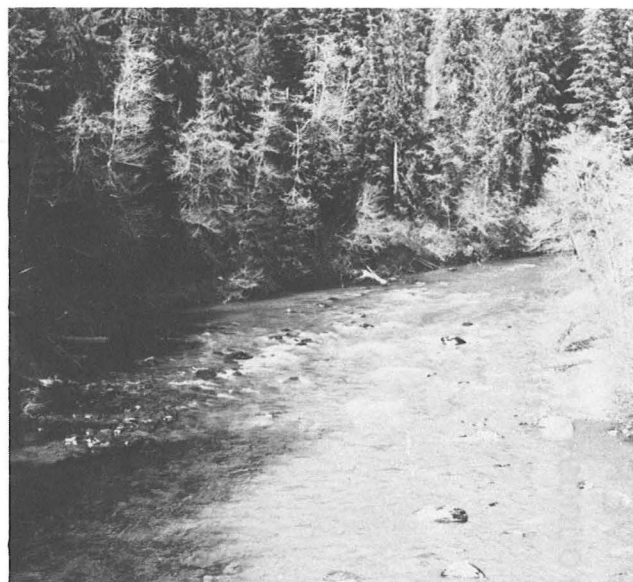
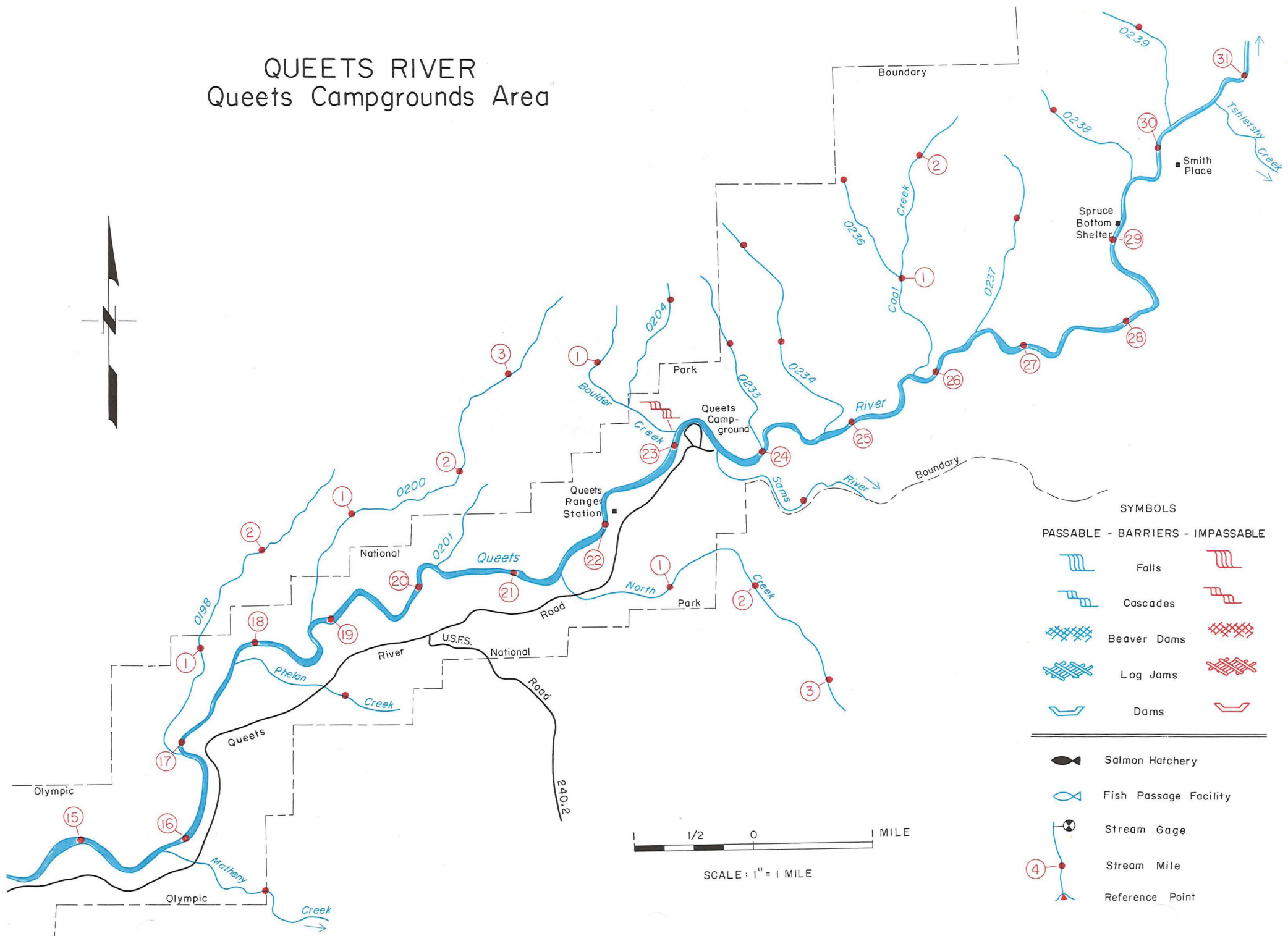


PHOTO 21-10. Queets River near Queets Campground.

QUEETS RIVER Queets Campgrounds Area



QUEETS RIVER
Queets Campground Area
Queets-Quinault Basin — WRIA

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0016	Queets River				Chin.,Coho,Chum
0165	Matheny Creek (See Queets-Quinault 603)	LB-15.8	17.2	37.8	
0198	Unnamed	RB-16.9	2.9	—	Coho
0199	Phelan Creek	LB-17.8	1.5	—	Coho
0200	Unnamed	RB-18.8	3.8	—	Coho
0202	North Creek	LB-21.4	3.3	—	Coho
0203	Boulder Creek	RB-23.1	1.6	—	None
0204	Unnamed	LB-0.45	1.2	—	None
0205	Sams River (See Queets-Quinault 603)	LB-23.5	15.2	30.9	
0233	Unnamed	RB-24.0	1.6	—	Coho
0234	Unnamed	RB-24.8	2.2	—	Coho
0235	Coal Creek	RB-25.8	2.5	—	Coho
0236	Unnamed	RB-1.0	1.0	—	Coho
0237	Unnamed	RB-26.6	1.6	—	Coho
0238	Unnamed	RB-29.5	1.2	—	Coho
0239	Unnamed	RB-30.2	1.3	—	Coho
0240	Tshletshy Creek (See Queets-Quinault 703) (Cont. Queets-Quinault 703)	LB-30.6	13.0	30.0	

MATHENY CREEK-SAMS RIVER

This section describes two major tributaries in the Queets River; Matheny Creek and Sams River. The mainstem of the Queets River between these two streams has been discussed in Section 500. These two streams contain 32.4 miles of mainstem plus 3 tributaries with a total of 63.50 miles of stream drainage.

Stream Description

Matheny Creek, the larger of the two watersheds, originates on the rugged slopes of Matheny Ridge and Higley Peak and flows westerly through a narrow stream valley to its confluence with the Queets River. This watershed is entirely within the Olympic National Forest with the exception of the lower 1.0 miles which is in Olympic National Park. Matheny Creek has an average width of 4 yards during the winter and 2 yards during the summer months in the upper reaches of salmon utilization. The streambed gradually becomes larger as it picks up a number of small tributaries until an average winter width of 18 yards and a summer width of 10 yards is achieved near its confluence with the Queets River. Boulders and rubble are the predominant bottom features in the lower 9 miles of Matheny Creek. Sufficient areas of gravel and rubble exist in the riffle areas to provide suitable fish production habitat. The gradient of the lower 14.5 miles of Matheny Creek is moderate. Generally adequate shade and cover is provided along the stream bank by conifer timber. Tributaries of Matheny Creek are generally quite steep and originate on the high ridges paralleling the river valley. These tributaries, generally less than 4 yards in width during the winter months and 2 yards during the summer months, are composed primarily of boulders and rubble with occasional patches of smaller gravel material. Logging debris jams are common on several which have been recently logged. Otherwise, streams are generally well shaded by conifer and deciduous timber.

The lower 5 miles of Sams River is the boundary between the Olympic National Park and the Olympic National Forest. Most of the river and its tributaries are in national forest land. The source of the river, however, is on the slopes of the Olympic Mountain Range in the Olympic National Park. Sams River has an average width of 18 yards in its lower reaches during the winter months and 10 yards during the summer months. The gradient of the lower 7 miles is moderate to moderately steep and has a streambed composed primarily of gravel and rubble. The gradient of the river increases near mile 7.0 where cascades and rapids are common. This portion of the river has a streambed composed primarily of large boulders and rubble. Most of the stream is adequately shaded by conifer timber and deciduous vegetation. Certain reaches, however, have been clear-cut and logged along the stream margin. Several tributaries in the lower river have moderate to moderately steep gradient sections in their lower extremities.

Salmon Utilization

Matheny Creek provides spawning, rearing, and transportation water for chinook and coho. Excellent chinook spawning area is found in the lower 2.7 miles of the stream with nearly 10 miles of suitable spawning area above this

point. Coho utilize all accessible spawning areas in the watershed. These fish spawn in Matheny Creek as far upstream as approximately mile 14.5. The lower reaches of several tributaries, including Hook Branch Creek, also are suited for this species.

Chinook and coho utilize the lower 7 miles of Sams River. Mainstem spawning occurs with both species. Several tributaries to this section may provide up to 2.0 linear miles of very limited spawning area for coho.

Limiting Factors

While excellent salmon production occurs in the lower 2.7 miles of Matheny Creek, production in the watershed above that point appears to be relatively small. The cause of this limited production was not determined from surveys. No barriers to migrating salmon were noted in the stream. Access to tributary streams is, however, quite limited. Logging and road construction activities along the tributary drainages have resulted in log and debris jams as well as siltation of the streambed.

A series of cascades on Sams River starting at mile 7.0 is a barrier to further upstream migration of salmon. Tributaries in this accessible reach are quite steep. Spawning may be possible in the extreme lower reaches up to these tributaries.

Beneficial Developments

There have been no beneficial developments for salmon production in this section.

Habitat Needs

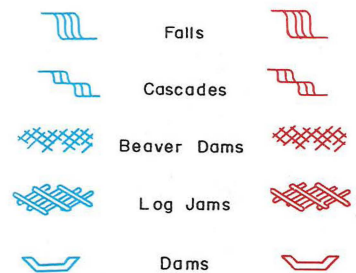
The steep slide slopes of both Matheny Creek and Sams River are presently being clear-cut logged. Extreme caution must be used to prevent excessive siltation of the streambeds. Stream bank cover must be maintained and logging debris kept from the stream channels.



PHOTO 21-11. Sams River near its confluence with Queets River.

SYMBOLS

PASSABLE - BARRIERS - IMPASSABLE



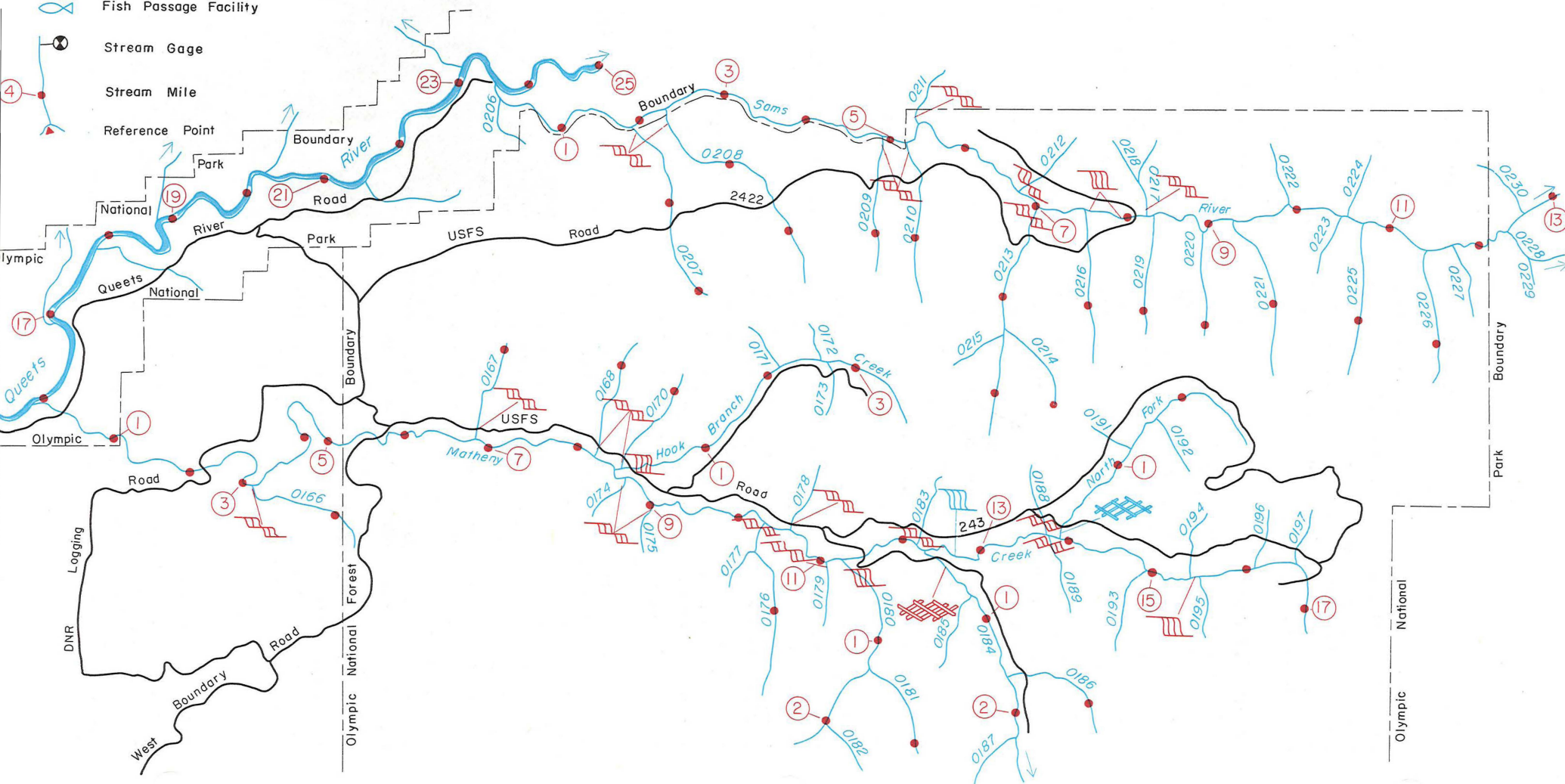
Salmon Hatchery

Fish Passage Facility

Stream Gage

Stream Mile

Reference Point



MATHENY CREEK - SAMs RIVER

2 1 1/2 0 1 2 MILES

SCALE : 1" = 1.5 MILES



MATHENY CREEK-SAMS RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0016	Queets River				
0165	Matheny Creek	LB-15.8	17.2	37.8	Coho, Chinook
0166	Unnamed	LB-3.1	1.5	—	
0167	Unnamed	RB-6.8	1.1	—	None
0168	Unnamed	RB-8.2	1.3	—	None
0169	Hook Branch Creek	RB-8.4	3.8	—	Coho
0170	Unnamed	RB-0.1	1.2	—	None
0176	Unnamed	LB-10.3	1.9	—	None
0180	Unnamed	LB-11.3	2.5	—	Coho
0181	Unnamed	RB-1.3	1.1	—	None
0184	Unnamed	LB-12.2	3.3	—	Coho
0186	Unnamed	RB-1.6	1.3	—	None
0190	N. F. Matheny Cr.	RB-13.9	2.9	—	Coho
0198	Unnamed	RB-16.9	2.9	—	
	(See Queets-Quinault 503)				
0199	Phelan Creek	LB-17.8	1.5	—	
	(See Queets-Quinault 503)				
0201	Unnamed	RB-20.3	3.3	—	
	(See Queets-Quinault 503)				
0202	North Creek	LB-21.4	1.6	—	
	(See Queets-Quinault 503)				
0203	Boulder Creek	RB-23.1	1.6	—	
	(See Queets-Quinault 503)				
0205	Sams River	LB-23.5	15.2	30.9	Coho, Chinook
0207	Unnamed	LB-1.9	2.1	—	Coho
0208	Unnamed	LB-2.3	2.5	—	Coho
0209	Unnamed	LB-4.9	1.4	—	None
0210	Unnamed	LB-5.15	1.7	—	None
0213	Unnamed	LB-7.0	2.4	—	None
0214	Unnamed	RB-1.35	1.0	—	None
0216	Unnamed	LB-7.5	1.6	—	None
0219	Unnamed	LB-8.2	1.2	—	None
0220	Unnamed	LB-8.9	1.1	—	None
0221	Unnamed	LB-9.2	1.7	—	None
0225	Unnamed	LB-10.7	1.6	—	None

MATHENY CREEK-SAMS RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0226	Unnamed	LB-11.4	1.4	—	None
0228	Unnamed	LB-12.3	1.1	—	None
(Cont. Queets-Quinault 703)					

QUEETS RIVER

Headwaters

This section describes the entire Queets River drainage upstream from and including Tshletshy Creek. This watershed includes 20.8 miles of Queets River plus 34 tributaries providing an additional 116.3 miles of stream drainage.

Stream Description

The Queets River heads within the heart of the Olympic Mountain Range and flows in a southwesterly and westerly direction towards Tshletshy Creek. This entire area is in Olympic National Park. Between Service Falls and Kilkelly Creek, the gradient moderates. Below Kilkelly Creek the river traverses a former slide area and a moderately steep channel for several miles then the river valley gradually broadens and the gradient again moderates. The channel has an average width of 30 yards during the winter and 18 yards during the summer months in the vicinity of Tshletshy Creek and 8 yards in width during the winter months near Service Falls. The streambed is composed primarily of gravel and rubble except in the slide area below Kilkelly Creek where large boulders predominate. Downstream from Alta Creek in the broader river valley area, the stream meanders through a river bottom and gravel flood plain area. Deep pools and glides are followed by short gravel and rubble riffle sections. Good stream bank cover is provided by deciduous vegetation and conifer timber.

Tshletshy Creek, the largest Queets tributary in this section, originates on the steep ridge dividing the Quinault and Queets drainages. Below the 20 and 30-foot falls which are located near mile 9.4 the creek has an average width of 5 yards during the winter months and 3 yards during the summer months and is confined to a narrow gorge with steep slopes. Streambed is composed primarily of gravel and rubble with approximately 70% of the stream area in this reach composed of riffle area with moderate to moderately steep gradient. A number of small steep gradient tributaries enter along this course and the stream gradually broadens to a 10-yard winter width. An area of cascades and rapids is located near mile 1.6. Below this point the gradient begins to moderate as the stream approaches the Queets River and the stream has an average width of 15 yards during the winter months and 7 yards during the summer months.

Most other tributaries of the Queets River in this section are less than 4.5 miles in length. Tributaries downstream from and including Alta Creek have a low or moderate gradient section along the Queets valley floor with steep gradients above. In these reaches the streams are less than 5 yards in width during the winter months and 3 yards in width during the summer months. The streambeds are composed primarily of gravel and rubble. Many of the tributaries upstream from Alta Creek have steep gradients throughout their entire length. Several, however, provide limited moderate gradient channel in their extreme lower reaches.

Salmon Utilization

The upper Queets watershed supports runs of chinook and coho. Chinook spawn on suitable riffle areas upstream from Tshletshy Creek to at least as far as the confluence of

Alta Creek and in the lower 1.5 miles of Tshletshy Creek. The better chinook spawning area is found in the reach between Tshletshy Creek and Paradise Creek.

Coho utilize all accessible spawning and rearing areas in this section. While some spawning occurs in stable side channel areas of the Queets River, most of the spawning takes place in the moderate to low gradient sections of the tributary streams. These streams are generally accessible for less than a mile. If the stream flow conditions permit, coho should be able to migrate upstream past the slide area on the Queets River below Kilkelly Creek and reach the base of Service Falls at mile 47.8. The Tshletshy Creek offers over 9 miles of stream suitable for coho production. The Cascades at mile 1.6 may not be negotiable at all stream flows. At least 12.5 miles of mainstem Queets River and approximately 15 linear miles of tributary streams are presently accessible to salmon in this section.

Limiting Factors

The primary factors limiting salmon production in this section of the Queets River include low stream flow in the tributaries and limited accessibility for salmon to these streams. A slide on the Queets River downstream from Kilkelly Creek appears to be at least a partial barrier to runs of salmon. Steelhead spawning has been observed upstream from this site. Service Falls is the upper limits of all migration. A cascade at mile 1.6 on Tshletshy Creek may be a partial barrier to upstream migration with total blocks at mile 9.4.

Beneficial Developments

No beneficial developments for salmon production have occurred in this section.

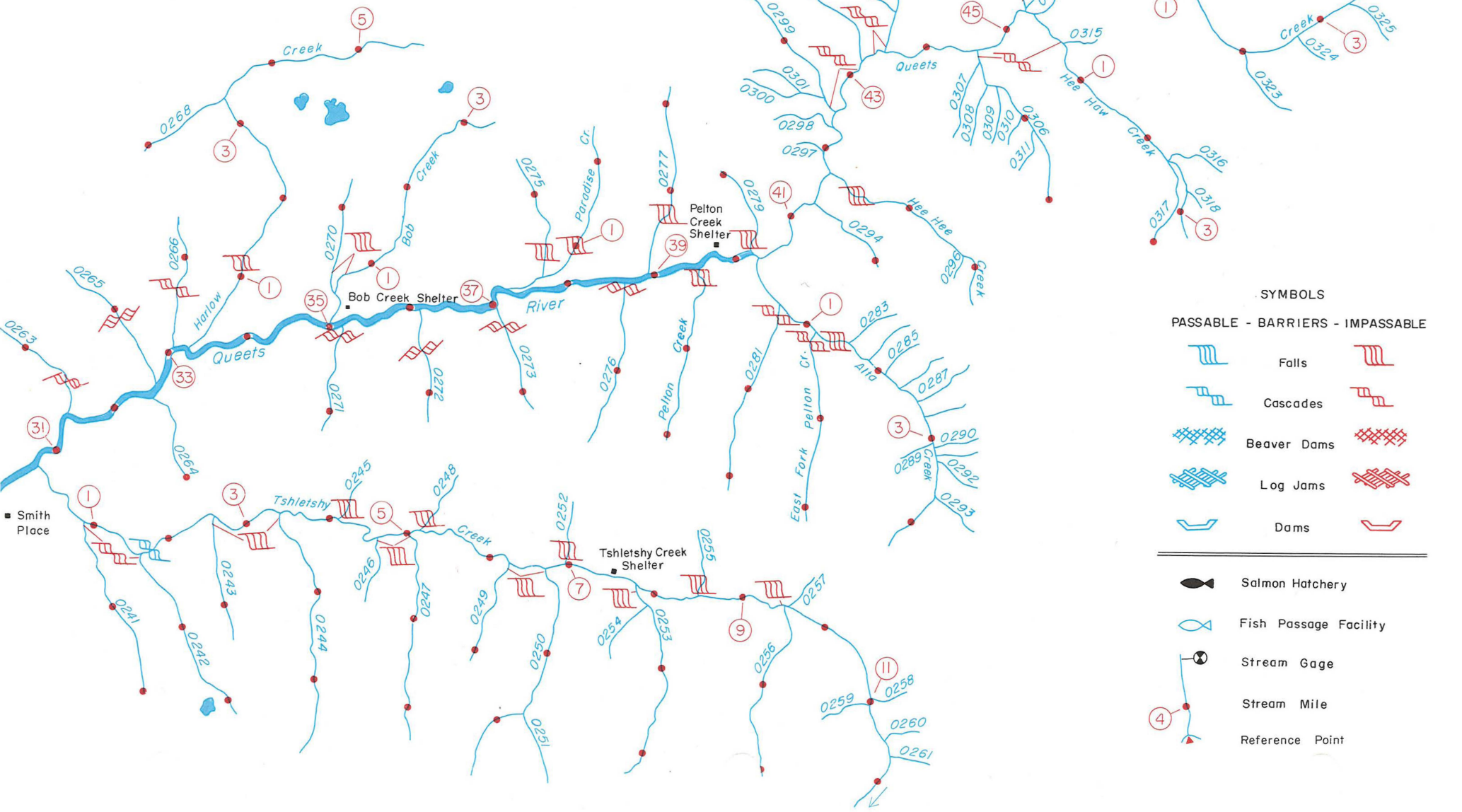
Habitat Needs

This entire reach of the Queets River lies in the Olympic National Park. The establishment of this park will provide the upper Queets habitat with ample protection against permanent environmental damage.

QUEETS RIVER Headwaters

2 1 1/2 0 1 2 MILES

SCALE : 1" = 1.5 MILES



QUEETS RIVER
Headwaters
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0016	Queets River				Chinook, Coho
0240	Tshletshy Creek	LB-30.6	13.0	30.0	Coho, Chinook
0241	Unnamed	LB-0.9	2.0	—	None
0242	Unnamed	LB-1.7	2.2	—	None
0243	Unnamed	LB-2.6	1.4	—	None
0244	Unnamed	LB-3.4	2.9	—	None
0247	Unnamed	LB-5.0	2.4	—	None
0249	Unnamed	LB-6.3	1.1	—	None
0250	Unnamed	LB-6.7	2.7	—	None
0253	Unnamed	LB-7.8	2.3	—	None
0256	Unnamed	LB-9.5	2.1	—	None
0263	Unnamed	RB-31.4	1.5	—	Coho
0264	Unnamed	LB-32.4	1.0	—	Coho
0265	Unnamed	RB-32.6	1.7	—	Coho
0266	Unnamed	RB-33.1	1.5	—	Coho
0267	Harlow Creek	RB-33.2	5.8	—	Coho
0268	Unnamed	RB-3.3	1.1	—	None
0269	Bob Creek	RB-35.0	3.3	—	Coho
0270	Unnamed	RB-0.45	1.3	—	Coho
0271	Unnamed	LB-35.1	1.2	—	Coho
0272	Unnamed	LB-36.1	1.4	—	None
0273	Unnamed	LB-37.0	1.2	—	None
0274	Paradise Creek	RB-37.2	2.4	—	Coho
0275	Unnamed	RB-0.4	1.4	—	Coho
0276	Unnamed	LB-38.6	1.9	—	None
0277	Unnamed	RB-38.9	2.2	—	Coho
0278	Pelton Creek	LB-39.5	2.0	—	Coho
0279	Unnamed	RB-40.2	1.1	—	None
0280	Alta Creek	LB-40.3	4.4	—	Coho, Chinook
0281	Unnamed	LB-0.5	2.3	8.46	None
0282	East Pelton Creek	LB-1.1	2.1	—	None
0294	Unnamed	LB-41.3	1.1	—	None
0295	Hee Hee Creek	LB-41.7	2.4	1.99	Coho
0299	Unnamed	RB-42.5	1.7	—	None

QUEETS RIVER
Headwaters
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0302	Unnamed	RB-43.2	1.7	—	None
0303	Kilkelly Creek	RB-43.5	1.8	—	None
0306	Unnamed	LB-44.5	2.0	—	None
0312	Unnamed	RB-45.3	1.5	—	None
0314	Hee Haw Creek	LB-45.4	3.3	—	None
0317	Unnamed	LB-2.35	1.0	—	None
0319	Paull Creek	RB-46.8	2.3	—	None
0320	Unnamed	LB-0.8	1.1	—	None
0321	Unnamed	LB-1.2	1.0	—	None
0322	Saghalie Creek	LB-47.0	4.2	—	None
0328	Unnamed	RB-48.7	1.4	—	None
0329	Unnamed	LB-48.8	1.3	—	None
0330	Unnamed	LB-49.1	1.0	—	None

RAFT RIVER

This section discusses Raft River and other small independent tributaries to the Pacific Ocean between Raft River and Quinault River. The Raft River is 10.3 miles in length and has 12 tributaries containing over 100 miles of stream drainage. There are also 6 independent streams with 30.1 miles of stream length in this section.¹

Stream Description

Virtually the entire Raft River watershed lies in the Quinault Indian Reservation. The entire watersheds of the independent drainages are located within this reservation. Only the extreme upper reaches of several tributary streams lie outside of the reservation. Raft River is formed by the confluence of Crane and Lunch creeks in its westerly course toward the Pacific Ocean. The river picks up a number of small tributaries and the North Fork Raft River, its largest tributary. Most of the Raft River watershed is characterized by low gentle-sloping hills or extensive plateaus. Much of the watershed has been clear-cut logged in recent years. The mainstem of the Raft River ranges up to 20 yards in width during the winter months. Tributary streams with the exception of the North Fork are generally less than 6 yards in width. Stream bank cover consists of both conifer and deciduous vegetation. Extensive areas of clear-cut logging are present along these tributary streams. In these reaches the stream bank cover is generally far less than that required to maintain proper temperature conditions in the streams. Streambed materials consist primarily of gravel, sand, and silt. Logging debris chokes stream channels in many areas.

Salmon Utilization

Runs of chum and coho salmon spawn and rear in the Raft River watershed. Salmon utilization of the independent tributaries is not known; however, coho are undoubtedly present in those accessible areas containing suitable spawning and rearing characteristics. Coho salmon have been observed in many of the Raft River tributaries. Limited chinook spawning may occur in the mainstem of the Raft River. All of the Raft River plus an estimated 43 linear miles of tributary streams are presently utilized by salmon.

Limiting Factors

Logging and associated road construction activity in the Raft River drainage have been conducted with no regard to the salmon production habitat. Stream bank cover has been removed from many of the stream reaches and logging debris chokes many stream channels. Siltation of the gravel due to logging and road construction is excessive in many of the tributary streams. Removal of stream bank cover results in extremely high summer water temperatures.

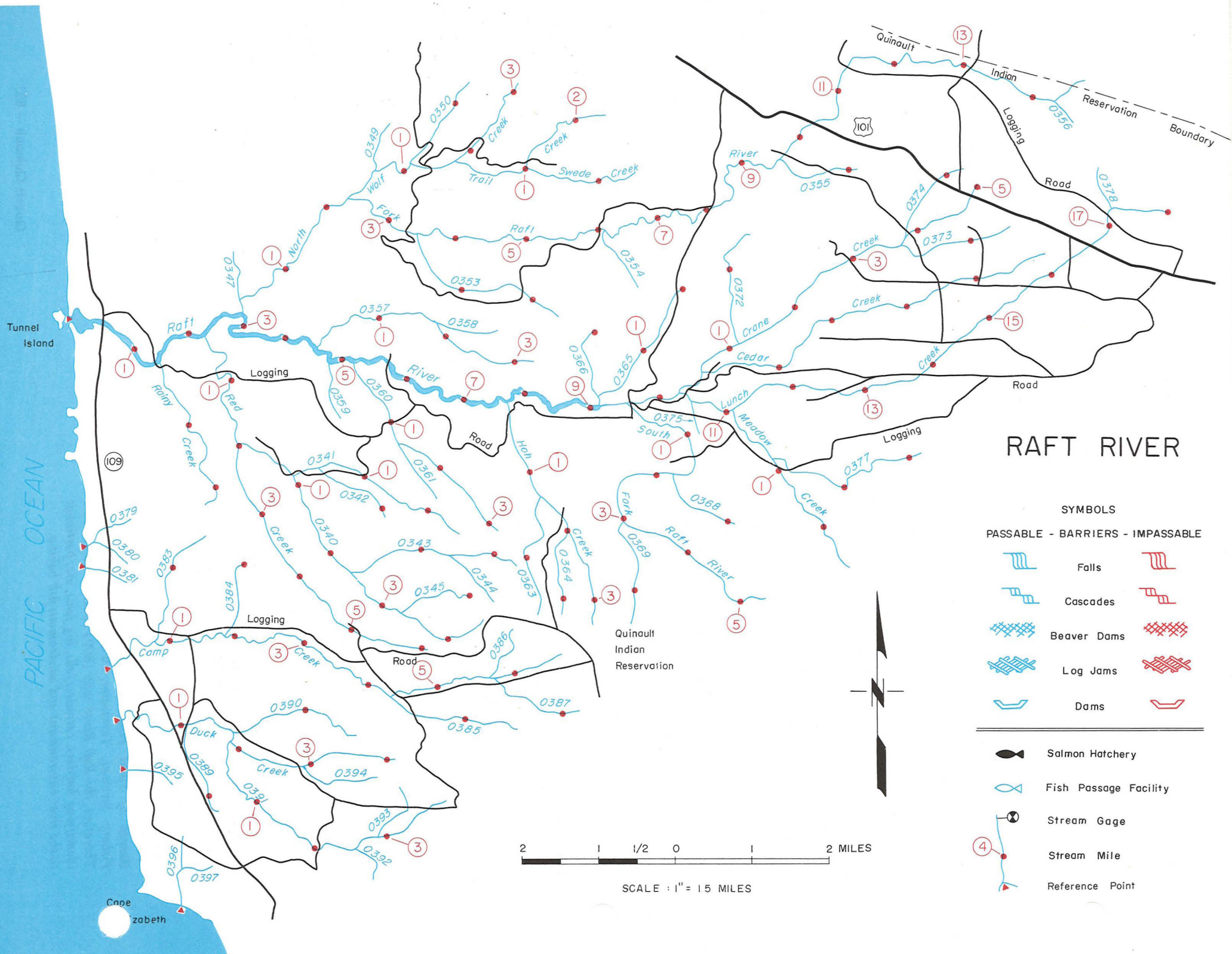
¹ The Department of Fisheries has not conducted surveys on streams within the Quinault Indian Reservation. Much of the information presented in this section is derived from "Preliminary Investigations of The Raft River System," Bureau of Sport Fisheries and Wildlife, Division of Fishery Services, Tumwater, Washington, May 1971. Therefore, the Raft River map (800) contains no symbols identifying barriers, cascades, falls, log jams, etc, pertinent to the river environment and anadromous fish habitat.

Beneficial Developments

Several stream clearance projects have been carried out on streams in the Raft River drainage.

Habitat Needs

Future logging activities must be conducted in a manner to prevent further degradation of the salmon production habitat. Extensive rehabilitation is required throughout the Raft River drainage and the independent drainages to reestablish harvestable runs of salmon. This would include the reestablishment of stream bank cover, clearance of log and debris jams in stream channels, and stabilizing of serious erosion areas.



RAFT RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0037	Raft River	S½, Sec21, T23N, R13W	18.0	—	Coho, Chum
0338	Rainy Creek	LB-1.35	2.4	—	None
0339	Red Creek	LB-2.2	6.1	—	Coho
0340	Unnamed	RB-2.0	4.5	—	Unknown
0341	Unnamed	RB-0.85	2.5	—	Unknown
0342	Unnamed	LB-0.4	1.1	—	Unknown
0343	Unnamed	RB-2.4	2.3	—	Unknown
0345	Unnamed	RB-3.2	1.0	—	
0346	N. F. Raft River	RB-2.8	14.8	24.2	Coho
0348	Wolf Creek	RB-2.3	3.1	—	Coho
0350	Unnamed	RB-1.2	1.3	—	Unknown
0351	Trail Creek	LB-1.8	2.4	—	Unknown
0352	Swede Creek	LB-1.0	1.5	—	Unknown
0353	Unnamed	LB-3.4	2.4	—	Unknown
0355	Unnamed	LB-9.6	1.1	—	Unknown
0357	Unnamed	RB-4.5	3.3	—	Coho
0360	Unnamed	LB-5.1	3.1	—	Coho
0362	Hoh Creek	LB-7.7	3.3	—	Coho
0363	Unnamed	LB-1.4	1.8	—	Unknown
0364	Unnamed	LB-2.0	1.2	—	Unknown
0365	Unnamed	RB-9.2	2.0	—	Unknown
0366	Unnamed	RB-0.1	1.0	—	Unknown
0367	S. F. Raft River	LB-9.5	5.3	—	Coho
0368	Unnamed	RB-1.8	1.1	—	Unknown
0369	Unnamed	LB-3.0	1.4	—	Unknown
0370	Crane Creek	RB-10.3	5.0	—	Coho
0371	Cedar Creek	LB-0.5	4.9	—	Coho
0373	Unnamed	LB-3.7	1.5	—	Unknown
0374	Unnamed	RB-3.8	1.2	—	Unknown
	Raft R. cont. as Lunch Creek	@ mi. 10.3			Coho
0376	Meadow Creek	LB-11.1	2.6	—	Coho
0377	Unnamed	RB-0.85	2.2	—	Unknown
0382	Camp Creek	Sec15, T22N, R13W	6.7	8.27	Coho
0383	Unnamed	RB-0.8	1.6	—	Unknown

RAFT RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0384	Unnamed	RB-1.9	1.0	—	Unknown
0385	Unnamed	LB-4.4	1.7	—	Coho
0387	Unnamed	LB-5.75	1.2	—	Unknown
0388	Duck Creek	NW¼, Sec22, T22N, R13W	4.1	7.63	Unknown
0389	Unnamed	LB-1.1	1.3	—	Unknown
0390	Unnamed	RB-1.7	1.8	—	Unknown
0391	Unnamed	LB-1.9	3.9	—	Unknown

QUINAULT RIVER

Lower Mainstem

This section describes the Quinault River and its tributaries downstream from the confluence of Joe Creek. This reach of the Quinault River is 14.3 miles in length and contains 15 tributaries providing an additional 51.5 miles of stream drainage. Upper reaches of the Quinault River are discussed in sections 100, 1100, 1200, 1300, and 1400.

The Department of Fisheries has not conducted surveys on streams within the Quinault Indian reservation. Therefore, the Quinault River, lower mainstem map (900) contains no symbols identifying barriers, cascades, falls, log jams, etc., pertinent to the river environment and anadromous fish habitat.

Stream Description

This entire section lies within the Quinault Indian Reservation. Little information is available on the salmon runs in this area and the characteristics of the stream and watershed. The Quinault flows in a southwesterly direction from the mouth of Joe Creek to its entrance on the Pacific Ocean south of Cape Elizabeth. Taholah, the main community on the Quinault Indian Reservation, is located on the left bank of the Quinault River near its confluence with the ocean. The remainder of the watershed is in timber production.

The Quinault River in this section meanders through a broad river valley. The streambed is composed primarily of rubble and gravel with short riffle sections followed by long slow-moving pools. Tributary streams head in the low hills to the north and south of the river. Little information is available on the characteristics of these streams. Extensive clear-cut logging has been conducted in recent years on many of the drainages on the north side of the Quinault River. These activities have left many of the tributary streams choked with logging debris and denuded of stream bank cover.

Salmon Utilization

This reach of the Quinault River provides spawning area for chinook, chum, and pink as well as transportation area for runs of these species and sockeye and coho destined for tributaries and upstream spawning areas. Chinook have been observed spawning on many of the suitable riffles in this reach. Pink spawn in limited numbers primarily near tide water. Considerable chum spawning area exists; however, the present utilization is unknown. Tributary streams undoubtedly provide limited spawning and rearing habitats for chum and coho. All of the mainstem and an unknown portion of the tributaries are presently utilized by salmon species.

Limiting Factors

Logging and road construction activities in this section have reportedly caused extensive damage to the salmon spawning and rearing habitats of the tributary streams.

Beneficial Developments

No information is available on developments within this section designed to improve salmon production.

Habitat Needs

Logging and road construction activities in the tributary drainages must be conducted in a manner which prevents excessive damage to the salmon production habitat. The Quinault River provides fair to good spawning characteristics for runs of salmon. Gravel removal projects should not be permitted within the streambed.

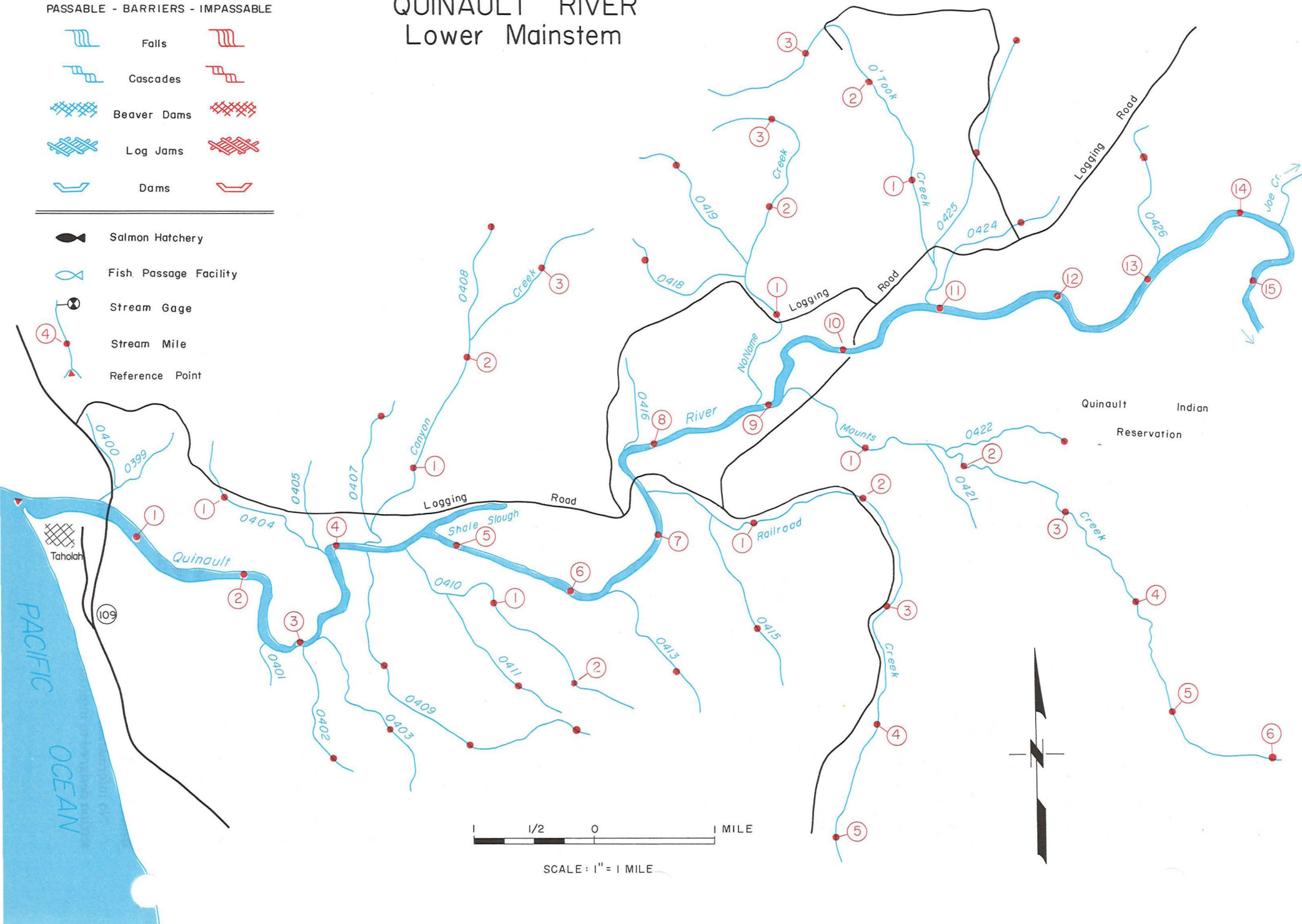
SYMBOLS

PASSABLE - BARRIERS - IMPASSABLE

	Falls	
	Cascades	
	Beaver Dams	
	Log Jams	
	Dams	

- Salmon Hatchery
- Fish Passage Facility
- Stream Gage
- Stream Mile
- Reference Point

QUINALT RIVER Lower Mainstem



QUINULT RIVER
Lower Mainstem
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0398	Quinault River	S1/2, Sec35, T22N, R13W	68.8	434.0	Chin., Coho, Chum, Pink, Sockeye
0402	Unnamed	LB-3.0	1.2	—	Unknown
0403	Unnamed	LB-3.1	1.6	—	Unknown
0404	Unnamed	RB-3.9	1.4	—	Unknown
0406	Canyon Creek	RB-4.15	3.6	—	Coho
0407	Unnamed	RB-0.3	1.1	—	Unknown
0408	Unnamed	RB-2.1	1.0	—	Unknown
0409	Unnamed	LB-4.2	3.1	—	Unknown
0410	Unnamed	LB-4.5	2.5	—	Unknown
0411	Unnamed	LB-0.5	1.4	—	Unknown
0413	Unnamed	LB-6.3	1.4	—	Unknown
0414	Railroad Creek	LB-7.3	5.2	—	Coho
0415	Unnamed	LB-0.6	1.5	—	Unknown
0417	No Name Creek	RB-8.9	3.4	—	Coho
0418	Unnamed	RB-1.4	1.2	—	Unknown
0419	Unnamed	RB-1.5	1.3	—	Unknown
0420	Mounts Creek	LB-9.1	6.1	—	Coho
0422	Unnamed	RB-1.7	1.0	—	Unknown
0423	O'Took Creek	RB-10.9	3.9	—	Coho
0424	Unnamed	LB-0.1	1.4	—	Unknown
0425	Unnamed	LB-0.4	2.0	—	Unknown
0426	Unnamed	RB-13.1	1.4	—	Unknown
0427	Joe Creek	RB-14.3	3.7	—	
	(See Queets-Quinault 1003)				
	(Cont. Queets-Quinault 1003)				

QUINULT RIVER

Cook Creek-Amanda Park

This section describes the Quinault River and its tributaries between Joe Creek and Lake Quinault. This reach of the Quinault River is 19.1 miles in length. The 11 tributaries to this reach contain 100.5 linear miles of stream drainage.

The Department of Fisheries has not conducted surveys on streams within the Quinault Indian reservation. Therefore, the Cook Creek-Amanda Park map (1000) contains no symbols identifying barriers, cascades, falls, log jams, etc., pertinent to the river environment and anadromous fish habitat.

Stream Description

The Quinault River downstream from Lake Quinault lies entirely within the Quinault Indian Reservation. The lower reaches of tributaries to this section are also on reservation lands. Their upper reaches are in the Olympic National Forest. Some privately owned timberland is found in the headwaters of the Cook Creek drainage. The community of Amanda Park is located on the Quinault River just below its discharge from Lake Quinault. Scattered rural residences are found along Highway 101 in this section. Virtually the entire watershed is in timber production.

The upper Quinault River, downstream from Lake Quinault, is confined to a low, narrow river valley. This valley broadens as the river flows in its southwesterly direction towards Joe Creek. The streambed is composed of rubble and gravel and consists of long, slow-moving pools with short riffle sections. Many of the tributary streams originate in the rugged ridges on the north and southeast. Their middle and lower reaches flow through low, hilly terrain to the confluence with the Quinault River. Since most of the stream area lies within the Quinault Indian Reservation, little survey information is available. Much of the timber on the south of Quinault River was harvested a number of years ago. Recent logging operations have been conducted in the portion of the watershed north of Quinault River. Stream channels in the recently logged area do not have adequate stream bank cover. Tributary streams are generally less than 10 yards in width during the winter months and less than 5 yards during the summer months. The streambeds are composed primarily of gravel and sand.

Salmon Utilization

This section of the Quinault River provides spawning area for runs of chinook and chum salmon. Coho, chum, chinook and sockeye destined for tributary streams and upper watershed areas also utilize this reach of the river. No information is available on the runs of salmon in the tributaries along the north side of the Quinault River. Chinook, chum and coho are known to utilize Cook Creek, the largest tributary system in this section. Coho probably utilize all accessible areas of tributary streams. The entire mainstem Quinault is presently utilized by salmon; however, the total salmon use of the tributary streams is unknown.

Limiting Factors

Tributary drainages entering the north bank of the Quinault River have reportedly been adversely impacted by road construction and logging activities. Low stream flows are known to limit production of coho salmon in many of the tributary streams.

Beneficial Developments

A hatchery constructed and maintained by the federal government is located on Cook Creek.

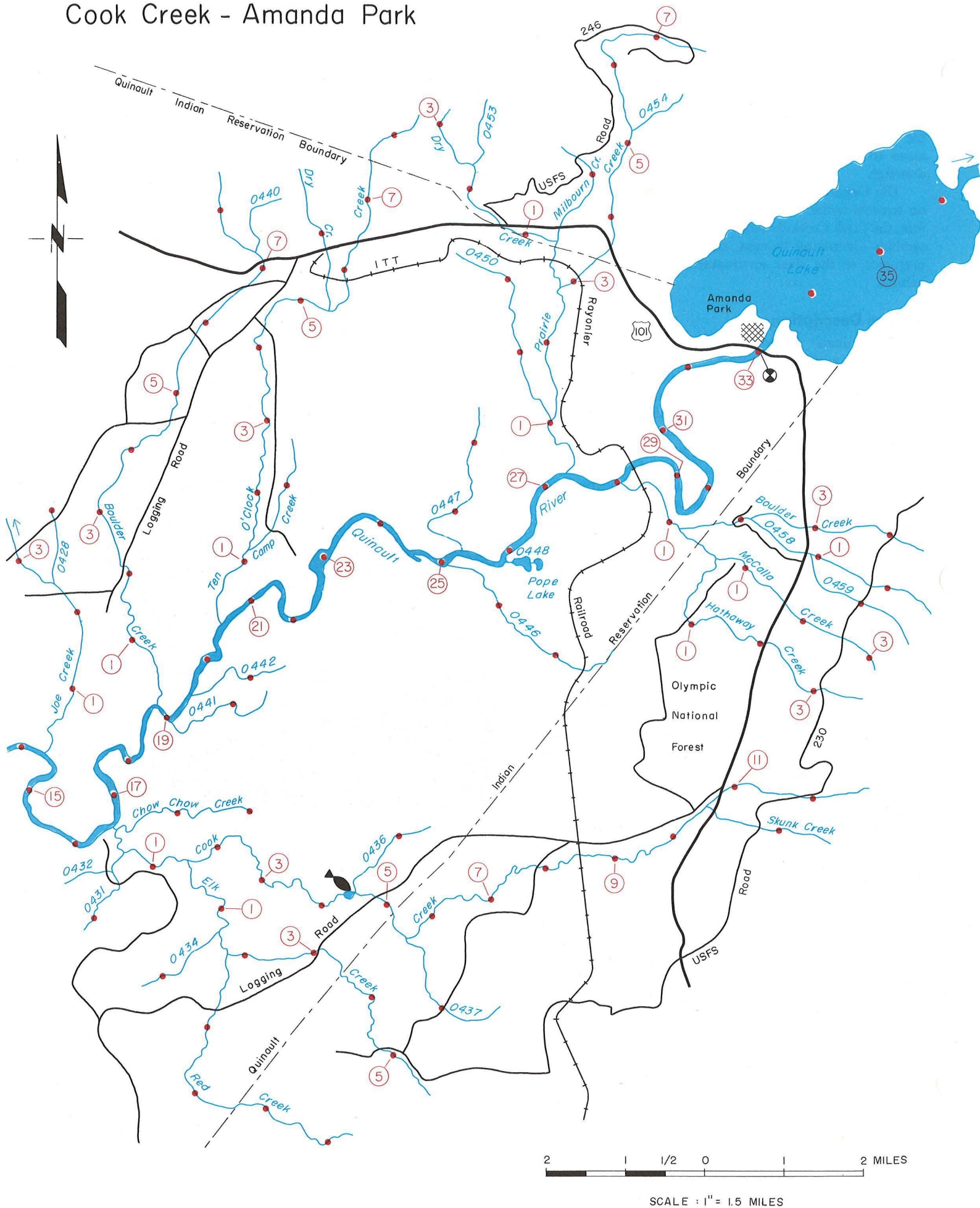
Habitat Needs

Considerable stream rehabilitation work is reportedly required on tributaries to the north bank of the Quinault River in this section. Logging and road construction activities along the tributary streams must be conducted in a manner to prevent degradation of the salmon production habitat.



PHOTO 21-12. Dry stream bed on Prairie Creek.

QUINULT RIVER
Cook Creek - Amanda Park



QUINULT RIVER
Cook Creek-Amanda Park
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0398	Quinault River				Chin.,Coho,Chum Sockeye
0427	Joe Creek	RB-14.3	3.7	—	Coho
0428	Unnamed	LB-2.5	1.0	—	None
0429	Cook Creek	LB-16.6	12.8	44.2	Coho,Chin.,Chum
0430	Chow Chow Creek	RB-0.1	2.0	—	Coho
0431	Unnamed	LB-0.5	1.2	—	Unknown
0433	Elk Creek	LB-1.5	5.7	—	Coho
0434	Unnamed	LB-1.5	1.3	—	Unknown
0435	Red Creek	LB-1.8	4.3	—	Coho
0436	Unnamed	RB-4.55	1.3	—	Unknown
0437	Unnamed	LB-5.5	1.8	—	Unknown
0438	Skunk Creek	LB-10.6	1.7	—	Coho
0439	Boulder Creek	RB-18.8	8.5	—	Coho
0441	Unnamed	LB-19.1	1.8	—	Unknown
0442	Unnamed	LB-19.5	1.5	—	Unknown
0443	Ten O'Clock Creek	RB-20.5	8.4	—	Coho
0444	Camp Creek	LB-1.2	1.6	—	Coho
0445	Dry Creek	RB-5.4	1.9	—	Unknown
0446	Unnamed	LB-25.0	2.9	—	Unknown
0447	Unnamed	RB-25.3	2.4	—	Unknown
0449	Prairie Creek	RB-27.3	7.6	12.8	Coho
0450	Unnamed	RB-1.0	2.8	—	Unknown
0451	Dry Creek	RB-2.8	3.2	—	Unknown
0452	Milbourn Creek	LB-0.65	1.5	—	Unknown
0455	Boulder Creek	LB-28.0	4.5	—	Coho
0456	McCalla Creek	LB-1.2	3.2	—	Coho
0457	Hathaway Creek	LB-0.6	3.6	—	Coho
0458	Unnamed	LB-2.1	2.7	—	Coho
0459	Unnamed	LB-0.9	1.8	—	Unknown
	Lake Quinault	Outlet-33.4	—	—	
	(Cont. Queets-Quinault 1103)				

LAKE QUINAULT

This section discusses Lake Quinault and its tributaries as well as the Quinault River and its tributaries upstream from Lake Quinault to, but excluding, the mouth of Big Creek. The Quinault River in this section is 8.3 miles in length. Downstream from Big Creek there are 6 tributaries with 29.8 miles of tributaries to the river. There are an additional 11 tributaries with 41.4 miles of tributary streams which enter directly into Lake Quinault.

Stream Description

Lake Quinault lies within the Quinault Indian Reservation. The northwest shore is in the Olympic National Forest. The Quinault River upstream from the lake forms the boundary between these two government ownerships. Considerable recreational and residential development has occurred on the shores of Lake Quinault. Some farm land exists in the river valley upstream from Lake Quinault. Most of the watershed within this section, however, is in timber production.

Quinault upstream from Lake Quinault is a low gradient meandering river with numerous side channels. Much of the river is on a broad gravel flood plain and has an average width of 30 yards during the winter months and 15 yards during the summer months. Much of the stream bank area has little marginal vegetation. The stream bed is composed primarily of rubble and gravel. The river is composed of moderate to low velocity pools with short gravel riffle sections.

All of the tributaries in this reach head on the adjacent steep ridges. Low to moderate gradient channels are found only in the lower reaches of these streams as they approach the lake or river. Streambeds are composed primarily of rubble and gravel. In the lower stream sections these tributaries are generally less than 5 yards in width during the winter months and 3 yards in width during the summer months. Ziegler Creek and Inner Creek Slough are the largest tributaries found in this section and average 8 and 15 yards in width during summer and winter, respectively. These streambeds are composed primarily of gravel and sand in a low gradient channel.

Salmon Use

Lake Quinault has a surface area of 3,729 acres, providing maturation and rearing area for sockeye, coho, chinook, and chum. Adult sockeye enter Quinault Lake during the late spring and summer months. They remain in the lake during the maturation period and move on to the tributary spawning grounds during the early winter months. Juvenile sockeye reside primarily in the lake. Lake Quinault also serves as maturation and rearing area for other runs of salmon. No beach spawning areas in Quinault Lake have been identified. Most of the small tributaries of Quinault Lake are accessible for relatively short distances to salmon migration. Salmon production in the streams along the north shoreline of the lake is generally confined to stream reaches downstream from the North Shore Road. An exception to this is the Canoe Creek Drainage where spawning of sockeye and coho occurs to near mile 2.1. Kestner Creek, a tributary to Canoe Creek, provides an additional 2.2 miles of

spawning area. Along the south shore of Lake Quinault stream gradients are not as abrupt. Coho and sockeye utilize about 1 mile of the lower reaches of these tributaries. The Quinault upstream from the lake provides spawning area for chinook, sockeye and chum as well as rearing area during the summer for coho. Sockeye spawn in several stable side channel areas. It is estimated that approximately 18.5 linear miles of tributary streams to the river and lake are accessible to salmon production.

Limiting Factors

Salmon spawning in this section is generally limited by the steep gradients of the tributary streams except in their lower extremities. Streamflows during the summer months are low. Several streams disappear in the gravel terrain and reappear near their mouths. Access into tributary streams along the north shore of Quinault Lake is hindered by road culvert installations. Only limited potential production exists above these barriers. Salmon production in the Quinault River below Big Creek is subject to numerous channel changes during flood conditions. The instability of the mainstem channel limits its use for spawning salmon.

Beneficial Developments

A fish ladder has been constructed on Falls Creek at mile 0.2. This fishway, constructed in cooperation with the U.S. Forest Service, has provided access to an additional 1.2 miles of spawning area. The federal government formerly maintained and operated an egg-taking station primarily for sockeye salmon on Lake Quinault.

Habitat Needs

Future logging activities can be expected on National Forest lands. Care must be taken to prevent excessive siltation to the streams during logging and road construction.



PHOTO 21-13. Unstable Quinault River channel above Lake Quinault.

QUINAUT LAKE

SYMBOLS

PASSABLE - BARRIERS - IMPASSABLE

	Falls		Cascades
	Beaver Dams		Log Jams
	Dams		

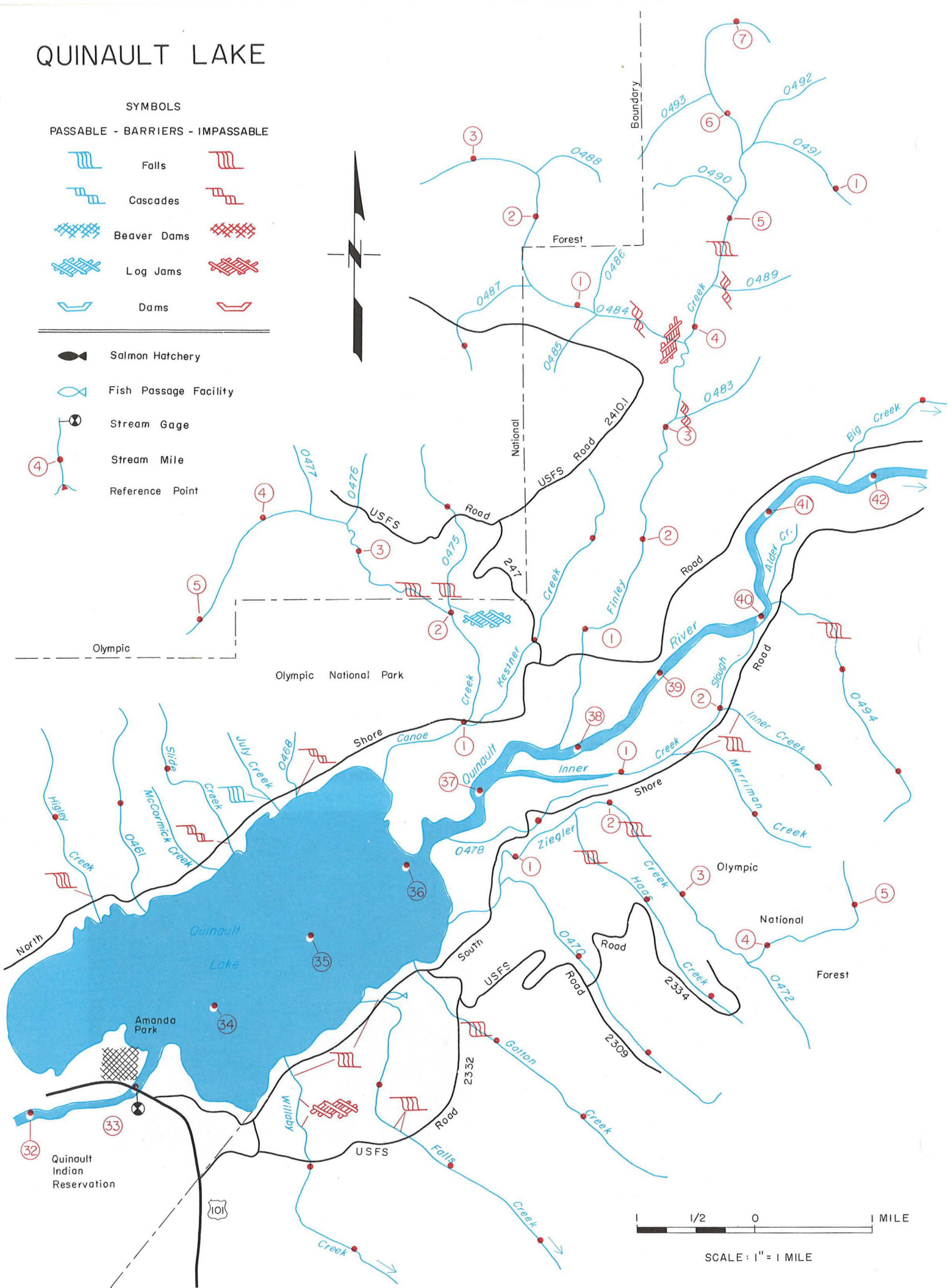
Salmon Hatchery

Fish Passage Facility

Stream Gage

Stream Mile

Reference Point



1 1/2 0 MILE

SCALE: 1" = 1 MILE

QUINULT LAKE
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0398	Quinault River				Sockeye, Coho, Chinook, Chum
	Quinault Lake	Outlet-33.4			Sockeye, Coho, Chinook, Chum
0460	Higley Creek	RS-33.6	1.8	—	Coho
0461	Unnamed	RS-34.0	1.9	—	Coho
0462	Willaby Creek	LS-34.2	4.9	—	Coho, Sockeye
0464	Slide Creek	RS-34.9	1.5	—	Coho
0465	Falls Creek	LS-35.0	4.0	—	Coho, Sockeye
0467	Gatton Creek	LS-35.55	2.8	—	Coho, Sockeye
0469	Ziegler Creek	LS-36.0	5.4	—	Sockeye, Coho, Chum
0470	Unnamed	LB-0.6	2.8	—	Sockeye, Coho
0471	Haas Creek	LB-1.7	2.3	—	Sockeye, Coho
0473	Canoe Creek	RS-36.1	5.2	—	Coho
0474	Kestner Creek	LB-1.0	2.6	—	Coho
0475	Unnamed	LB-2.0	1.6	—	Coho
0478	Unnamed	LB-36.4	1.6	—	Sockeye, Coho
0479	Inner Creek Slough	LB-37.2	2.75	—	Sockeye, Coho, Chum, Chinook
0480	Merriman Creek	LB-1.45	1.55	—	None
0481	Inner Creek	LB-2.0	1.2	—	None
0482	Finley Creek	RB-37.8	7.4	—	Coho
0483	Unnamed	LB-3.1	1.0	—	None
0484	Unnamed	RB-3.8	3.5	—	Coho
0487	Unnamed	RB-1.4	1.2	—	None
0491	Unnamed	LB-5.6	1.2	—	None
0494	Unnamed	LB-40.15	2.5	—	Sockeye, Coho
0496	Big Creek	RB-41.7	10.0	—	
	(See Queets-Quinault 1203)				
	(Cont. Queets-Quinault 1203)				

QUINAUT RIVER

Big Creek Area

This section discusses the Quinault River and its tributaries between Big Creek and Graves Creek. The North Fork Quinault is discussed separately in section 1300. The upper Quinault River is included in section 1400. This section includes 10.9 miles of the mainstem Quinault River and 12 tributaries providing an additional 59.2 miles of stream drainage.

Stream Utilization

The Quinault River from Big Creek upstream to near the confluence of Canyon Creek is the boundary between the Olympic National Forest and the Olympic National Park. Some cleared farmland and farming residences are found in this portion of the Quinault Valley. The entire watershed on the north bank of the Quinault is in the Olympic National Park as is the remainder of the watershed upstream from Bunch Creek.

The Quinault flows in a southwesterly direction from its confluence with Graves Creek over a moderate gradient channel to the confluence of the North Fork. The river in this reach has an average winter width of approximately 20 yards and a summer width of 12 yards with a streambed of gravel and rubble. Below the confluence of the North Fork the gradient moderates and the channel broadens to an average width of 35 yards during the winter and 20 yards during the summer. The river channel above the North Fork is relatively stable with little evidence of the streambed scouring which is common downstream.

Big Creek, largest stream drainage tributary to this section (except for the North Fork), heads on the steep ridge north of the Quinault Valley and flows towards the Quinault through a steep canyon area. The stream valley broadens and the gradient moderates a short distance upstream from Irely Creek. Downstream from here the stream passes over a coarse gravel terrain to near the mouth of Fox Creek. This particular reach of stream is dry except during moderately high streamflow periods. Below Fox Creek, Big Creek meanders through the lowlands to its confluence with Quinault River. In this reach the average width of the stream increases from 10 yards to 15 yards during the summer months and 12 to 20 yards during the winter. Most of the stream is well shaded by both conifer and deciduous timber. Several tributaries to Big Creek including both Fox Creek and Irely Creek have suitable characteristics for salmon production. These streams are generally less than 5 yards in width during the winter and two yards in width during the summer. Their streambeds are composed primarily of gravel and sand.

There are a number of small left-bank tributaries to this reach of the Quinault River. These streams are generally less than 4 miles in length and have steep to very steep gradients except in their extreme lower reaches. Streambed materials are primarily gravel and rubble with excellent stream bank cover. In the lower gradient sections these streams have average winter widths of up to 8 yards. All but the largest of these streams are dry during the summer months.

Salmon Utilization

This section of the Quinault provides spawning area for chinook, coho, and sockeye, as well as transportation waters for runs destined for upstream areas. The Quinault between the North Fork and Graves Creek is one of the primary chinook spawning areas. Limited spawning of this species occurs in the Quinault River between Big Creek and North Fork and in the lower 2 miles of Big Creek and in the lower 0.5 miles of Fletcher Creek.

Coho spawning and rearing occurs in all accessible streams in this section including the river near Graves Creek. Big Creek is utilized by this species upstream to mile 7.0. Coho production also occurs in several of its tributary streams. Additional coho production occurs in the low and moderate gradient stream sections of the other tributaries to the Quinault River.

Big Creek is a major sockeye spawning stream in the Quinault River watershed. This species also spawns in Fletcher Creek and other accessible tributaries, as well as in the Quinault River's stable side-channel areas. All of the mainstem Quinault River in this section and at least 15 miles of the tributaries are estimated to be presently utilized by salmon.

Limiting Factors

The Quinault downstream from the North Fork is unstable and channel shifting due to high winter flows is common. Coho production in the upper reaches of Big Creek is limited by the limited spawning area available as well as by the stream reach which frequently goes dry. Accessibility in most tributary streams is restricted to their lower reaches by falls and cascades.

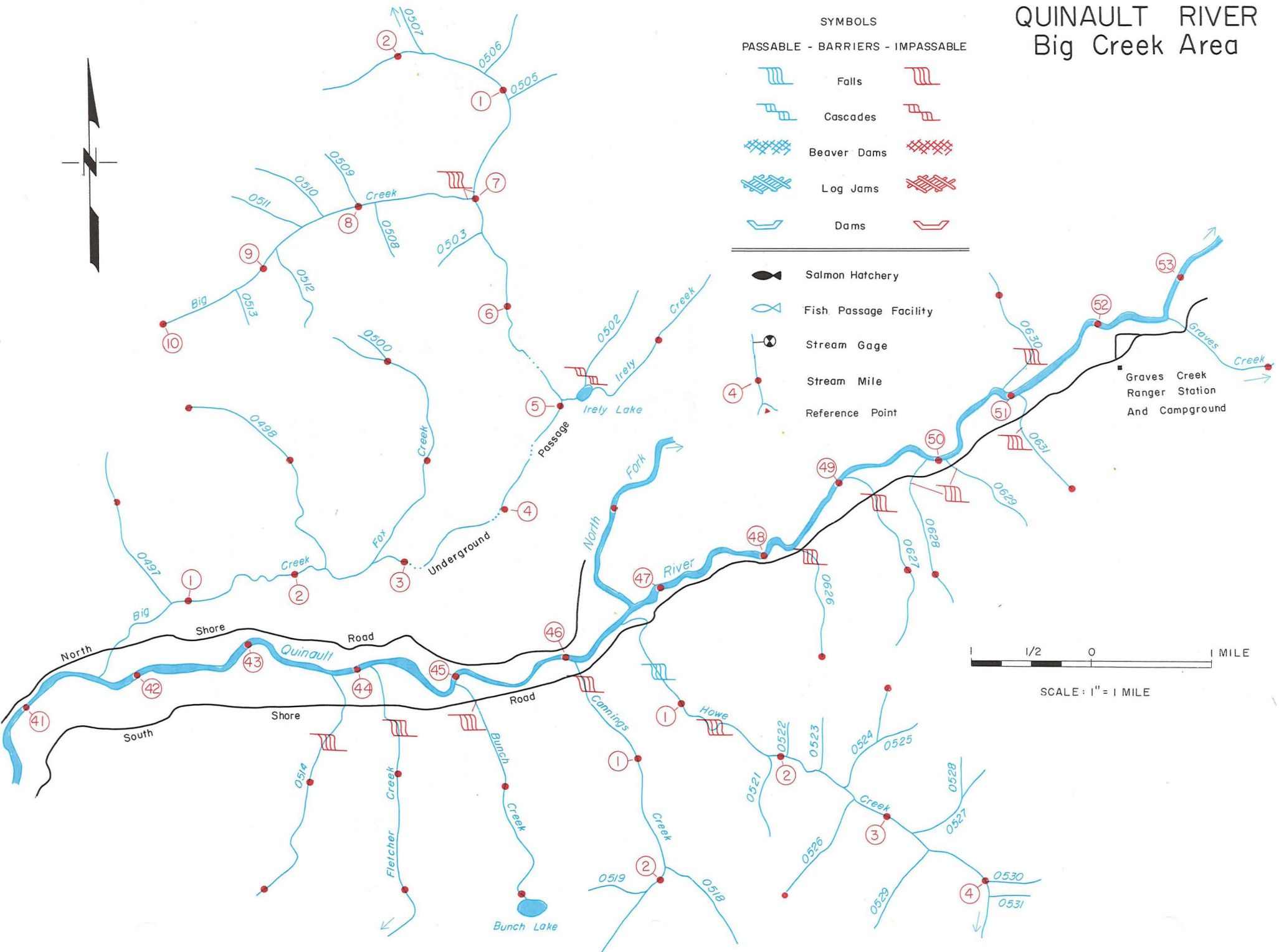
Beneficial Developments

There are presently no beneficial developments for salmon production in this watershed. The federal government formerly operated an egg-taking station on Big Creek.

Habitat Needs

Since virtually all of the salmon production habitat in this section is in the Olympic National Park, degradation of spawning and rearing habitat due to road construction and logging activities will not occur. The stream is subject to the ravages of winter floods particularly below the North Fork. Stabilization of side channel areas could improve spawning habitat for chinook and sockeye.

QUINALT RIVER Big Creek Area



QUINULT RIVER
Big Creek Area
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0398	Quinault River				
0496	Big Creek	RB-41.7	10.0	20.6	Sockeye, Coho, Chinook, Chum
0497	Unnamed	RB-0.9	1.4	—	Coho
0498	Unnamed	RB-2.3	2.0	—	Coho
0499	Fox Creek	RB-2.7	2.5	—	Coho
0501	Irely Creek	LB-5.0	1.7	—	Coho
	Irely Lake	Outlet-0.15	—	—	
0504	Unnamed	LB-7.0	2.6	—	None
0514	Unnamed	LB-43.8	2.1	—	Coho
0515	Fletcher Creek	LB-44.1	4.0	—	Sockeye, Coho, Chinook, Chum
0516	Bunch Creek	LB-45.0	2.1	—	Sockeye, Coho
	Bunch Lake	Outlet-2.1	—	—	
0517	Cannings Creek	LB-46.1	2.8	—	Coho
0518	Unnamed	RB-1.9	1.9	—	None
0520	Howe Creek	LB-46.6	5.5	7.64	Coho
0524	Unnamed	RB-2.6	1.0	—	None
0526	Unnamed	LB-2.7	1.0	—	None
0532	N. F. Quinault R.	RB-46.8	18.8	80.7	
	(See Queets-Quinault 1303)				
0626	Unnamed	LB-48.4	1.0	—	Coho
0627	Unnamed	LB-49.1	1.6	—	Coho
0628	Unnamed	LB-49.9	1.3	—	Coho
0630	Unnamed	RB-50.9	1.2	—	Coho
0631	Unnamed	LB-51.1	1.0	—	Coho
0632	Graves Creek	LB-52.6	6.0	18.0	
	(See Queets-Quinault 1403)				
	(Cont. Queets-Quinault 1303)				

NORTH FORK QUINAUT RIVER

The entire North Fork Quinault River watershed is discussed in this section. The North Fork Quinault is 18.8 miles in length and has 30 tributaries providing an additional 101 miles of stream drainage.

Stream Description

The North Fork Quinault River originates in the heart of the Olympic Mountain Range. The upper tributaries which collectively form the North Fork have their sources on Mt. Noyes, Mt. Seattle, and Mt. Christie. This entire drainage is in the Olympic National Park. Popular campgrounds and recreation area is located on the North Fork near mile 3.5 at the end of the North Shore Road. A trail maintained by the National Parks service provides the only access to the watershed above this point.

The North Fork Quinault and its upper tributaries have steep gradients with numerous falls and cascades. Streambed material consists of bedrock and boulders and the channels average 10 yards or less in width. The North Fork flows through a steep-sided valley for most of its length downstream to Rustler Creek. A moderate gradient channel section is located between Goeduck and Promise creeks near Sixteen-Mile Shelter. This section consists of pools and riffles with a streambed of gravel and rubble. Between Goeduck and Kimta creeks the gradient again increases to moderately steep. This area also contains a number of cascades and falls as well as constrictions in the streambed which create high velocities. From Kimta Creek downstream to Wild Rose Creek much of the North Fork is confined to canyons with numerous deep pools and short riffles. This section of the river has an average width of 20 yards during the winter months and 12 yards during the summer months. The streambed is composed of rubble and boulders with an occasional patch of gravel material. Below Wild Rose Creek the river breaks out of the canyon area and flows through a narrow river valley to its confluence with the Quinault River. The streambed has an average width of 20 yards during the winter months between Wild Rose Creek and Rustler Creek and 30 yards between Rustler Creek and the Quinault. During the summer months these two reaches have widths of 12 and 20 yards respectively. The streambed is composed primarily of gravel and rubble. Fair to good stream bank cover is provided along most of the mainstem of the North Fork Quinault.

With the exception of Rustler Creek, all tributaries to the North Fork Quinault are very steep. These tributaries head high on the ridges adjacent to the North Fork and drop abruptly to the valley floor. Steep cascades and waterfalls are located on all of these streams at or near their confluence with the North Fork Quinault. Rustler Creek provides some moderate gradient stream channel in its lower 3 miles. This section of the stream is composed of pools and riffles with rapids found near the series of 8- to 10-foot falls located at approximately mile 3.0. Most of this stream is well shaded by mixed timber.

Salmon Utilization

The North Fork Quinault provides spawning, rearing and transportation water for runs of chinook and coho

salmon. Small numbers of sockeye may also utilize this system. Chinook and coho are believed to migrate upstream to approximately mile 10.5. Spawning is confined primarily to the mainstem of the river and side channel area. Tributary streams above Rustler Creek are too steep for salmon utilization. Rustler Creek is the only tributary which provides suitable spawning habitat for salmon. Coho salmon may utilize the lower 3 miles of this stream while the lower mile is suited for chinook spawning. Suitable spawning area for sockeye salmon is located in various short reaches of the North Fork downstream from Rustler Creek.

Limiting Factors

Coho production in the North Fork Quinault is seriously limited by lack of suitable spawning material. The tributaries are too steep, with the exception of Rustler Creek, to permit upstream migration. A series of cascades and falls on the North Fork near Kimta Creek is the upstream limit of salmon migration. Movement of coho upstream in Rustler Creek is blocked by a series of falls near mile 3.0. The North Fork channel downstream from Rustler Creek shows evidence of considerable channel shifting during periods of high water. This instability affects success of mainstem spawning, primarily by chinook and sockeye. Cold water temperatures may inhibit the growth of juvenile salmon.

Beneficial Developments

There have been no beneficial developments for salmon production in this watershed.

Habitat Needs

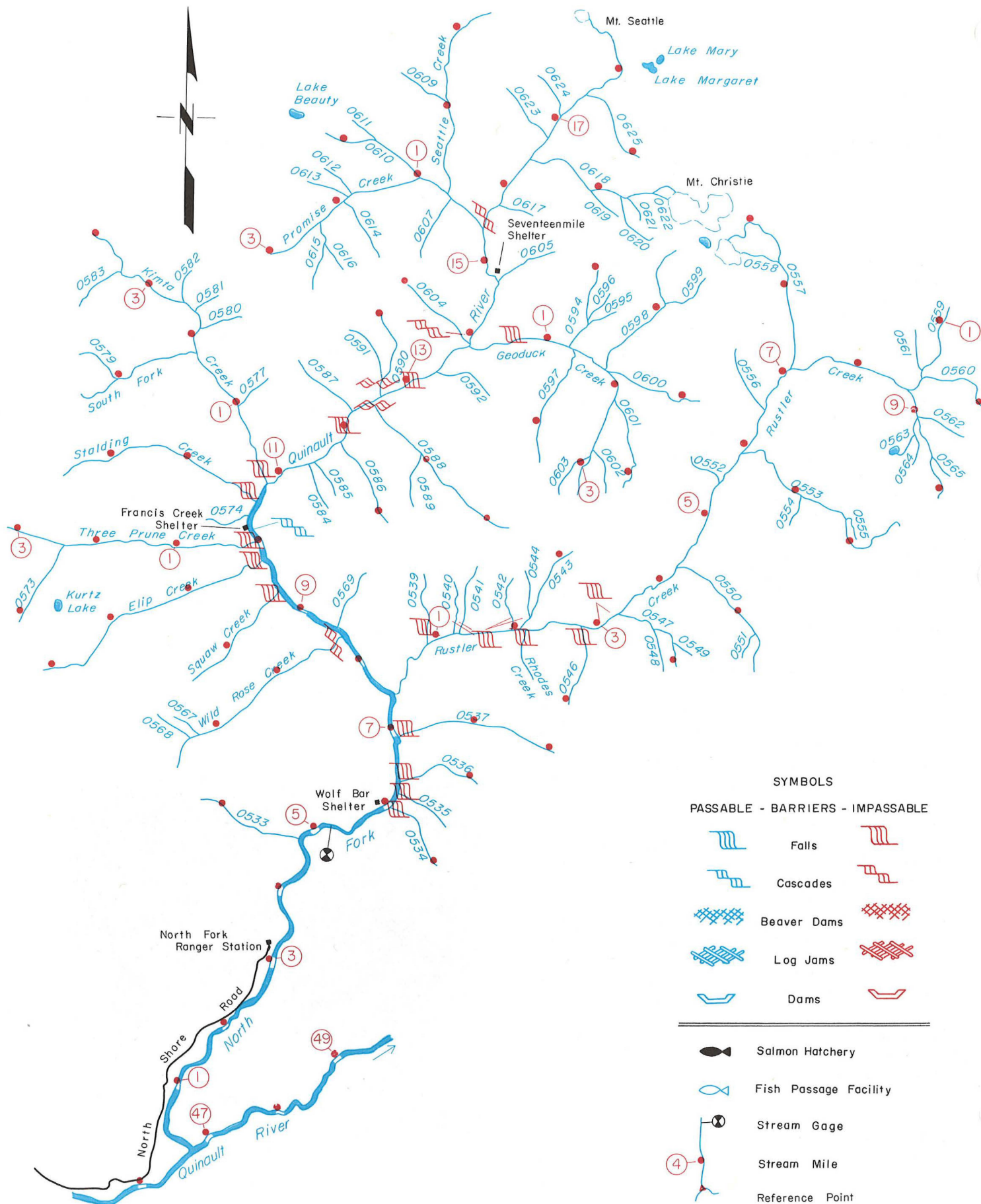
Since this watershed is entirely within the Olympic National Park, no man-caused alteration is expected to affect salmon production.



PHOTO 21-14. Typical reach of North Fork near Rustler Creek.

A number line representing distance in miles. The line starts at 0 and ends at 2. Major tick marks are at 0, 1/2, 1, and 2. The segment from 0 to 1/2 is shaded black. The segment from 1/2 to 1 is shaded gray. The segment from 1 to 2 is white.

SCALE : 1" = 1.5 MILES



NORTH FORK QUINAULT RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0398	Quinault River				
0532	N. F. Quinault R.	RB-46.8	18.8	80.7	Coho, Chinook, Sockeye
0533	Unnamed	RB-4.8	1.3	—	Unknown
0534	Unnamed	LB-6.0	1.0	—	Unknown
0536	Unnamed	LB-6.4	1.1	—	Unknown
0537	Unnamed	LB-6.9	2.0	—	Unknown
0538	Rustler Creek	LB-7.5	9.4	21.8	Coho, Chinook
0543	Unnamed	RB-2.0	1.2	—	None
0546	Unnamed	LB-2.8	1.0	—	None
0547	Unnamed	LB-3.3	1.0	—	None
0550	Unnamed	LB-4.3	1.8	—	None
0553	Unnamed	LB-5.9	2.7	—	None
0557	Unnamed	RB-7.1	2.5	—	None
0559	Unnamed	RB-8.7	1.2	—	None
0560	Unnamed	LB-0.2	1.0	—	None
0566	Wild Rose Creek	RB-8.4	2.8	—	Coho
0570	Squaw Creek	RB-9.4	1.6	—	Coho
0571	Elip Creek	RB-9.8	3.1	—	None
0572	Three Prune Creek	RB-10.0	3.1	—	None
0573	Unnamed	RB-2.4	1.1	—	None
0575	Stalding Creek	RB-10.5	2.7	—	None
0576	Kimta Creek	RB-10.8	4.1	—	None
0578	S. F. Kimta Cr.	RB-1.8	1.6	—	None
0586	Unnamed	LB-11.8	1.1	—	None
0588	Unnamed	LB-12.5	2.2	—	None
0590	Unnamed	RB-12.6	1.0	—	None
0593	Geoduck Creek	LB-13.9	3.3	6.96	None
0594	Unnamed	RB-1.2	1.0	—	None
0597	Unnamed	LB-1.3	1.5	—	None
0598	Unnamed	RB-1.7	1.8	—	None
0600	Unnamed	RB-1.8	1.2	—	None
0601	Unnamed	RB-2.1	1.2	—	None
0604	Unnamed	RB-13.95	1.0	—	None
0606	Promise Creek	RB-15.4	3.0	—	None

NORTH FORK QUINAUT RIVER

Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0608	Seattle Creek	LB-0.6	2.4	—	None
0610	Unnamed	LB-1.0	1.3	—	None
0618	Unnamed	LB-16.5	1.9	—	None
0625	Unnamed	LB-17.5	1.0	—	None
(Cont. Queets-Quinault 1403)					

QUINAULT RIVER

Headwaters

This section includes the entire Quinault River and its tributaries upstream from and including Graves Creek. The Quinault River in this section is 16.2 miles in length. There are 42 tributaries with a total of 87.7 miles of stream drainage.

Stream Description

The Quinault originates in glacier fields on the south side of Mt. Anderson. The stream maintains a southwesterly course through Enchanted Valley towards the confluence of Graves Creek. This entire drainage is in the Olympic National Park. Below the confluence of Anderson Creek the stream gradient is moderate to moderately steep and has an average winter width of 20 yards. During the summer months an average channel width of 7 yards is maintained between Anderson Creek and Upper O'Neil Creek. During the summer between Upper O'Neil Creek and Graves Creek the channel averages 12 yards in width. The streambed is composed of rubble and boulders with occasional gravel patches in the riffle areas. Areas of cascades and rapids are scattered along this entire reach, particularly between Lamata and Anderson creeks. Above Anderson Creek the gradient is very steep all the way up to Anderson Glacier. Near the mouth of Fire Creek the Quinault enters a deep canyon area. It emerges from this canyon a short distance above Graves Creek. A number of falls, cascades and log jams were observed in the canyon.

Graves Creek, the largest tributary drainage system in this section of Quinault, originates in Lake Sundown near Sundown Pass. The stream has a steep to very steep gradient throughout most of its course as it picks up several large tributaries. Downstream from Litchy Creek, the stream gradient moderates. In this reach the stream has an average width of approximately 10 yards during both the summer and winter months and is composed of rubble and boulders. Pool area comprises nearly half of the stream in this reach. Some cascades and rapids are present in the lower 0.7 miles. A high fall exists at this point.

O'Neil Creek is another major tributary of the upper Quinault. This stream heads on the southwest slope of Mt. Duckabush and flows westerly towards the Quinault through a steep gradient channel. The lower 0.5 miles of the stream has a moderate to moderately steep gradient and a streambed composed of bedrock, boulder, and rubble. Some gravel patches are present in the riffle areas. During the winter months this stream has an average width of 8 yards. A 5-yard average width channel is present during the summer.

All of the other tributaries of this section of the Quinault River have steep to very steep gradients. These streams are generally less than 1.5 miles in length. Many of them are dry during the summer months. Their streambeds are composed of bedrock, boulder and rubble.

Salmon Utilization

There is presently little salmon utilization of this portion of the Quinault watershed. Runs of coho and chinook can ascend the Quinault River to a cascade area approximately

0.7 miles above Graves Creek. Coho can utilize the lower 0.6 miles of Graves Creek and chinook salmon spawn near its mouth. Some sockeye spawning is likely in the Quinault as well as in Graves Creek. It is estimated that approximately 9 miles of tributary streams are presently accessible and utilized by salmon.

Limiting Factors

Surveys of the canyon area on the Quinault above Graves Creek indicate that there are a series of cascades and log jams scattered throughout its length. Constrictions in the canyon walls narrow the river bed to 3 yards in places. High velocities appear to be the main feature which prevents salmon from passing through this canyon. Steelhead trout are capable of passing through the canyon above Graves Creek and are known to utilize the Quinault River and the lower reaches of O'Neil Creek above the canyon. The steep gradient of Graves Creek above mile 0.7 stops upstream migration.

Beneficial Developments

There have been no beneficial developments for salmon production in this section.

Habitat Needs

Since this entire area lies within the Olympic National Park, little habitat alteration is expected in the future. While it would be desirable to improve passage conditions through the canyon area, such a project doesn't appear to be feasible.

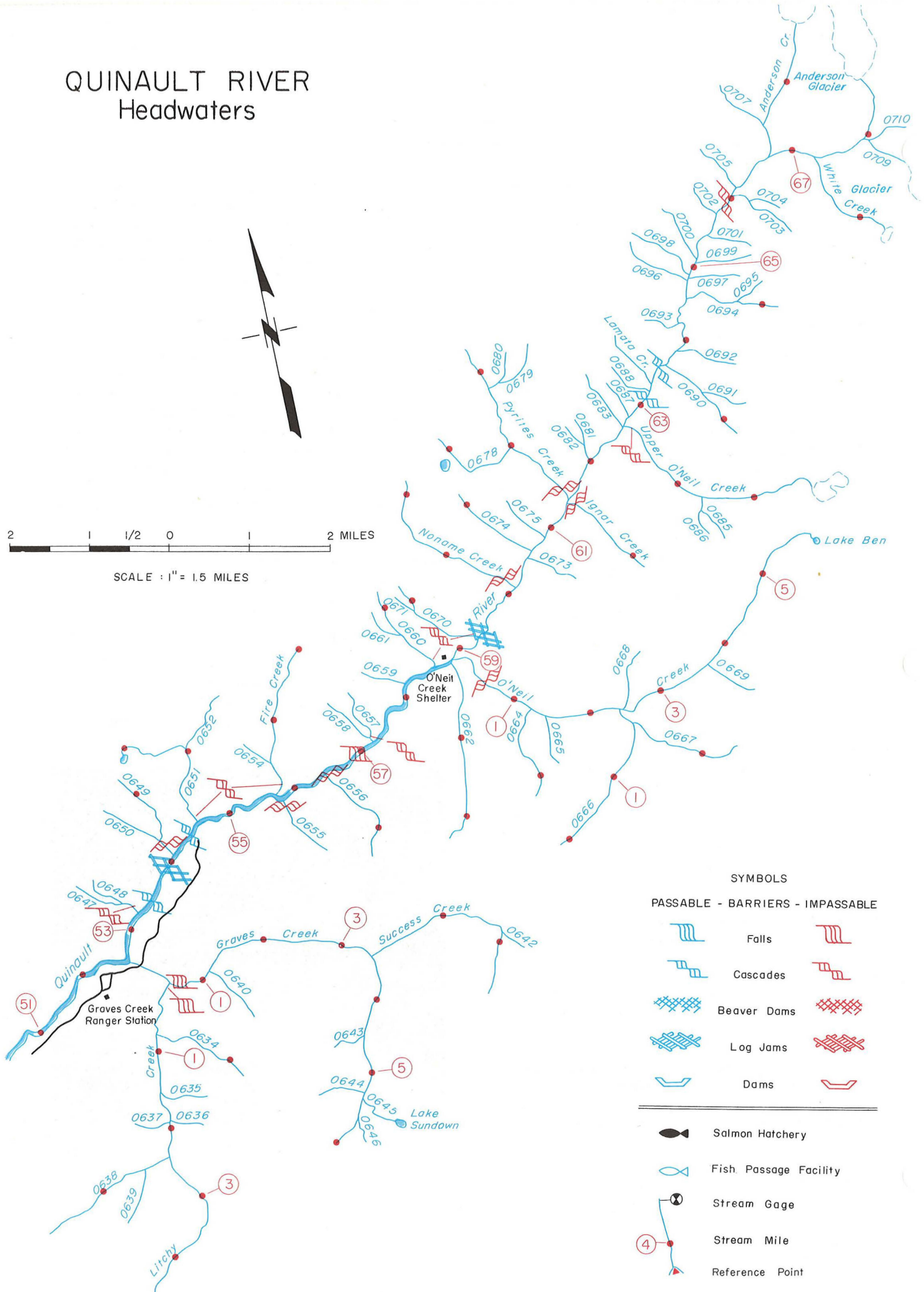


PHOTO 21-15. Steep gradient near Lamata Creek typifies the upper Quinault River.

QUINAULT RIVER Headwaters



SCALE : 1" = 1.5 MILES



SYMBOLS

PASSABLE - BARRIERS - IMPASSABLE

	Falls	
	Cascades	
	Beaver Dams	
	Log Jams	
	Dams	

Salmon Hatchery

Fish Passage Facility

Stream Gage

Stream Mile

Reference Point

QUINULT RIVER
Headwaters
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0398	Quinault River				Chinook, Coho, Sockeye
0632	Graves Creek	LB-52.6	6.0	18.0	Coho, Sockeye
0633	Litchy Creek	LB-0.6	4.5	—	None
0634	Unnamed	RB-0.8	1.3	—	None
0638	Unnamed	LB-2.3	1.8	—	None
0641	Success Creek	RB-3.4	2.6	—	None
0649	Unnamed	RB-54.1	1.3	—	None
0651	Unnamed	RB-54.6	2.0	—	None
	Unnamed Lake	Outlet-2.0	—	—	
0653	Fire Creek	RB-55.7	2.0	—	None
0656	Unnamed	LB-56.4	1.4	—	None
0660	Unnamed	RB-58.6	1.2	—	None
0662	Unnamed	LB-58.8	2.3	—	None
0663	O'Neil Creek	LB-58.85	5.9	10.7	None
0664	Unnamed	LB-1.2	1.2	—	None
0666	Unnamed	LB-2.4	2.1	—	None
0667	Unnamed	RB-0.2	1.5	—	None
	Lake Ben	Outlet-5.9	—	—	
0670	Unnamed	RB-59.3	1.3	—	None
0672	Noname Creek	RB-60.1	2.2	—	None
0674	Unnamed	RB-60.6	1.1	—	None
0676	Ignar Creek	LB-61.4	1.3	—	None
0677	Pyrates Creek	RB-61.5	2.3	—	None
0678	Unnamed	RB-1.0	1.2	—	None
0684	Upper O'Neil Creek	LB-62.7	2.8	—	None
0690	Unnamed	LB-63.6	1.2	—	None
0694	Unnamed	LB-64.6	1.2	—	None
0706	Anderson Creek	RB-66.7	1.8	—	None
0708	White Creek	LB-67.3	1.4	—	None

MOCLIPS RIVER

This section describes the Moclips River and 10 independent tributaries to the Pacific Ocean between Moclips and Quinault rivers. These tributaries have total stream lengths of 23.2 miles. The mainstem of the Moclips is 11.5 miles in length and has 2 tributaries with an additional 24.6 miles of stream drainage.

The Department of Fisheries has not conducted surveys on streams within the Quinault Indian reservation. Therefore, the Moclips River map (1500) contains no symbols identifying barriers, cascades, falls, log jams, etc., pertinent to the river environment and anadromous fish habitat.

Stream Description

Virtually this entire section lies in the Quinault Indian Reservation. The upper reaches of both the North Fork Moclips and the Moclips River lie outside the boundaries of the reservation, as does the lower 2 miles of river. The community of Moclips is located on the river near its mouth. The remainder of this section is primarily in second growth timberland. Since little of this watershed lies outside of the Quinault Indian Reservation, no stream surveys were conducted. Consequently little information is available for inclusion in this report section.

Moclips River drains a large flat area south of the lower Quinault River. Most of the watershed lies at an elevation of less than 400 feet above sea level. The stream reportedly has a large number of old log and debris jams in both the mainstem and its tributary streams.

The independent drainages lying between the Moclips and Quinault rivers head in a low ridge of hills along the coast. Wreck Creek is the only independent drainage of consequence. The other tributaries are generally less than 2 miles in length and have moderate to moderately steep gradients.

Salmon Utilization

Department records of catches by Quinault Indian tribal members in the Moclips indicate that the river formerly supported a significant run of coho and a small run of chum. Information presently available indicates that these runs have declined considerably in recent years. Wreck Creek is the only independent drainage which appears to be sufficiently large to support runs of salmon. Coho salmon probably utilize this drainage. The total miles of streams presently utilized by salmon in this watershed is not known.

Limiting Factors

A dam located on the Moclips River at mile 1.3 has hindered upstream passage of adult salmon for many years. The fish ladder constructed at this dam was generally inadequate. Logging activities in the Moclips watershed have reduced the former potential of this system.

Beneficial Developments

The dam located at mile 1.3 on the Moclips River will be removed by the Department of Fisheries during 1974. This should provide unhindered access to the spawning and rearing areas upstream.

Habitat Needs

The removal of the dam at mile 1.3 along with rehabilitation of streams in the Moclips River drainage could once again re-establish this river system as an important coho contributor. Chum salmon runs will also benefit from these activities.

MOCLIPS RIVER

SYMBOLS

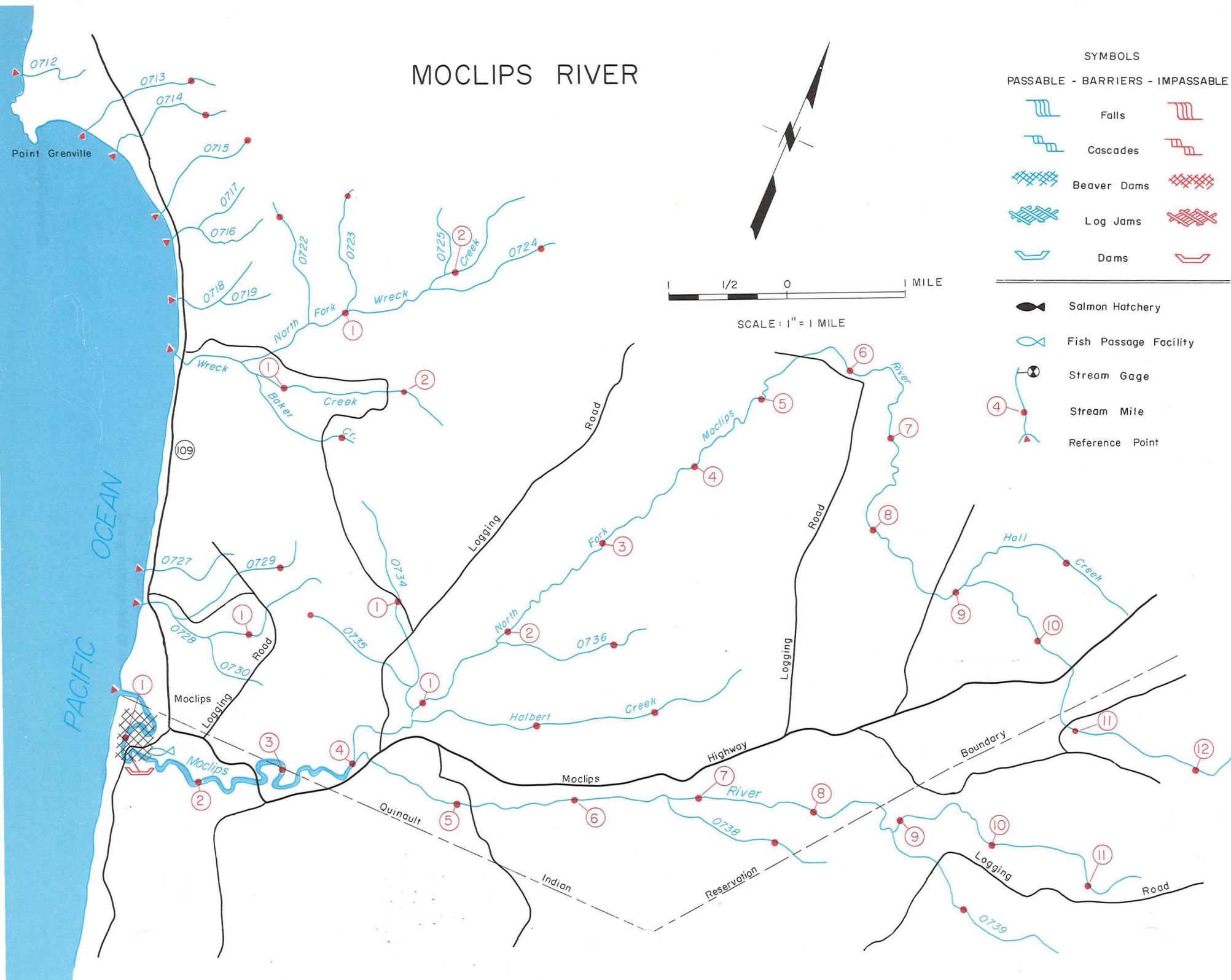
PASSABLE - BARRIERS - IMPASSABLE

	Falls	
	Cascades	
	Beaver Dams	
	Log Jams	
	Dams	

- Salmon Hatchery
- Fish Passage Facility
- Stream Gage
- Stream Mile
- Reference Point

1 1/2 0 1 MILE

SCALE: 1" = 1 MILE



MOCLIPS RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0711	Unnamed	NW¼, NW¼, Sec12, T21N, R13W	1.5	—	Unknown
0713	Unnamed	SW¼, SW¼, Sec18, T21N, R13W	1.2	—	Unknown
0714	Unnamed	SE¼, SW¼, Sec18, T21N, R12W	1.2	—	Unknown
0715	Unnamed	NE¼, Sec19, T21N, R12W	1.0	—	Unknown
0720	Wreck Creek	N½, NE¼, Sec29, T21N, R12W	2.4	—	Coho, Chum
0721	N. F. Wreck Creek	RB-0.6	2.9	—	Coho, Chum
0722	Unnamed	RB-0.7	1.1	—	Unknown
0723	Unnamed	RB-1.0	1.1	—	Unknown
0724	Unnamed	LB-1.7	1.1	—	Unknown
0726	Baker Creek	LB-0.8	1.1	—	Unknown
0728	Unnamed	NE¼, Sec6, T20N, R12W	1.9	—	Unknown
0729	Unnamed	RB-0.4	1.3	—	Unknown
0731	Moclips River	SE¼, Sec6, T20N, R12W	11.5	—	Coho, Chum
0732	N. F. Moclips River	RB-4.0	12.4	—	Coho, Chum
0733	Halbert Creek	LB-0.8	2.8	—	Coho, Chum
0734	Unnamed	RB-0.9	1.9	—	Coho, Chum
0735	Unnamed	RB-0.2	1.0	—	Coho, Chum
0736	Unnamed	LB-1.9	1.3	—	Coho, Chum
0737	Hall Creek	RB-9.1	1.7	—	Coho, Chum
0738	Unnamed	LB-6.8	1.6	—	Coho, Chum
0739	Unnamed	LB-8.9	1.9	—	Coho, Chum

COPALIS RIVER

This section discusses 7 independent drainages to the Pacific Ocean between Grays Harbor and the Moclips River. Copalis River, the largest of these drainages, has a total length of 20.1 miles. There are 5 tributaries with 29.9 miles of drainage to the Copalis River. The other drainages in this section have a total stream mileage of 61.8.

Stream Description

The watersheds described in this section drain the lowlands between the Pacific Ocean and the Humptulips River. Elevation in these watersheds are generally less than 300 feet above sea level. These watersheds are in second growth timber production. Considerable residential and recreational development has occurred along the ocean beach area. The community of Pacific Beach is located near the mouth of Joe Creek. The town of Copalis Beach is located at the mouth of Copalis River. The lower reaches of Conner Creek is the site of Ocean City.

Joe Creek is the northernmost tributary discussed in this section. This stream has a moderate to low gradient throughout its entire length. This stream has an average width of 8 yards during the winter months and 6 yards during the summer months in its lower reaches. The streambed material in the lower 4 miles is composed primarily of sand with only an occasional patch of gravel. Most of this section consists of long, slow-moving pools followed by short sand and gravel riffles. In the middle and upper reaches of Joe Creek the gradient increases somewhat and the streambed is composed of gravel and rubble. Here the stream has an average winter width of 6 yards and a summer width of 3 yards. Log and debris jams are present. Fair to excellent stream bank cover is provided by deciduous vegetation. The tributaries of Joe Creek are generally quite small and average 2 yards or less in width during the winter months in their lower reaches. Their streambeds are composed primarily of gravel and sand.

Elk Creek and Boone Creek have low gradients throughout their lengths and their streambeds are composed primarily of sand. An occasional riffle of gravel material is found in each.

The estuary of Copalis River extends upstream from the ocean for approximately 3 miles. The river during the winter months above the estuary gradually narrows from a width of 10 yards to 4 yards at mile 20. The summer width in this same area decreased from 5 yards to 2 yards. Moderate shade and cover is provided by deciduous and conifer vegetation along the stream margin. Log and debris jams are common throughout the reach above the estuary. The streambed is composed primarily of gravel and rubble with considerable quantities of sand. Conner Creek and its tributary, Cranberry Creek, are similar to other streams in this section. These water courses have low gradients and much of the surrounding terrain is quite swampy. Occasional patches of gravel are found in shallow riffles.

Salmon Utilization

Most of these streams provide suitable habitat for coho and chum spawning. Copalis River is the major salmon production stream in this section. Coho salmon have been ob-

served in the Copalis River near its source. Small runs of chum salmon reportedly spawn in this river also. These species are also known to utilize Joe Creek and its accessible tributaries as well as reaches of Conner and Cranberry Creek. Small runs may be present in Boone Creek.

Limiting Factors

The primary factor limiting salmon production in the Copalis River section is the limited spawning area on streams other than Copalis river. Low stream flows inhibit summer rearing of coho salmon. Water temperatures are frequently high. Log and debris jams may periodically hinder upstream migration of adults. A mill pond dam on Beaver Creek, a tributary to Joe Creek, constitutes a total barrier to migrating salmon.

During the low stream flow period the mouths of most of these ocean tributaries may be blocked by a buildup of beach sands. These sand bar buildups are broached by high winter flows.

Beneficial Developments

No beneficial developments for salmon production have occurred in this watershed in recent years.

Habitat Needs

Reforestation of much of this section will improve conditions for salmon production. Installation of gravel incubation boxes in the tributaries other than Copalis River could provide juvenile coho salmon for the limited rearing area available.

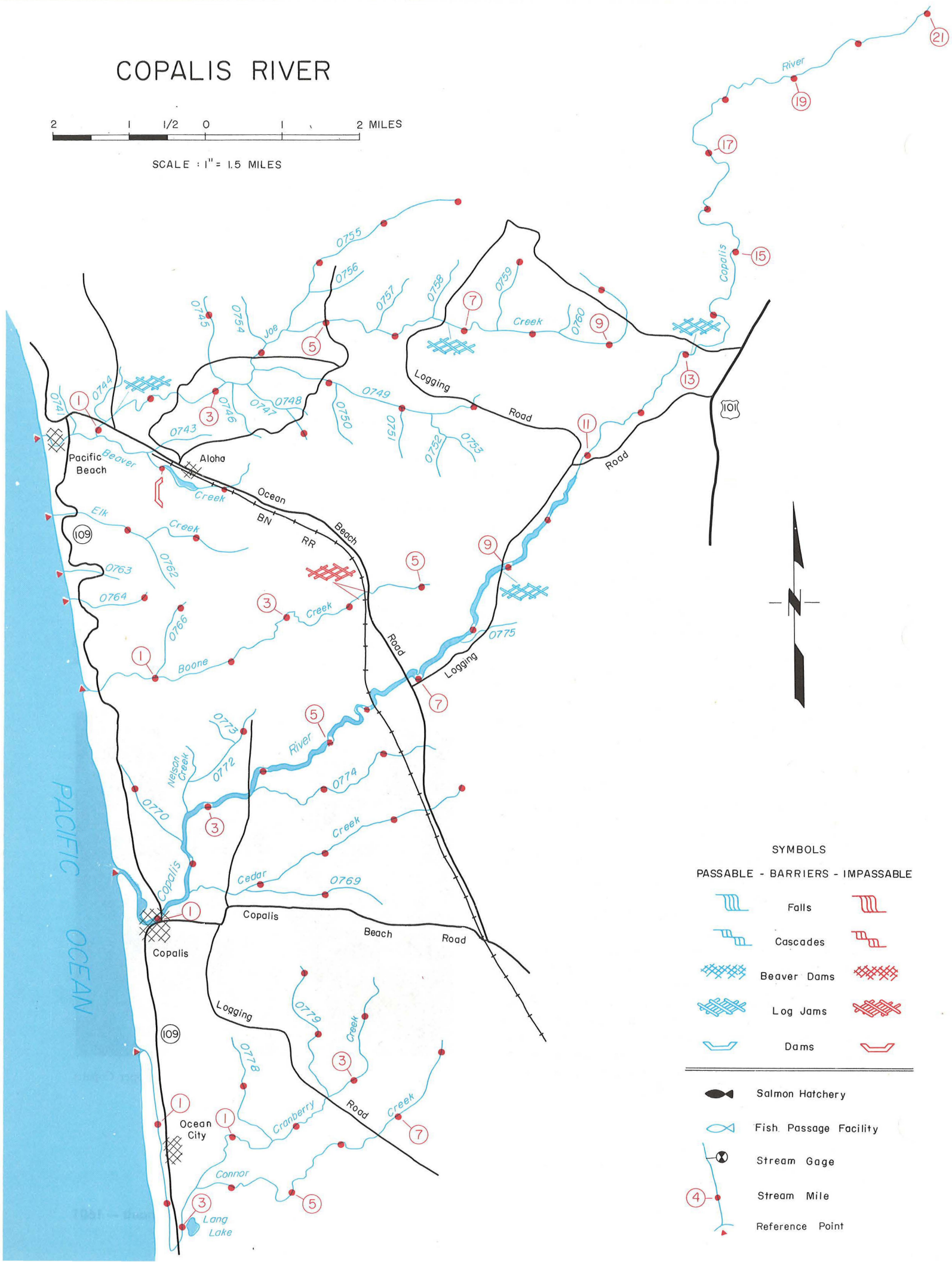


PHOTO 21-16. Coho spawning and rearing area on upper Copalis River.

COPALIS RIVER

2 1 1/2 0 1 2 MILES

SCALE : 1" = 1.5 MILES



SYMBOLS

PASSABLE - BARRIERS - IMPASSABLE

	Falls	
	Cascades	
	Beaver Dams	
	Log Jams	
	Dams	

- Salmon Hatchery
- Fish Passage Facility
- Stream Gage
- Stream Mile
- Reference Point

COPALIS RIVER
Queets-Quinault Basin — WRIA 21

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0740	Joe Creek	S1/2,Sec20, T20N,R12W	10.3	—	Coho, Chum
0742	Beaver Creek	LB-0.9	2.5	—	Coho
	Unnamed Lake	Outlet-1.0	—	—	
0745	Unnamed	RB-3.2	1.2	—	Unknown
0747	Unnamed	LB-3.5	1.1	—	Unknown
0749	Unnamed	LB-3.7	3.4	—	Unknown
0755	Unnamed	RB-4.5	3.0	—	Unknown
0759	Unnamed	RB-7.6	1.0	—	Unknown
0761	Elk Creek	SE1/4,Sec29, T20N,R12W	2.8	—	Unknown
0764	Unnamed	S1/2,SE1/4,Sec32, T20,R12W	1.0	—	Unknown
0765	Boone Creek	SW1/4,Sec4, T19N,R12W	5.1	6.32	Coho
0766	Unnamed	RB-1.0	1.1	—	Coho
0767	Copalis River	NE1/4,Sec21, T19N,R12W	21.1	—	Coho,Chum,Chin.
0768	Cedar Creek	LB-1.6	4.0	6.72	Coho
0769	Unnamed	LB-0.8	1.8	—	Unknown
0770	Unnamed	RB-2.3	1.4	—	Coho
0771	Nelson Creek	RB-2.7	0.9	—	Coho
0772	Unnamed	LB-0.5	1.3	—	Coho
0774	Unnamed	LB-3.7	2.7	—	Coho
0776	Connor Creek	N1/2,SE1/4,Sec33, T19N,R12W	8.1	—	Coho, Chum
0777	Cranberry Creek	RB-3.6	4.5	5.93	Unknown
0778	Unnamed	RB-1.6	1.7	—	Unknown
0779	Unnamed	RB-2.6	2.1	—	Unknown
0780	Oyhute Creek	Sec22,T18N,R12W	1.4	—	Unknown

