SNOHOMISH BASIN
Water Resource Inventory Area 07

The Snohomish River, with its multitude of tributary streams, represents the second largest drainage system within the Puget Sound region. Its overall watershed encompasses some 1,780 square miles. Also within the basin more than a dozen small streams enter Puget Sound independent of the Snohomish River system with these having a combined drainage area of approximately 120 square miles. Three of these independent streams are located north of the Snohomish River estuary and eleven smaller streams drain into Puget Sound between Everett and Mukilteo. Most of these small independent drainages provide some suitable spawning and rearing areas for anadromous and resident fishes and each contributes to the specific ecological make-up of the estuarine and marine water conditions in the vicinity of its confluence with Puget Sound. There are 1,730 rivers and streams identified in the Snohomish basin providing over 2,718 linear miles of drainage.

The Snohomish River system consists of two principal rivers, the Skykomish draining approximately 844 square miles of watershed, and the Snoqualmie, draining approximately 693 square miles. These two large rivers have their confluence approximately five miles southwest of the town of Monroe, forming the mainstem Snohomish River which continues on to Puget Sound at the city of Everett.

The Skykomish River heads in the steep sloped, heavily forested, deep snow country of the high Cascade Mountains. From the vicinity of Stevens Pass the South Fork Skykomish flows generally west and northwest for some 32 miles to its confluence with the North Fork near the town of Index. Along this course the South Fork receives numerous moderate sized tributaries which are all important to the anadromous and resident fish population of the area. Some of these include the Beckler, Foss, and Miller rivers, plus Money and Index creeks. These upper drainages of the Skykomish, including its highly productive North Fork, all present mountain-type characteristics including moderately steep gradient and extensive large rock and cascade areas. However, these drainages also contain considerable pool and riffle areas sufficient to sustain and produce good populations of fish.

Below the confluence of the North and South forks, the mainstem Skykomish River continues generally west for 30 miles to its junction with the Snoqualmie River. Moving through this stretch, the river leaves the high mountain country proceeding across an increasingly broader valley floor. Much of the lower river course is bounded by cleared

PHOTO 07-1. Snohomish River estuary with Possession Sound and Whidbey Island in the background.

and semi-cleared farm land with intermittent sections of deciduous and coniferous forest and occasional small settlements and towns. Principal tributary streams entering the Skykomish along this lower course include the moderately large Wallace and Sultan rivers, plus Proctor, Elwell and Woods creeks. This lower stretch of mainstem Skykomish River is predominantly a pool-riffle type stream of superb quality for all aspects of fish production.

The Snoqualmie River system also heads in the steep sloped, densely forested, heavy snow country of the high Cascade Range. From the Snoqualmie Pass area, the South Fork Snoqualmie flows generally northwest through mostly mountainous terrain for about 35 miles to Snoqualmie Falls. Most of this section is predominantly a mountain-type stream having steep gradient and extensive cascade and falls sections; however, some stretches of the lower reaches do contain extensive, good quality, pool-riffle type stream bed. Approximately five miles above the falls the combined North Fork and Middle Fork Snoqualmie have their confluence with the South Fork.

The Middle Fork Snoqualmie heads in the Mount Daniel-Mount Roosevelt-Big Snow Mountain region of the high Cascades and flows generally west and southwest 40 miles to its confluence with the North Fork, four miles east of the town of Snoqualmie. The North Fork Snoqualmie heads in the Lennox Mountain region of the Cascades and flows generally southwest and south for 26.5 miles to its meeting with the Middle Fork. Both the North and Middle forks contain considerable good quality pool and riffle areas utilized extensively by resident fish. However, like the South Fork, the upper reaches present steep gradients and moderately heavy cascade characteristics.

PHOTO 07-2. The largest potential salmon production area in the state blocked by a natural barrier lies above Snoqualmie Falls.

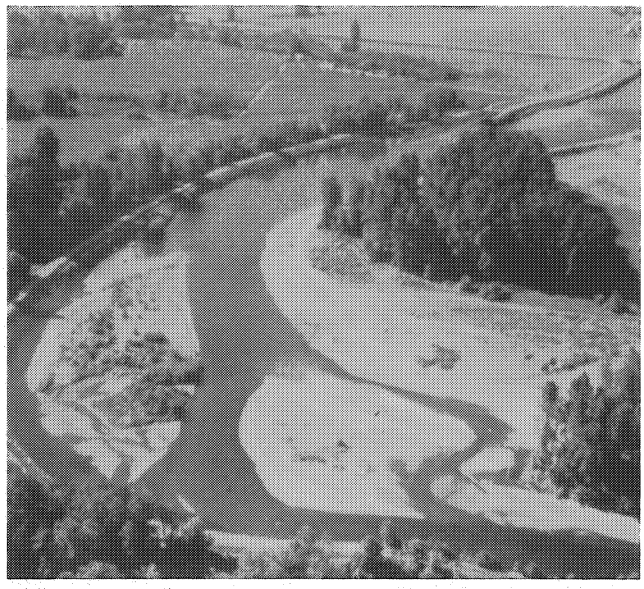


PHOTO 07-3. A chinook spawning riffle in the Snoqualmie River below Carnation.

Below the 268 foot drop of Snoqualmie Falls, located near the town of Snoqualmie, the mainstem Snoqualmie River flows generally northwest and north 36 miles to its confluence with the Skykomish River. Here the river moves out of the high mountain country and meanders across a relatively broad and flat valley floor. This section contains extensive pools and deep, slow moving glides as well as numerous, high quality riffles, all important to the fish production capacity of the stream. Bordering the lower river are considerable cleared farm lands and occasional small settlements and towns. The accessible tributary streams contributing to the lower Snoqualmie's flow include the Tolt and Raging rivers, and Tokul, Griffin and Cherry creeks.

Below the confluence of the Skykomish and Snoqualmie Rivers, the mainstem Snohomish meanders 20.5 miles northwest to its meeting with Puget Sound at Everett. Along this stretch exist numerous pools and deep slow moving glides, as well as intermittent riffle areas suitable for fish spawning. This portion of the very broad valley floor is characterized by extensive open farm land. Considerable industrialization also occurs, particularly in its lower reaches. The major tributary of the Snohomish in this area is the Pilchuck River entering from the north at river mile 13.4.

The independent drainages in this basin are all relatively short, most of them carrying only surface runoff. The total accessible stream length provided by these smaller streams would not exceed 20 linear miles. Quilceda Creek is the largest and contains fair to good salmon habitat. Tulalip, Mission, and one unnamed tributary are located on relatively undeveloped land of the Tulalip Indian Reservation, while the remainder of the area's independent streams flow through farming, residential and/or industrial area. Each of these smaller streams support relatively good populations of resident fish; however, accessibility and suitability for anadromous fish is generally limited.

Fish Inventory and Distribution

The Snohomish River system is inhabited by four salmon species, chinook, coho, pink, and chum, and by each of the anadromous game fish species. These fish migrate, spawn, and rear in over 200 miles of accessible river, including portions of each of the accessible tributaries. Some of the smaller independent drainages of the area may support spawning runs of each of the anadromous game fishes; however, only limited numbers of coho and chum salmon have been observed in these streams.

Chinook Salmon — The chinook salmon inhabiting the Snohomish Basin can be generally separated into three segments or races: spring, summer, and fall chinook. The spring chinook life history is somewhat different from that of the summer and fall chinook, particularly in timing of adult migration and in location of spawning area. Because of this, the springs are usually treated separately from the combined summer and fall runs. Since there is less separation between summer and fall chinooks, especially in adult migration timing and in spawning area location, these races are usually regarded as a single population and are often referred to as the summer-fall chinook.

PHOTO 07-4. Beckler River provides spawning and rearing habitat for both spring chinook and coho.

The majority of spring chinook salmon utilize the upper Skykomish River system for spawning and rearing. Although few spring chinook surveys have been conducted in the area, it is known that these fish spawn in the accessible waters of the North Fork and South Fork Skykomish and in the tributaries of the Beckler, Foss, and Miller rivers. Additional spring chinook spawning probably occurs, although at a reduced level, in portions of the Skykomish's larger tributary streams, and the Wallace and Sultan rivers, as well as in upper portions of the Snoqualmie, Tolt, and possibly the Pilchuck rivers. It is estimated that within the entire Snohomish River system approximately 50 linear miles of stream area are utilized by spawning spring chinook.

The adult spring chinook salmon begin entering the Snohomish River in May with the run continuing well into July (Table 07-1). These fish hold within the deep pools of the river until they are ready to spawn. Spawning commences as early as mid-August in some areas and is usually completed throughout the basin by mid-October. After emerging from the gravel the juveniles characteristically remain in the system for more than a year, migrating seaward from April to July early in their second year of life. This migration generally coincides with the natural spring runoff pattern of the river; however, some chinook juveniles are commonly observed migrating nearly year around.

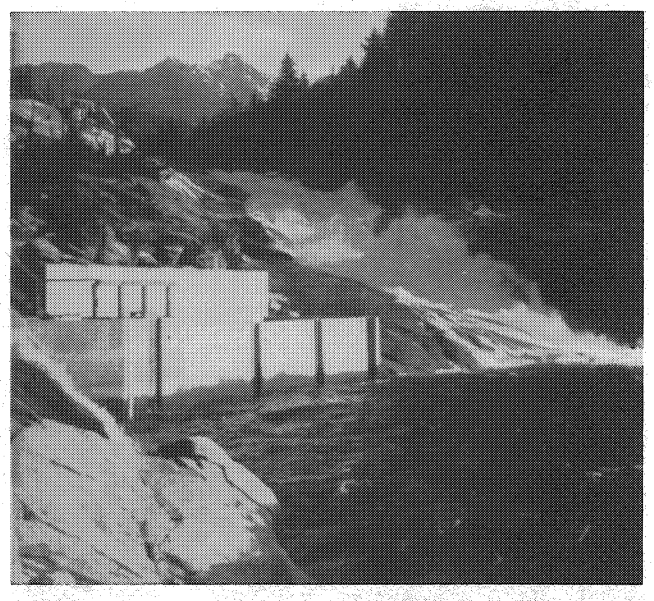


PHOTO 07-5. An adult salmon trap and haul facility on the South Fork Skykomish has made miles of production area accessible above Sunset Falls.

Based principally on Sunset Falls fish passage counts and on extensive inspections of spring chinook spawning areas, it is estimated that the escapements have ranged from 150 to 500 fish for the period 1966 to 1971, averaging about 450 per year.

The summer-fall chinook salmon populating the basin spawn extensively throughout the entire accessible length of the Skykomish and Snoqualmie rivers, and over a relatively

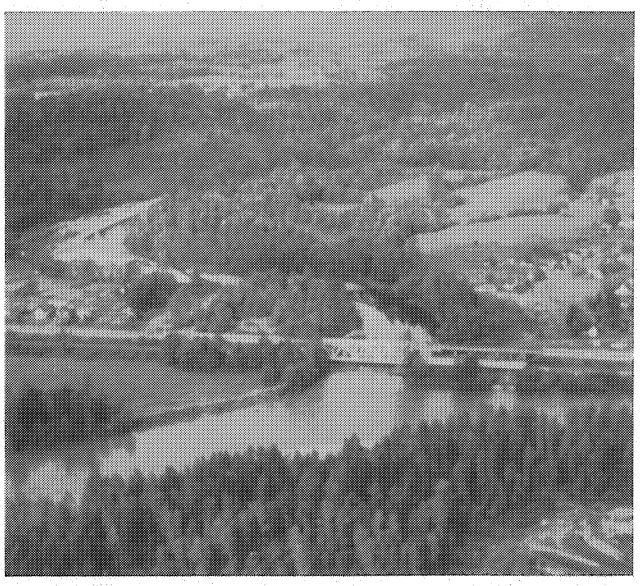


PHOTO 07-6. Sultan River is a major tributary to the Skykomish River (foreground).

short stretch of mainstem Snohomish above the town of Snohomish. In addition, many larger tributaries to each of these major rivers receive summer-fall chinook spawners. In the South Fork Skykomish, above Sunset Falls, approximately 27 miles of accessible river have been made available to these fish including the accessible areas of the Beckler, Foss, and Miller rivers. From Sunset Falls downstream to the confluence of the Skykomish and Snoqualmie rivers, approximately 32 miles of excellent quality spawning area is available to these fish. In addition, approximately 19 miles of accessible tributaries are utilized below Sunset Falls. These include the North Fork, Wallace, and Sultan rivers plus portions of Woods, Elwell, and Proctor creeks.

PHOTO 07-7. Pilchuck River provides excellent spawning and rearing habitat for anadromous fish.

In the Snoqualmie system approximately eleven miles of mainstem stream, virtually all above the town of Duvall, are used by summer-fall chinook spawners. Some 12 miles of additional tributary spawning occurs in the Raging and Tolt rivers and in smaller portions of Tokul and Griffin creeks.

In the mainstem Snohomish River chinook spawning occurs from the confluence of the Skykomish and Snoqualmie downstream some 6.5 miles to the vicinity of the city of Snohomish. The excellent pool-riffle areas of the Pilchuck River, tributary to the mainstem Snohomish River at Snohomish, are also utilized by summer-fall chinook spawners.

The occurrence of any chinook salmon spawning in Snohomish Basin drainages other than in the Snohomish system is considered minimal since each of these streams is quite small and each exhibits very low flows during normal adult chinook migration and spawning periods.

The entire accessible length of the mainstem Skykomish, Snoqualmie and Snohomish rivers, plus each of the tributary streams used by spawning adults, are used extensively by juvenile chinook salmon for their early fresh-water rearing. Early rearing also takes place in the highly important estuarine waters of the basin.

The adult summer-fall chinook salmon begin entering the Snohomish River im mid-July with the run continuing well into October. Spawning commences about mid-September and is usually completed by early to mid-November. Following egg incubation and subsequent fry emergence, the fall chinook juveniles generally remain in the system about three months prior to migrating seaward. Although little is presently known regarding summer chinook early life history, these juveniles are expected to exhibit a rearing pattern somewhat between that of the springs and falls. Principal out-migration for the young chinook generally occurs between mid-April and mid-July corresponding with the natural spring run-off flows.

Based on extensive spawning ground inspections, it is estimated that the total combined summer-fall chinook, natural spawning escapements to the Snohomish River system have ranged from 6,300 to 12,600 fish for the period 1966 to 1971. The average adult return for this period was near 9,200 fish.

In addition to the natural production of chinook salmon in the Snohomish basin, the Washington State Department of Fisheries propagates this species at a hatchery located near the town of Goldbar on the Skykomish River. The largest single year return to this facility during the period 1966-1971 was 2,221 chinook.

It has been calculated that the combined spring and summer-fall chinook, natural and artificial spawning escapement to the Snohomish Basin has exceeded 11,000 fish in recent years. It is estimated that a seasonal escapement of this magnitude will reflect a commercial and sport fish catch of up to 44,000 salmon.

Coho Salmon — Virtually every accessible stream and tributary draining the Snohomish Basin is utilized by coho salmon. This includes portions of the mainstem Skykomish and mainstem Snoqualmie rivers, particularly where channel -splitting occurs forming water courses and conditions better suited for coho spawning.

Some of the more important tributaries receiving coho spawners include the North Fork, South Fork, Wallace, and Sultan rivers, and Elwell, Proctor and Woods creeks in the Skykomish system. In the Snoqualmie system major coho use occurs in the Raging and Tolt rivers, and Tokul, Griffin, Harris, Patterson, Peoples, and Cherry creeks. Important

PHOTO 07-8. Tokul Creek is one of many excellent small streams contributing to the coho production on the Snohomish basin.

spawning tributaries to the lower Snohomish include the Pilchuck River and French Creek. Coho spawning in the basin's independent drainages is generally restricted due to limitations of accessibility and suitability for both spawning and rearing.

Juvenile coho rear throughout the accessible length in each of the tributaries as well as in the mainstem Skykomish, Snoqualmie and Snohomish rivers. Rearing also occurs in the basin's important estuary waters.

Adult coho salmon begin entering the Snohomish River as early as mid-July. Spawning commences from mid to late October and continues until mid-January in some areas. Following egg incubation and subsequent emergence, the juvenile coho characteristically remain in the system for more than a year, migrating seaward early in their second year of life. This migration generally occurs from mid-April through mid-July, coinciding with the increased river flows experienced during the annual spring runoff. However, some coho juveniles can be found moving downstream at all times of the year.

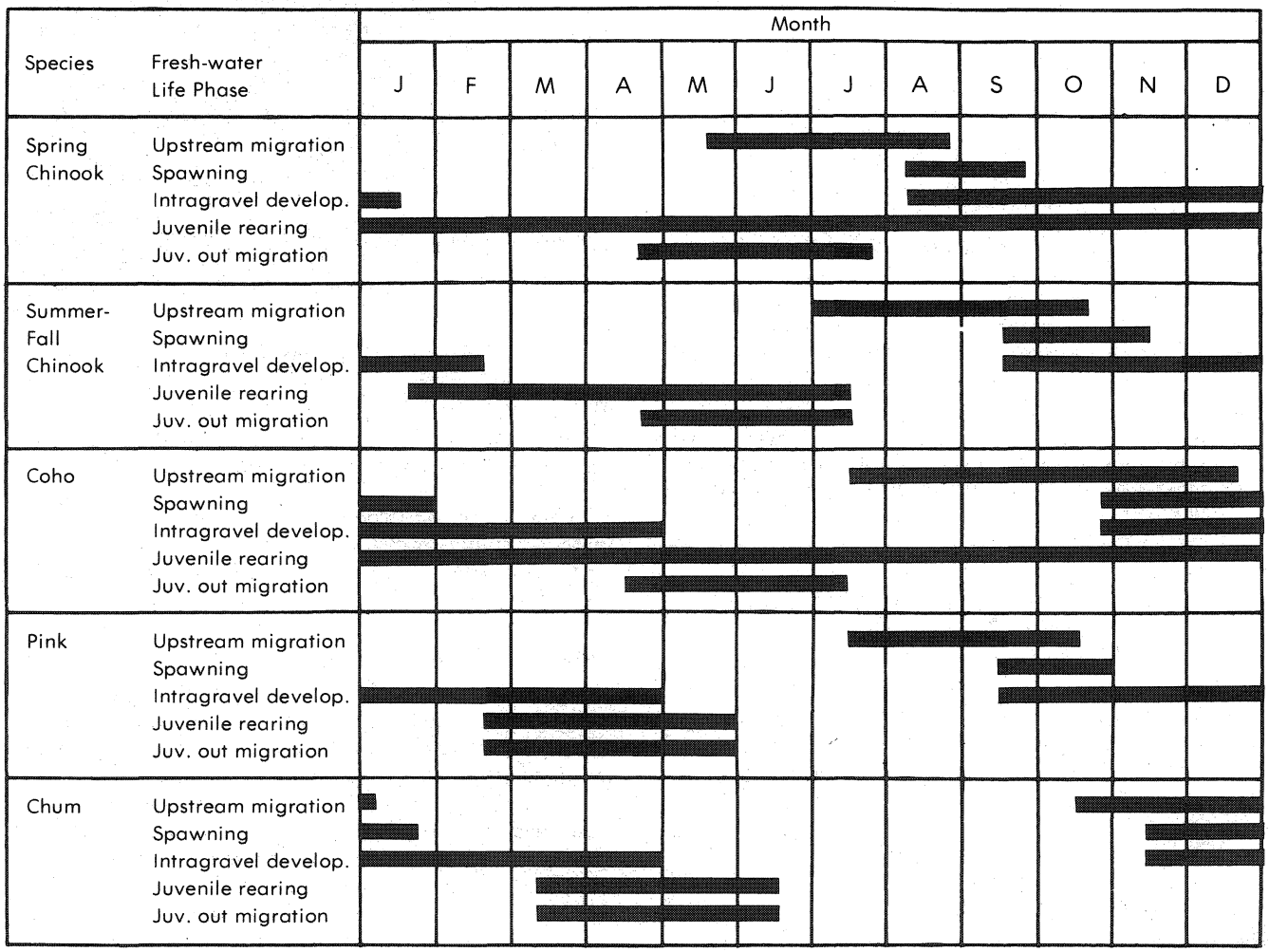
Based on spawning ground observations and fishway counts, it is estimated that annual coho escapements to the Snohomish River system have ranged from about 32,100 to 74,500 during the 1966-1971 time period, averaging about 52,500 annually. Only limited survey data is available for independent drainages; however, it is expected that their combined annual escapement averages about 2,000 coho per year.

In addition to natural production, coho are also propagated at the Washington Department of Fisheries' hatchery near Goldbar. The peak escapement to this facility was 17,840 coho during the 1966-1971 period.

Catch to escapement calculations on coho production from the Snohomish Basin for natural plus artificial stocks indicate that this river contributes in excess of 210,000 fish for the Puget Sound and ocean commercial and sport fisheries during an average year.

Pink Salmon — Pink salmon return to Puget Sound streams on odd-numbered years with only insignificant numbers on even years. Within the Snohomish Basin pink salmon spawning occurs in the two major forks and the mainstem Snohomish and a number of major tributaries. Virtually every Skykomish River tributary upstream to the vicinity of the North Fork receives adult pink salmon. Above this point only minimal use of the spawning area is made by those spawners while the majority of spawning occurs in the mainstem Skykomish. The more important spawning tributaries to the Skykomish include the Wallace and Sultan rivers, plus Elwell, Howard, Proctor and Woods creeks, all tributaries to the mainstem Skykomish. In the Snoqualmie River system again the majority of pink spawning occurs in the mainstem river. In this system the more important streams utilized by pink salmon include

Timing of salmon fresh-water life phases in Snohomish Basin WRIA 07



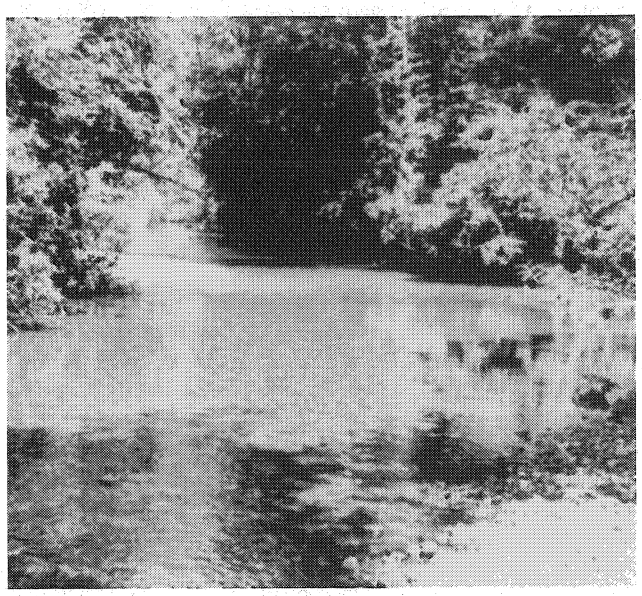


PHOTO 07-9. Wallace River is a major pink salmon stream and also produces excellent numbers of chinook, coho and chum.

principally the Tolt River and Griffin Creek. No established runs of pink salmon are known to exist in any of the basin's independent drainages.

Since juvenile pink salmon begin their seaward migration soon after emerging from the gravel, much of the early fresh-water life takes place in the mainstems of the Skykomish, Snoqualmie, and lower Snohomish rivers. These stream sections are exceedingly important to these young fish, providing the initial rearing environment during their downstream journey. The basin's estuarine waters are also extremely important to these young fish, providing the necessary fresh-to-salt water transition zone as well as the important initial feeding area.

Adult pink salmon have been recorded in the Snohomish system as early as mid-July with the run continuing well into October. Following egg incubation and subsequent fry emergence, the juvenile pinks begin their seaward movement with out-migration usually completed by the end of May, although some pinks may be found moving as late as early June.

Based on extensive tagging and recovery programs prior to 1965 and on routine stream survey information gathered during the four cycle years (1965-1971), it is estimated that the pink salmon spawning escapement to the Snohomish system ranged from 70,000 to 185,000 fish, averaging 118,000 per year.

Calculations based principally on catch to escapement ratios reveal that a spawning escapement of about 150,000 reflects a catch of up to 300,000 pinks for the commercial and sport fisheries.

Chum Salmon — Within the Snohomish drainage adult chum salmon spawn principally in the mainstem Skykomish River, the mainstem Snoqualmie River, and in the upper portions of the mainstem Snohomish River. Major tributaries receiving spawners include the Wallace and Sultan rivers on the Skykomish drainage and the Pilchuck River, tributary to the mainstem Snohomish. Relatively little chum spawning occurs in the Snoqualmie River tributaries. The independent streams of the basin provide some chum spawning area; however, the use of these areas by this species is considered to be quite limited.

Like the pink salmon, the young chum begin their seaward migration soon after emergence from the gravel, making the mainstem portions of all the basin's chum producing streams exceedingly important to the juvenile's early fresh-water rearing period. The basin's associated estuarine waters are highly important to the survival of these young fish.

Some adult chum salmon have been recorded in the Snohomish River as early as late August; however, the major run enters from late October through December. Spawning commences in late November and continues into January. Soon after emergence from the gravel, the juvenile chum begin their seaward migration, completing their early fresh-water life phase by mid-June.

Based on spawning ground inspections, it is estimated that chum salmon spawning escapements to the Snohomish basin have ranged from 3,000 to 28,000 fish from 1966 to 1971, averaging about 12,300 annually. Spawning ground checks on the area's independent drainages indicate these streams probably receive a combined spawning escapement of about 1,200 chum annually.

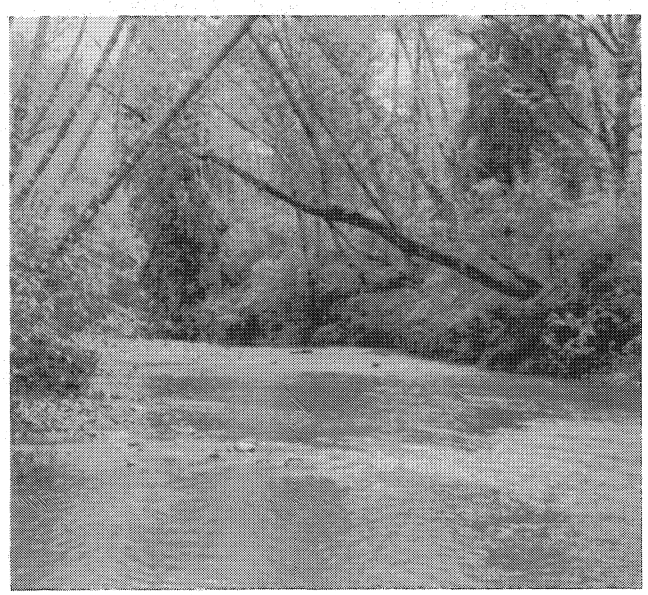


PHOTO 07-10. Chum salmon spawn extensively in side channel areas off the Skykomish River (Sky Slough — R.M. 36.5)

Using catch to escapement ratios, it has been calculated that a spawning escapement of 30,000 chum to the Snohomish basin reflects a catch of about 30,000 fish by the commercial fishery.

Salmon Production

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

Natural production of salmon in the Snohomish River watershed provides 394,000 salmon annually to various sport and commercial fisheries in Washington. In an average year over 170,000 chinook, coho, pink and chum salmon adults return to spawn naturally in the Snohomish, Skykomish and Snoqualmie rivers and their tributaries.

TABLE 07-2. Salmon Escapement Level for the Snohomish Basin WRIA 07.

Species	1966-1971 Escapements [1] Range	Average
Chinook	6,300—12,600	9,300
Coho	32,100— 74,500	52,500
Pink	70,000—125,000	96,000
Chum	3,000— 28,000	12,300

Natural Escapement Potential	
Chinook	11,000
Coho	40,000
Pink	190,000
Chum	30,000

[1] *Includes natural plus artificial combined escapements.*

In addition to natural production, salmon are propagated in the Snohomish basin at the Washington Department of Fisheries' Skykomish Hatchery located on May Creek, a tributary to the Wallace River near Startup. The hatching capacity is approximately 5,800,000 fry with the rearing capacity being about 800,000 yearling and 2,000,000 fingerling salmon. This station can rear 39,000 lbs. of juvenile salmon annually.[1] Fall chinook and coho are the principal species handled with nearly all fish introduced into waters of the Snohomish basin. The capacity of this station will be increased to 71,000 lbs. by 1976 with the addition of new ponds and increased water supply. Occasionally some fish are transported into the Snohomish basin from facilities located outside the area; however, total plantings of this type have been relatively small in the past.

For the period 1966 to 1971, chinook returns to the May Creek hatchery rack ranged from 350 to 2,221 adults, averaging 1,239 annually. Coho rack counts ranged from 5,217 to 17,840, averaging 11,026 spawners annually. Chum salmon returns ranged from 0 to 38 with none spawned artificially.

Plants in 1971 included 3,310,000 juvenile chinook (14,800 lbs.) into the Snohomish watershed and 1,467,600 juvenile coho (55,600 lbs.) into Snohomish, Shelton, and Kitsap streams. 1971 production is representative of recent years.

Information from commercial and sport catch statistics indicates the present planting program in the basin contributes approximately 21,200 chinook and 48,400 coho to these fisheries annually.

[1] *The average weight of juvenile salmon when released from hatcheries is 20 coho/lb. and 125 chinook/lb.*

Harvest

Salmon produced or reared in Snohomish basin waters contribute to U.S. and Canadian, Pacific Ocean commercial and sport fisheries, as well as to commercial and sport fisheries conducted through the Strait of Juan de Fuca, upper Puget Sound, and into the Snohomish River itself. The estimated total contribution, both natural and artificial (all species), to these fisheries has, during the base years, ranged from 283,000 to 546,000 salmon.

The basin's marine waters support a moderate to heavy commercial fishery for salmon. Gill netters operate in the Port Susan and Port Gardner areas with favorite locations including Kayak Point, Tulalip Point, Hat Island, Mukilteo, and Meadowdale. The majority of salmon caught are landed at Everett; however, many fish are shipped to ports from Bellingham south to Seattle. Each of these ports serves as a fleet base for numerous gill net vessels that fish in this basin.

The Tulalip Indians, who fish the waters of southern Port Susan, harvest adult salmon migrating to both the Snohomish and Stillaguamish rivers. This is principally a beach or drag seine fishery operating in marine waters from reservation lands. Catch records reveal this Indian fishery has harvested over 168,000 fish in a single season during the past ten years with the majority being pink salmon. In 1971, over 49,500 salmon were taken in this fishery.

The question of Indian fishing rights has been contested for many years and adjudication now in progress may cause significant alterations in both fishing patterns and distribution of catch.

Salt-water sport fishing for salmon is presently considered light to moderate in Port Gardner. In 1971 more than 187,000 angler trips were recorded in the surrounding waters. Angling success has deteriorated considerably in some areas, due principally to poor water quality conditions. Numerous small boat rental and moorage facilities in and around Everett Harbor flourish on sport fishing trade; however, the majority of sport boats operating out of this area move away from the basin's once popular angling sites, generally to the more productive waters of the Admiralty Inlet, San Juan Islands, and Kitsap basin.

Fresh-water angling for salmon in the Snohomish basin is permitted in portions of the Snohomish, Skykomish, Snoqualmie, and Tolt rivers with approximately 64 total miles of stream area open to salmon angling. The mainstem Snohomish is open for both adult and jack salmon from the City of Snohomish downstream to the mouth from July through January. Jack salmon angling is permitted downstream from the confluence of the Skykomish and Snoqualmie rivers from July through mid-November. The Skykomish River is open to salmon angling downstream from the mouth of the Wallace River, a distance of approximately 35 miles, for jack salmon only.[2] The Snoqualmie River is open its entire length to the capture of jack salmon during July through mid-November with 20 miles of river available to the salmon angler on this section. The Tolt River is open to jack salmon angling from the forks downstream to the mouth, a distance of 8.8 miles, from July through mid-November. Punch card records indicate that an average of 502 jack salmon were taken annually from the Snohomish River system for the period 1966 through 1971. This sport catch consisted of jack and adult, coho and chinook salmon and adult pink salmon.

[2] *Not less than 10 inches nor more than 20 inches in length.*

Limiting Factors

Limiting factors refer to conditions that lead to a complete loss or a reduction of an environment's fish producing potential, excluding harvest.

Stream flow — Within the Snohomish drainages seasonal flooding occurs which is particularly damaging on the mainstem Snohomish, Skykomish, Snoqualmie, Tolt, Raging, and Sultan rivers. These flooding conditions are primarily the result of excessive intermittent runoff into local tributaries from extensively logged and cleared areas.

In recent years low water conditions have been particularly limiting in the Pilchuck, Raging, Sultan, and Wallace rivers as well as in numerous smaller tributaries to both the Skykomish and Snoqualmie rivers, again due primarily to the destabilizing effect of clear cutting timber and land development.

The Sultan River poses a different streamflow problem. The lower river is subject to unregulated and erratic flow fluctuation by the City of Everett's operation of its diversion and storage complex.

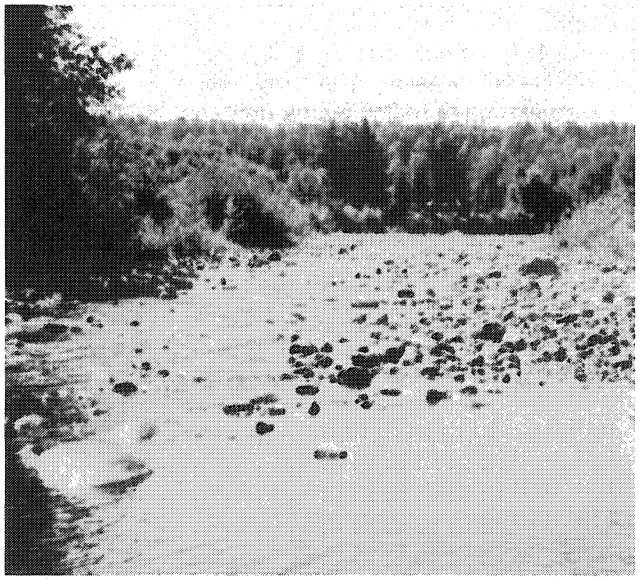


PHOTO 07-11. Sultan River fish production is limited by low flows.

Physical barriers — Most barriers to anadromous fish passage in the Snohomish basin are natural in origin. Snoqualmie Falls, with a 268-foot vertical drop located below the three major forks of the Snoqualmie River, presents a complete physical barrier to extensive production area above this point. A series of falls on the South Fork Skykomish River, just above the confluence with the North Fork, is presently bypassed with a combination ladder-trap and haul facility operated at Sunset Falls by the Washington Department of Fisheries. This passage facility opens up some 36 miles of additional stream length. The Wallace River, a tributary to the Skykomish, is blocked by falls 8 miles from its mouth. The North and South forks of the Tolt River are also blocked by falls at 3.5 and 7.5 miles, respectively, upstream from their confluence. Numerous falls and cascades are located on many of the small to moderate tributary streams; however, individually they block a minor percentage of fish use area.

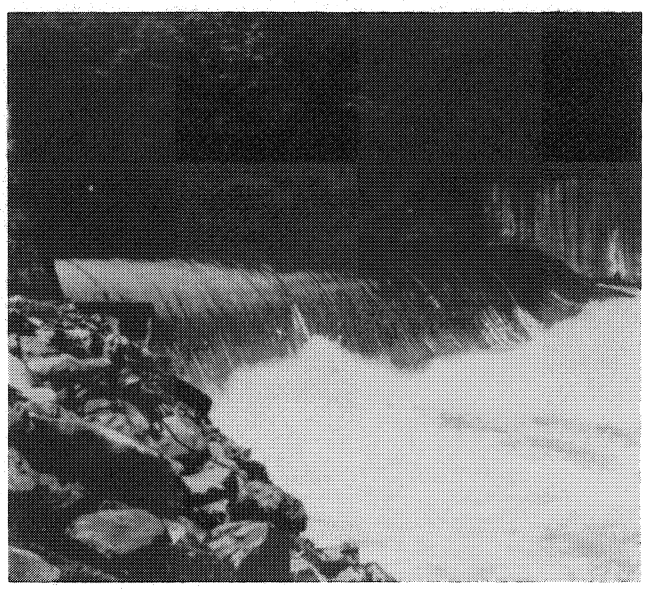


PHOTO 07-12. A diversion dam blocks fish migrations to the middle portion of the Sultan River.

The major unnatural barrier in the basin is the storage and diversion dam complex on the Sultan River. The diversion dam blocks all upstream migrating fish at river mile 9.7 and the operation of these facilities often creates low flow barriers downstream, depending upon the season in which such reduced flows occur. Another man-made obstruction to anadromous fish is the French Creek flood control facility near the town of Snohomish. Cooperative efforts with Soil Conservation Service and the drainage district can alleviate passage problems here.

Water quality — Stream areas having poor water quality conditions are located principally in the lower Snohomish valley. The lower mainstem Snohomish River and the lower Pilchuck River are particularly affected. These stream sections receive a variety of municipal, industrial, and agricultural wastes. Expected large-scale population and industrial expansion will present a very real potential for extreme pollution throughout the oower river area.

At the present time the estuary waters of Everett Harbor are known to contain areas of extremely poor water quality caused by industrial waste disposal. This area is considered only marginal for habitation by anadromous fish, as well as other aquatic organisms. Both adult and juvenile salmonids must pass through these waters on their spawning or seaward migrations. The transition from fresh to salt water requires from a few days to several weeks within estuary waters for juvenile salmonids. Heavy mortalities occur in those Everett Harbor waters which are depleted of oxygen.

High summer temperatures occur in the lower Snohomish River valley during the low flow periods in summer. Lethal temperatures are seldom reached, but the combination of elevated temperatures and other poor water quality factors present in the lower river create undesirable conditions for aquatic life. Such conditions occur most often in the lower Snohomish River, Pilchuck River, and in French, Cherry, and Patterson creeks. The Sultan River can reach lethal water temperatures in its lower section during restricted flow conditions.

Water quality in the upper watershed is generally good except where excessive siltation occurs. This condition is usually found in extensive clear-cut sections of the upper Snoqualmie and Skykomish watersheds. These logging activities influence water run-off patterns, resulting in heavy siltation and general degrading of stream ecology. The Tolt River drainage is seriously affected by heavy clay siltation.

Limited spawning and rearing — Limited spawning conditions exist in areas of poor water quality and unstable flow conditions. Excessive siltation and resulting gravel compaction is a particular problem in areas such as the Tolt River. Rearing potential is most severely limited in areas of restricted or unregulated summer flows in addition to headwater areas where steep gradients limit pool areas. The Pilchuck, Raging, Tolt, and Sultan rivers regularly experience these conditions.

PHOTO 07-13. Channelization can reduce or eliminate fish production. (Griffin Creek)

Watershed development — Logging activities and land clearing for housing developments have altered the flow regime and water quality in the Snohomish system. Expanding industrial development, especially in the lower Snohomish valley, is adding to pollution problems in this area. Gravel removal, although mostly confined to the lower Snohomish valley at present, is seriously reducing spawning area. The removal of water from the basin's upper drainages for municipal, agricultural, and industrial purposes presents limiting conditions, principally on the Sultan, Pilchuck, and Tolt rivers. Future demands for such water will result in further limitations on natural fish production. The water storage and hydroelectric projects proposed for the North Fork Skykomish, Beckler, and upper North Fork and Middle Fork Snoqualmie rivers will present definite limitations on anadromous fish unless every effort is made to coordinate such developments with fish requirements in the basin.

PHOTO 07-14. Gravel removal operations on the river bars can have serious impacts on the aquatic environment. (Pilchuck River)

SNOHOMISH BASIN WRIA 07
Index to Key Map

SNOHOMISH RIVER
Lower Mainstem

This section covers the lower Snohomish River east of Everett in Snohomish County. It includes 14 miles of mainstem river plus nearly 24 miles of major side channels (sloughs), 14 tributaries with more than 121 linear stream miles, and more than 53 miles of interconnecting drainage ditches and backwater sloughs. Also included are many small independent drainages to Port Susan-Possession Sound.

Stream Description

From R.M. 14.0, about 1.0 mile above the town of Snohomish, the river travels north-northwest for 6 miles to Ebey Slough divergence (R.M. 8.1). It continues northwest about a mile toward the west valley perimeter, then generally north more than 3 miles to Steamboat Slough divergence (R.M. 3.8). From here it flows north-northwest to Possession Sound, immediately north of Everett.

Ebey Slough is the longest side channel. From its right bank divergence (R.M. 8.1) it meanders northeast 2.5 miles to the east valley perimeter, then winds north-northwest 10 miles to the northeast corner of Possession Sound, nearly 2 miles north of the Snohomish River.

Steamboat Slough, the major side channel, diverges from the Snohomish right bank (R.M. 3.8), curves northeast about a mile, then turns north and west more than 5 miles to Possession Sound, entering less than a mile southeast of Ebey Slough. Steamboat has a large left bank divergence, Union Slough (R.M. 6.1). It meanders generally north, then northwest for about 5 miles, converging with Steamboat about R.M. 0.8. Steamboat has tow interconnections with Ebey, at approximately R.M. 5.5 and 6.0.

Principal tributaries include the Pilchuck River (Snohomish 201-401) entering the right bank just above the town of Snohomish, plus Allen and Quilceda creeks entering Ebey Slough near Marysville.

The Snohomish Valley is broad and flat with widths sometimes exceeding 3 miles. Much is cleared for agriculture, and sparsely populated. Occasional strips or thickets of deciduous growth line some stream courses. Commercial-industrial development is heavy along the west bank of the river below R.M. 6, with wood product industries dominating. Some valley areas support moderately heavy recreation use.

Below R.M. 14, the Snohomish meanders over gentle gradient, with Puget Sound tides influencing river level the entire distance. The channel is well defined, mainly of relatively long, deep, slow-moving glides with few riffles or pools. The bottom downstream to Ebey Slough is chiefly sand, with only a few stretches of gravel or rubble. The river's lower 8 miles, and the major side sloughs, have gentle gradients with predominantly sand-mud bottoms. These channels contain deep, relatively slow-moving glides. The river above Ebey Slough averages better than 100 yards to nearly 300 yards. Ebey Slough width vary, averaging generally 40-50 yards. Steamboat's upper third averages about 65 yards and 110-115 yards in lower reaches. Stream cover is sparse along most valley floor channels. Most tributaries have moderate to dense deciduous cover over much of their length.

Salmon Utilization

The Snohomish and its sloughs provide transportation for all adult and juvenile salmon using the system. They provide vital salt/fresh water transition habitat where salmon must acclimate before moving from one environment to the other. Large populations of chinook, coho, pink, and chum salmon use these waters en route to or from upriver spawning grounds. The lower Snohomish channel and Union Slough receive light to moderate trasportation and/or rearing use, while Ebey and Steamboat sloughs have moderate to heavy use. Coho, chum, and some chinook use accessible reaches of Quilceda Creek, while some coho and chum use the smaller tributaries. Juvenile salmon rearing occurs throughout accessible stream reaches.

Independent streams, Tulalip and Mission creeks, east of Marysville, are utilized mainly by coho and probably some chum salmon. Use by anadromous fish of the steep, short-run drainages southwest of Everett is unknown.

Limiting Factors

The major factor limiting salmon production in this section is water quality. Areas principally affected include the lower 6 miles of mainstem Snohomish, and the lower 2-3 miles of each major slough. Most industrial effluents enter from wood product industries. Extensive log rafting deteriorates the channel bottom, while heavy silt loading often occurs from dredging or channelizaton. A potential problem is use of wood chip "hog fuel" as a fill over valley lowlands.

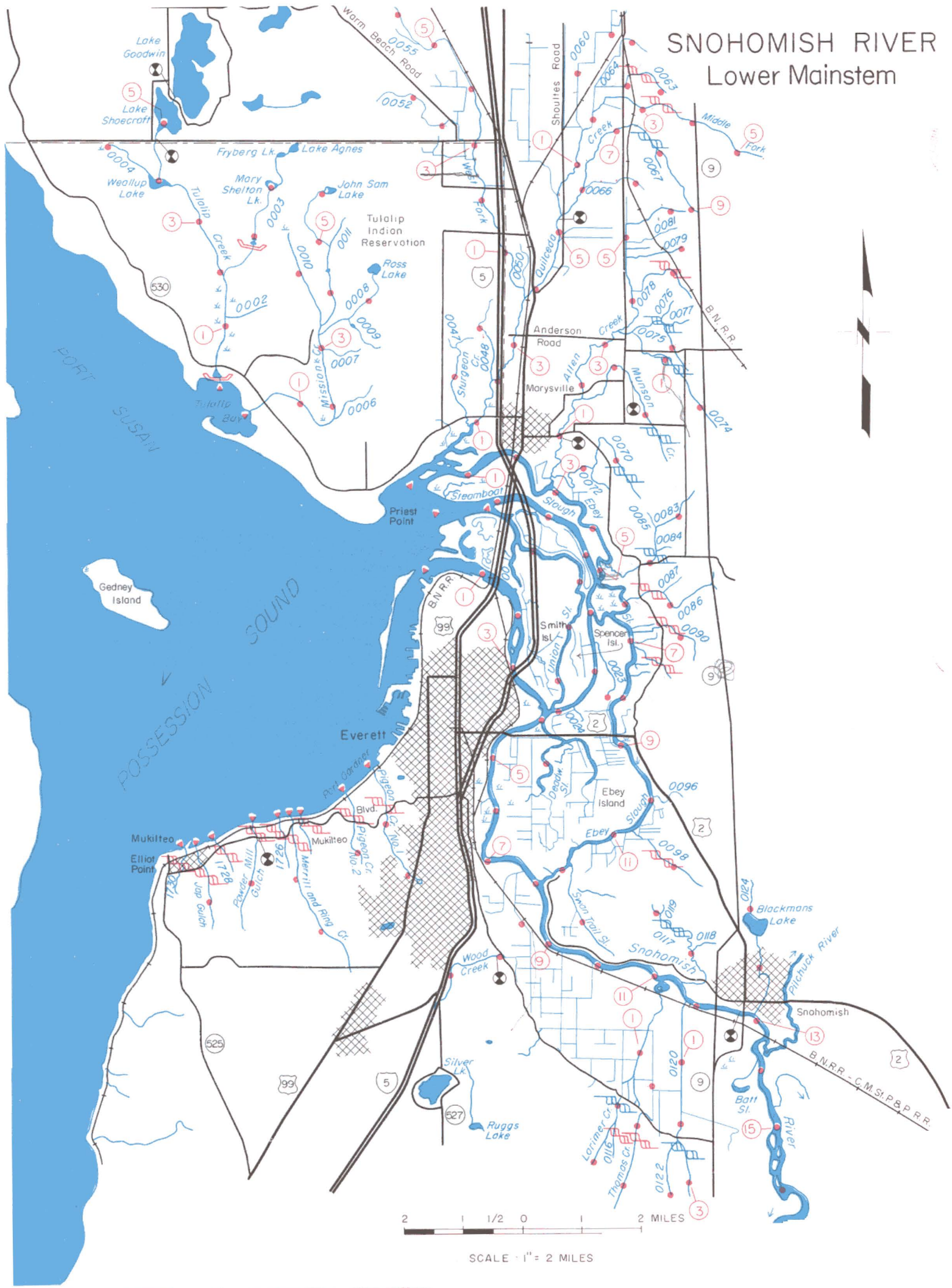
Beneficial Developments

No facilities or programs have been undertaken to specifically benefit salmon production in the lower Snohomish River.

Habitat Needs

Implementation of State Water Quality Standards is expected to maintain or, to some degree, improve water quality in the lower river and estuary.

PHOTO 07-15. Mouth of Snohomish River at Everett.


SNOHOMISH RIVER
Lower Mainstem
Lake Goodwin
Lake Shoecraft
Warm Beach Road
0055
0052
Shoultes Road
0060
0064
0063
Middle Fork
Creek
0067
0066
Fryberg Lk.
Lake Agnes
Wallup Lake
0004
Tulalip Creek
Mary Shelton Lk.
0003
John Sam Lake
Tulalip Indian Reservation
0011
0010
Ross Lake
0008
0009
0007
0002
0006
Mission Cr.
Tulalip Bay
PORT SUSAN
Quilceda
0050
0081
0079
0078
0076
0077
0075
B.N.R.R.
Anderson Road
Creek
Sturgeon Cr.
0047
0048
Allen
Marysville
Munson Cr.
0074
0070
0072
Steamboat Slough
Ebey
Priest Point
0085
0083
0084
0087
0086
0090
Gedney Island
POSSESSION SOUND
B.N.R.R.
Smith Isl.
Union Slough
Spencer Isl.
0023
0024
Everett
Port Gardner
Pigeon Cr. No. 1
Pigeon Cr. No. 2
Blvd.
Ebey Island
Deadow St.
Ebey Slough
0096
0098
Mukilteo
Elliot Point
1730
1728
1726
Jap Gulch
Powder Mill Gulch
Merrill and Ring Cr.
Swan Trail Sl.
0124
Blackmans Lake
0119
0117
0118
Snohomish River
Wood Creek
Snohomish
Silver Lk.
Ruggs Lake
0120
Batt Sl.
B.N.R.R. - C.M.St.P.&P.R.R.
Lorimer Cr.
0116
Thomas Cr.
0122
River
2 1 1/2 0 1 2 MILES
SCALE 1" = 2 MILES

SNOHOMISH RIVER — LOWER MAINSTEM
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0001	Tulalip Creek	Sec.27,T30N,R4E	5.5	—	Coho, (Chum)
0003	Unnamed	LB-1.9	2.8	—	Coho, (Chum)
	Reservoir	Outlet-0.8	—	—	
	Reservoir	Outlet-0.9	—	—	
	Mary Shelton Lake	Outlet-1.95	—	—	
	Fryberg Lake	Outlet-2.55	—	—	
	Lake Agnes	Outlet-2.8	—	—	
	Weallup Lake	Outlet-3.8	—	—	
0004	Unnamed	RB-3.9	1.0	—	Unknown
	Lake Shoecraft	Outlet-4.9	—	—	
	Lake Goodwin	Outlet-5.5	—	—	
0005	Mission Creek	Sec.27,T30N,R4E	6.1	—	(Coho), (Chum)
0008	Unnamed	LB-3.2	1.5	—	Unknown
	Ross Lake	Outlet-1.5	—	—	
0010	Unnamed	RB-3.4	1.5	—	Unknown
	Unnamed Pond	Outlet-4.15	—	—	
	John Sam Lake	Outlet-6.1	—	—	
0012	Snohomish River	Sec.7,T29N,R5E	82.4	—	Chin., Coho, Pink, Chum
0014	Drainage Ditch	RB-1.9	~ 1.5	—	Unknown
0015	Steamboat Slough	RB-3.9	6.2	—	Chin., Coho, Pink, Chum
0016	Union Slough	LB-0.9	4.7	—	Chin., Coho, Pink, Chum
0019	Drainage Ditch	LB-1.8	~ 4.0	—	Unknown
0020	Drainage Ditch	LB-3.05	~ 2.0	—	Unknown
0023	Deadman Slough	RB-4.65	1.0	—	Unknown
0026	Deadwater Slough	RB-4.1	1.7	—	Unknown
0027	Drainage Ditch	LB-0.4	~ 3.3	—	Unknown
0028	East Fork	RB-0.5	0.9	—	Unknown
0030	Drainage Ditch	LB-0.2	~ 1.0	—	Unknown
0031	Drainage Ditch	RB-0.7	~ 4.0	—	Unknown
0033	E. Fork cont. as Drainage Ditch	@ mi. 0.9	~ 3.0	—	Unknown
0034	Deadwater Slough cont. as drainage ditch	@ mi. 1.7	~ 5.0	—	Unknown
0036	Wood Creek	LB-7.7	3.8	—	Unknown
0037	Drainage Ditch	LB-0.1	~ 2.0	—	Unknown
0041	Drainage Ditch	RB-1.45	~ 8.0	—	Unknown

SNOHOMISH RIVER — LOWER MAINSTEM
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0043	Ebey Slough	RB-8.1	12.4	—	Chin., Coho, Pink, Chum
0044	Quilceda Creek	RB-8.5	9.1	—	(Chin), Coho, Chum
0046	Sturgeon Creek	RB-0.9	1.9	—	(Coho), (Chum)
0048	Unnamed	RB-1.9	1.5	—	(Coho), (Chum)
0049	West Fork	RB-3.7	6.2	—	(Chin), Coho, (Chum)
0051	Drainage Ditch	(LB-2.21	~ 1.1	—	Unknown
0052	Unnamed	RB-2.85	2.7	—	(Coho), (Chum)
0054	Drain. Ditch	LB-0.7	~ 2.1	—	Unknown
0057	Drainage Ditch	LB-4.9	~ 2.0	—	(Coho)
0058	Middle Fork	RB-5.31	5.4	10.7	Coho, (Chum)
0059	Drainage Ditch	RB-0.3	~ 4.0	—	(Coho)
0060	Unnamed	RB-1.6	3.35	—	(Coho)
0061	Drain. Ditch	RB-0.05	~ 1.65	—	Unknown
0063	Unnamed	RB-2.05	2.1	—	(Coho)
0064	Unnamed	RB-0.5	1.3	—	(Coho)
0066	Unnamed	LB-6.0	1.2	—	(Coho)
0068	Allen Creek	RB-2.9	6.3	—	Coho, (Chum)
0069	Drainage Ditch	RB-0.1	~ 1.2	—	Unknown
0070	Unnamed	LB-0.15	2.9	—	(Coho), (Chum)
0073	Munson Creek	LB-1.9	2.8	—	Coho, (Chum)
0074	Unnamed	LB-3.4	2.35	—	(Coho)
0075	Unnamed	RB-0.2	1.6	—	(Coho)
0078	Unnamed	LB-4.16	1.7	—	(Coho)
0079	Unnamed	LB-4.7	1.0	—	(Coho)
0083	Unnamed	RB-4.8	2.5	—	(Coho), (Chum)
0086	Unnamed	RB-6.0	1.95	—	(Coho), (Chum)
	Unnamed Pond	Outlet-1.01	—	—	
0090	Unnamed	RB-6.95	1.5	—	(Coho), (Chum)
0097	Drainage Ditch	RB-10.5	~ 1.0	—	Unknown
0098	Unnamed	RB-10.7	1.6	—	(Coho)
0099	Drainage Ditch	RB-11.05	~ 1.0	—	Unknown
0100	Drainage Ditch	RB-11.3	~ 1.0	—	Unknown
0103	Swan Trail Slough	RB-11.9	1.8	—	(Coho)
0104	Drainage Ditch	LB-0.8	~ 1.0	—	Unknown
0106	Drainage Ditch	LB-9.3	~10.0	—	Unknown
0107	Larimer Creek	LB-11.1	3.05	—	(Coho), (Chum)

SNOHOMISH RIVER — LOWER MAINSTEM
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0108	Thomas Creek	RB-0.7	3.4	—	(Coho), (Chum)
0111	Drainage Ditch	LB-0.71	~ 1.8	—	Unknown
0117	Unnamed	RB-11.45	2.2	—	(Coho), (Chum)
0120	Unnamed	LB-11.8	3.35	—	Unknown
0122	Drainage Ditch	RB-1.9	~ 1.45	—	Unknown
0123	Unnamed	LB-2.36	1.05	—	Unknown
0124	Blackmans Lake Creek	RB-12.85	2.4	—	(Coho), (Chum)
	Blackmans Lake	Outlet-1.55	—	—	
0125	Pilchuck River	RB-13.4	41.2	—	Chin., Coho, Pink, (Chum)
	(See Snohomish 203)				
	(Cont. Snohomish 503)				
1722	Pigeon Creek No. 1	Sec25,T29,R4E	2.2	—	Unknown
	Reservoir	Outlet-2.2			
1723	Pigeon Creek No. 2	Sec25,T29N,R4E	1.3	—	Unknown
1725	Merrill & Ring Creeks	Sec35,T29N,R4E	2.9	—	Unknown
1727	Powder Mill Gulch Creek	Sec34,T29N,R4E	1.8	—	Unknown
1729	Jap Gulch Creek	Sec33,T29N,R4E	1.5	—	Unknown

PILCHUCK RIVER
Lower Mainstem

This section includes th Pilchuck River's lower 12 miles, plus eight tributaries adding nearly 60 linear stream miles. Access to this western Snohomish County area is via U.S. Highway 2 at Snohomish and the Machias-Lake Stevens Highway to the north.

Stream Description

From R.M. 12, near Conner Lake outlet, the Pilchuck winds south about three miles to the mouths of Little Pilchuck and Dubuque creeks. It then moves southwest about two miles to near Machias, turning mostly south again for seven miles entering the Snohomish River (R.M. 13.4) just south of Snohomish. Larger tributaries include Little Pilchuck and Dubuque creeks.

The valley floor along this reach is relatively shallow, ranging from a few hundred yards in width to nearly a half-mile in some areas. The largest portion of the right bank slopes are gentle, while the left bank exhibits somewhat steeper hillsides. The valley widens considerably below R.M. 3.0, as the Pilchuck moves onto the much broader Snohomish Valley. Cover over much of the lower Pilchuck Valley consists of scatteed strips or thickets, mostly of deciduous growth. Steeper side terrain to the east produces some dense mixed conifer/deciduous growth. Gently sloping land bordering the west valley presents irregularly shaped and various-sized stands of mixed deciduous/conifer trees, separated by cleared agricultural land, and a few suburban developments. Agriculture represents the principal land use along this reach, with some small logging operations, principally over the east valley slopes. Gravel mining is prevalent with numerous dredging and gravel bar scalping operations, mostly over the lower seven miles. Moderate to heavy recreation use also occurs in this section. Major community developments include Lake Stevens, Machias, and the town of Snohomish.

The mainstem Pilchuck serpentines throughout this reach. It offers predominantly moderate gradient with good-to-excellent pool-riffle balance. Its channel is relatively broad, presenting numerous channel split sections. Widths range generally from 9 to 16 yards during fall months, with some broader areas in the lower three miles. The bottom is predominantly rubble and gravel and is relatively clean with no sand deposits. Streambed stability in some areas has been affected by gravel removal operations. Most banks appear naturally stable with broad, gently sloping gravel and rubble beaches as well as a few steeper earth cuts. A few stream bank sections along the upper valley farmland have been purposely contoured and riprapped to prevent erosion. A few locations present earth slide potential. These are located mainly on the left bank where very steep hillsides abut the river between stream mile 7.0-8.5 in the Machias vicinity, and stream mile 11.0-12.0 near the Conner Lake outlet. Stream-side cover is light to moderate along most of this reach, consisting of strips and occasional dense thickets of deciduous trees and underbrush. Cover is sparse along the lower three miles.

Tributaries exhibit typical lowland stream character, with gentle to moderate gradient, good pool-riffle balance and small rubble-gravel bottoms. Most have adequate cover, usually of mixed deciduous trees and underbrush.

Salmon Utilization

This mainstem section provides transportation, spawning, and rearing for chinook, coho, pink, and chum salmon. Coho inhabit all accessible tributaries with pink and chum salmon utilizing a few of the larger streams in this stretch. Exceptional juvenile salmon rearing habitat exists in the river as well as in the accessible tributaries.

Limiting Factors

The main factor limiting salmon production in this reach is extensive gravel removal. This disturbs and/or reduces spawning areas, aggravating gravel movement and streambed stability. Flash flooding accelerates streambed scouring, particularly where the bed is already unstable. Severe low flow conditions often trap and destroy many juvenile fish rearing within the river. Some smaller tributaries also suffer from low summer flows.

Beneficial Developments

Fish passage facilities have been installed at two locations in the Little Pilchuck Creek drainage. No other facilities or programs have been undertaken in this section to benefit salmon production.

Habitat Needs

A major requirement to maintain salmon production habitat is to restrict gravel removal from the lower river. Streambed stabilization is urgently needed for a number of areas along this lower section. Also, maintenance of existing cover and establishment of cover where it now is lacking are desirable.

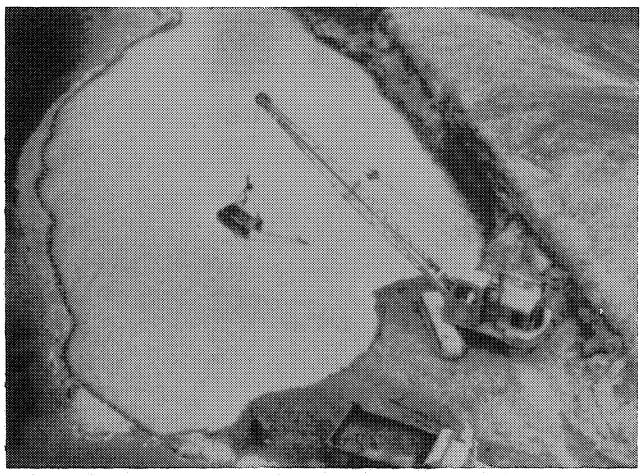
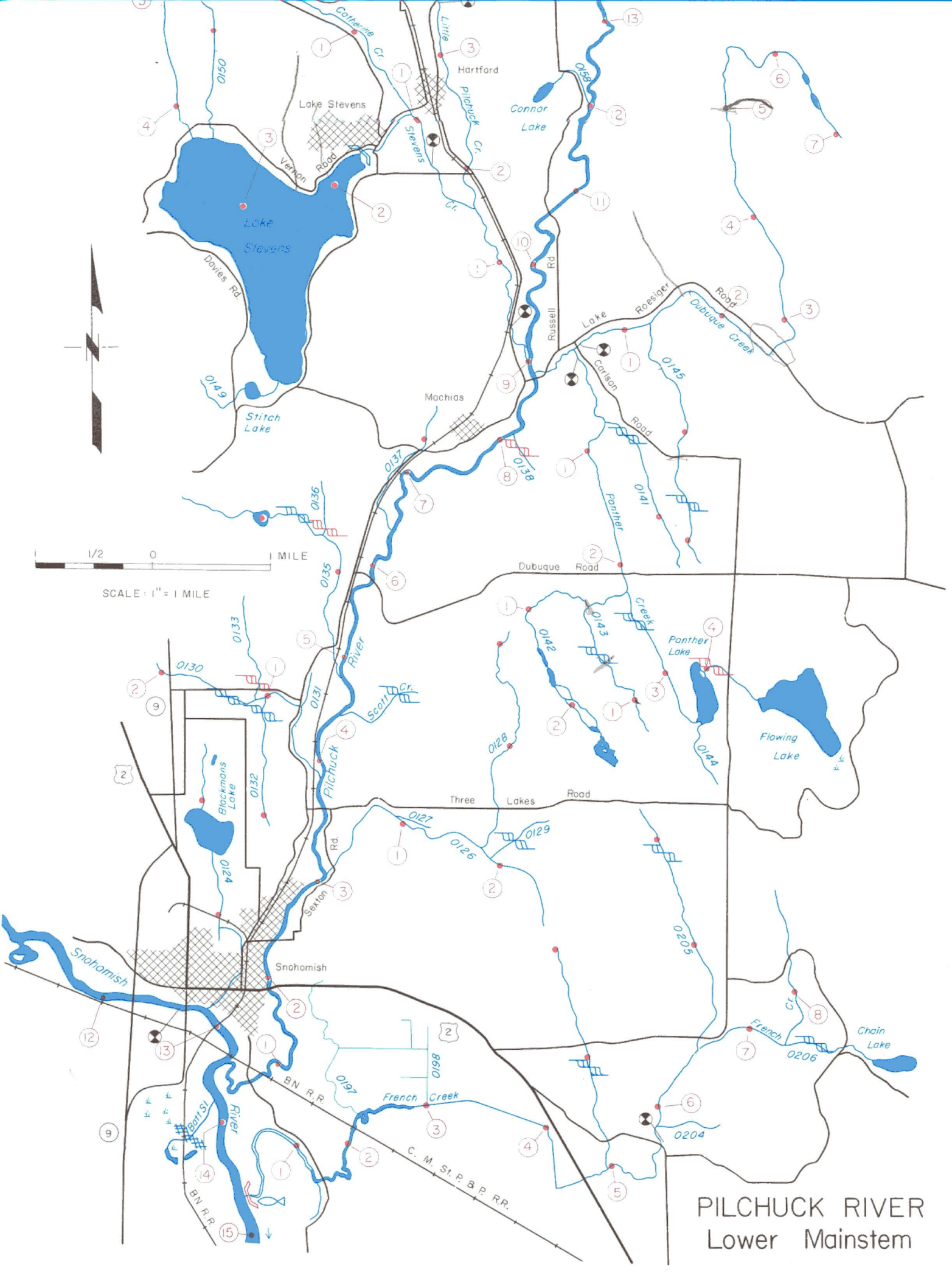


PHOTO 07-16. Gravel removal operations adjacent to the lower Pilchuck River.



PILCHUCK RIVER
Lower Mainstem

PILCHUCK RIVER — LOWER MAINSTEM
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0125	Pilchuck River	RB-13.4	41.2	—	Chin, Coho Pink, (Chum)
0126	Unnamed	LB-3.05	2.7	—	Coho, (Chum)
0128	Unnamed	RB-1.8	2.2	—	Coho
0130	Unnamed	RB-3.85	2.1	—	Coho, (Chum)
0132	Unnamed	RB-1.05	1.1	—	Unknown
0135	Unnamed	RB-4.8	2.7	—	Coho, (Chum)
	Unnamed Lake	Outlet-1.95		—	
0137	Unnamed	RB-6.4	1.3	—	Coho, (Chum)
0139	Dubuque Creek	LB-8.81	7.1	—	Coho, (Chum)
0140	Panther Creek	LB-0.5	4.6	—	Coho
0141	Unnamed	RB-0.7	1.4	—	Coho
0142	Unnamed	LB-2.2	2.5	—	Coho
0143	Unnamed	RB-0.4	1.3	—	Coho
	Panther Lake	Outlet-3.5	—	—	
	Flowing Lake	Outlet-4.6	—	—	
0145	Unnamed	LB-1.2	2.2	—	Coho
0146	Little Pilchuck Cr.	RB-9.0	11.65	—	Coho, (Chum)
0147	Stevens Creek	RB-1.61	5.85	—	Coho
0148	Catherine Cr.	LB-1.05	2.75	—	Coho
	Lake Stevens	Outlet-1.65	—	—	
0150	Unnamed	LB-3.6	2.0	—	Unknown
	(Cont. Snohomish 303)				

(Cont. Snohomish 303)

PILCHUCK RIVER
Granite Falls Area

This segment covers 14 miles of middle Pilchuck River plus nearly 14 total stream miles existing in eight tributaries. The area is located generally south of Granite Falls in Snohomish County. It is accessible via Highway 92, between Lake Stevens and Granite Falls, with county roads extending south and east.

Stream Description

From the City of Snohomish diversion dam (R.M. 26.4), the Pilchuck runs southwest about a mile to the vicinity of Purdy Creek. From here it courses generally northwest for more than six miles to a point about a mile southwest of Granite Falls (R.M. 18.5). The river turns west a short distance, then curves south-southwest, winding some seven miles to the Conner Lake vicinity (R.M. 12.0). Principal tributaries include Boyd Lake, Bosworth Lake, and Swartz Lake creeks.

From the diversion dam to the vicinity of Granite Falls the valley floor is quite narrow, sometimes exhibiting shallow ravine-like character. Only a few short stretches present slightly broader widths. Most of this upper section is densely forested with deciduoss trees and underbrush, some mixed conifers, and relatively dense conifer forest over the steeper side valley slopes. Below R.M. 18.5, the valley floor intermittently broadens and narrows, progressing to a continuous shallow valley configuration. Cover is sparse, consisting of deciduous strips or thickets, separated by increasing amounts of cleared land. Left bank slopes are considerably steeper, with dense conifer/deciduous forest. Upstream from Granite Falls, a few scattered farms and some patch logging represent the only development. Downstream the principal land use is agriculture, with limited logging away from the valley floor. This section receives moderate to heavy recreation use.

From the diversion downstream about two miles, the Pilchuck exhibits moderate to moderately steep gradient. Steeper sections contain coarse gravel, rubble, and some boulder, and provide short riffles and only a few short pools. Downstream most of the channel maintains a moderate gradient for 5 or 6 miles, with only a few short stretches having steeper gradients. Here, during the early fall, the channel ranges from 6 to 12 yards wide, and provides relatively good pool-riffle balance, with a number of fairly long, shallow glides. A few short split channel sections are found in this stretch. The bottom is generally clean rubble and gravel, having only a few areas with scattered boulders. Streambed and banks are quite stable, with moderately steep-sloped earth cuts, large rock material, or gravel-rubble side beaches. Stream cover is dense deciduous trees, underbrush, and some conifer.

As the Pilchuck moves out of its relatively narrow valley southeast of Granite Falls, it presents mostly moderate gradient, with a few stretches of gentle slope. Through this lower 6-7 miles the meandering channel is 8 to 14 yards wide, with braided sections offering good to excellent pool-riffle conditions. The bottom is mostly clean gravel and rubble. Most of the streambed and banks appear quite stable; however, a few widely separated bank areas have riprap protection. Banks are mainly broad, gently sloping gravel and rubble beaches separated by intermittent, relatively sharp earth cuts. Cover is moderate throughout this lower stretch with a few dense stands of deciduous trees and underbrush.

Tributaries in this section exhibit characteristics typical of most small lowland drainages. They provide predominantly moderate gradients, and have narrow channels confined within shallow valleys or draws. Most have good pool-riffle balance, gravel or small rubble bottoms, and are usually well shaded by stream-side vegetation.

Salmon Utilization

This section of river provides transportation for chinook and coho salmon utilizing the upper river. It also supplies extensive spawning and rearing habitat for those species, as well as some pink and chum salmon. Most pink and chum use occurs in the lower half of this reach. Tributaries are used by coho, and a few by chum. Heavy concentrations of rearing juveniles inhabit this section of river and its accessible tributaries.

Limiting Factors

The principal factor limiting salmon production in this section is low summer flow that restricts rearing potential, and at times presents partial barriers to migrating adult salmon. Some gravel removal along lower stretches of this reach has altered natural streambed configuration and reduced stability.

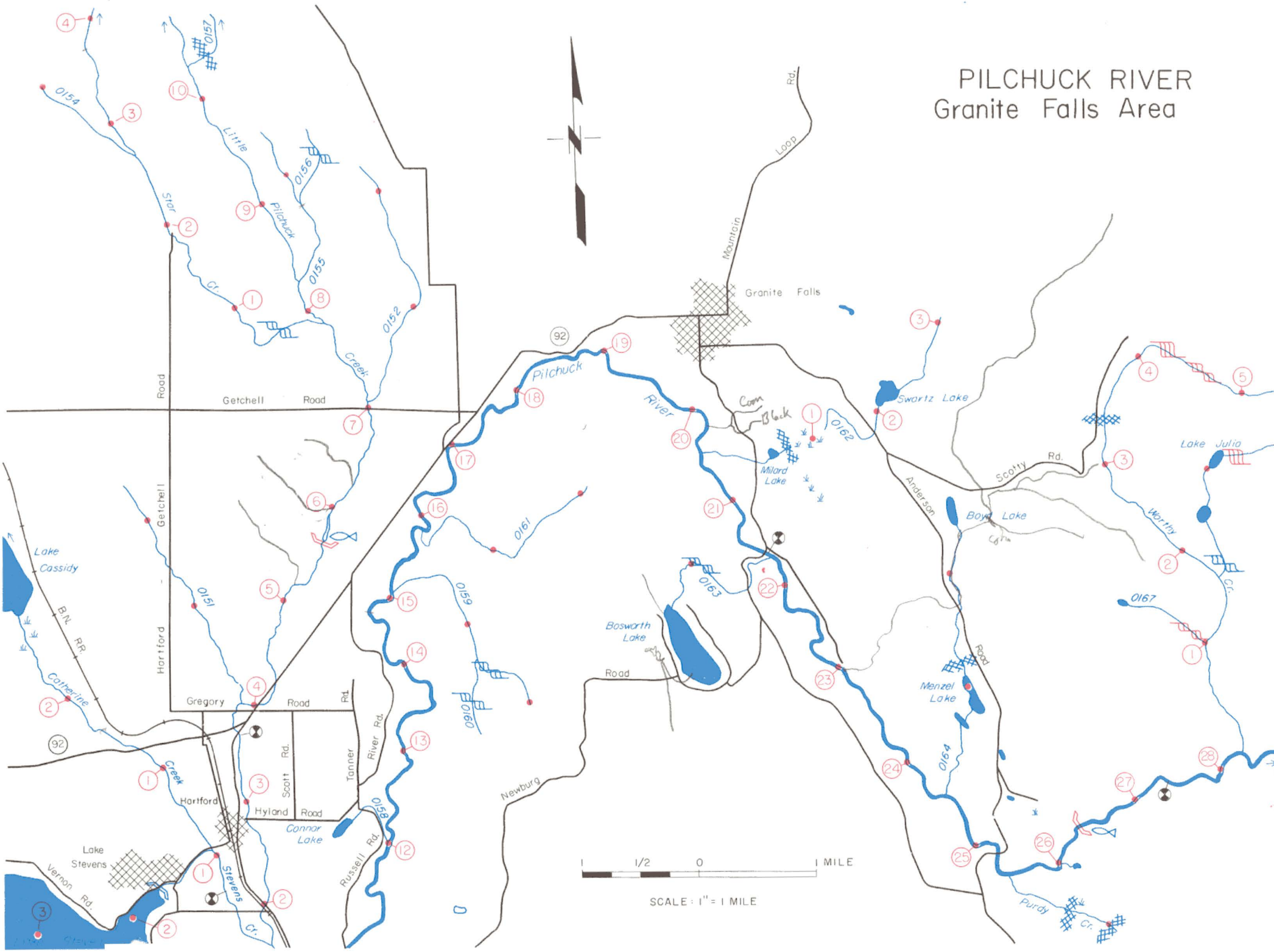
Beneficial Developments

The City of Snohomish diversion dam is equipped with a fishway which passes adult salmon to the river above. No other facilities or programs to benefit salmon production have been undertaken.

Habitat Needs

To maintain fish production and potential in this section, stream cover and natural stream and streambed conditions must be preserved. Gravel removal should be restricted. Streambed stabilization may be necessary at a few locations.

PHOTO 07-17. City of Snohomish diversion dam and fishway.


PILCHUCK RIVER
Granite Falls Area
Granite Falls
Mountain Loop Rd.
Pilchuck River
Getchell Road
Gregory Road
Hyland Road
Scott Rd.
Tanner Rd.
River Rd.
Hartford
Getchell
Hartford Road
Lake Cassidy
B.N. RR.
Catherine Creek
Star Creek
Little Pilchuck Cr.
0151
0152
0153
0154
0155
0156
0157
0158
0159
0160
0161
0162
0163
0164
0167
Connor Lake
Lake Stevens
Stevens Ct.
Vernon Rd.
Russell Rd.
Newburg
Bosworth Lake
Road
Corn Block
Millard Lake
Swartz Lake
Anderson Rd.
Scotty Rd.
Boyd Lake
Menzel Lake
Lake Julia
Worthy Cr.
Purdy Cr.
92
1/2 0 1 MILE
SCALE: 1" = 1 MILE

PILCHUCK RIVER — GRANITE FALLS AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
0125	Pilchuck River				Chin, Coho, Pink, Chum
0146	Little Pilchuck Cr.				Coho, (Chum)
0151	Unnamed	RB-3.85	2.35	—	(Coho)
	Unnamed Reservoir	Outlet-5.7	—	—	
0152	Unnamed	LB-7.01	2.3	—	(Coho)
0153	Star Creek	RB-7.8	5.1	—	(Coho)
0154	Unnamed	RB-2.6	1.0	—	Unknown
0155	Unnamed	LB-8.3	1.5	—	(Coho)
0157	Unnamed	LB-10.3	1.5	—	(Coho)
0159	Unnamed	LB-15.05	2.0	—	(Coho)
0161	Unnamed	LB-15.8	2.1	—	Coho
0162	Swartz Lake Creek	RB-20.5	3.05	—	Coho
	Milard Lake	Outlet-0.65	—	—	
	Swartz Lake	Outlet-2.05	—	—	
0163	Bosworth Lake Cr.	LB-21.71	1.4	—	Coho
0164	Boyd Lake Creek	RB-24.5	2.4	—	Coho
	Unnamed Lake	Outlet-0.65	—	—	
	Menzel Lake	Outlet-0.8	—	—	
	Boyd Lake	Outlet-2.4	—	—	
0165	Purdy Creek	LB-25.5	1.1	—	Coho
	(Cont. Snohomish 403)				

PILCHUCK RIVER
Headwaters

This segment of Pilchuck River drainage is in central Snohomish County, about 7 miles southeast of Granite Falls. It encompasses 14 river miles, from the vicinity of Bald Mountain north of Spada Lake, westerly to near the Anderson-Lake Roesiger Road. Eight tributaries along this reach provide about 37 additional stream miles. Access is via secondary roads, east off the Anderson Road. A few river sections, as well as portions of most tributaries, are within Snoqualmie National Forest.

Stream Description

From Bald Mountain, the Pilchuck travels northwest almost 11 miles to Kelly Creek, one of its larger tributaries. From here, it takes a west-southwest course nearly 4 miles to the City of Snohomish diversion dam (R.M. 26.4). Other principal tributaries include Wilson, Miller, Boulder, and Worthy creeks.

The upper 2 miles of stream falls over mostly steep mountainous, densely forested terrain. Over the next 3.5-4 miles, to the vicinity of Miller and Wilson creeks (R.M. 35.5), the valley is narrow with steep, densely forested side slopes. Moving downstream, the valley broadens slightly in some areas; however, it remains quite narrow through 9 miles to the diversion. Along this stretch, moderate to dense conifer timber persists, with some scattered mixed deciduous growth. The side slopes remain mostly steep and densely forested. Timber is the predominant land use in this section, with extensive clear-cut logging evident over many of the upper slopes, and in some places, over considerable portions of tributary basins. Recreation use is also prominent.

Over its uppermost 2 miles, the narrow river channel cuts rapidly down steep slopes, presenting numerous cascades with a predominantly large rubble- and boulder-strewn bottom. Below R.M. 39.0, stream gradient decreases, offering mostly moderate channel conditions for the next 4 miles. Here the winding channel, ranging 3 to 6 yards wide, has a relatively good pool-riffle balance with only a few small rapid sections. The stream bottom is predominantly clean gravel and rubble with numerous high quality, shallow riffles. The streambed and bank appears mostly stable, aided to a large degree by fallen, imbedded logs. Stream banks are mainly gently sloped gravel and rubble beaches, with only a few low sharp-faced earth cuts. Cover is dense and predominantly conifer with some sections of thick deciduous undergrowth.

Below Wilson Creek (R.M. 35.4), the river offers intermittent sections of moderate to moderately steep gradient over its next 9 miles. The twisting channel remains relatively confined, ranging 6 to 11 yards wide, with only a few areas of splitting. It is mainly a riffle-type stream through this stretch, with a few short rapids or cascades, and some deeper pools. The bottom is mostly large rubble and boulders, some bedrock, and only a few short gravel riffles or small patch gravel sections. Most banks are moderately steep earth or rock cuts with a few gently sloped rubble and boulder beaches. Cover is moderate to dense, still mostly large conifer trees with some mixed deciduous growth. These conditions continue to the diversion.

With exception of Worthy Creek, most tributaries exhibit steep mountainous stream character, with numerous cascades and rapids, and mainly rubble and boulder stream bottoms. Generally they have dense cover except where extensive clear-cut logging has occurred. Much of Worthy Creek has low valley stream character, with moderate gradient, good to excellent pool-riffle balance, gravel stream bottom, and moderate to dense surrounding cover.

Salmon Utilization

This section of the Pilchuck is utilized primarily by coho and chinook salmon. Coho spawn in the accessible tributaries, and over upper reaches of mainstem river. Chinook spawning occurs mainly in the river. Coho salmon spawning is especially heavy in some sections of Worthy Creek. Juvenile salmon rearing takes place throughout the accessible length of river and tributaries.

Limiting Factors

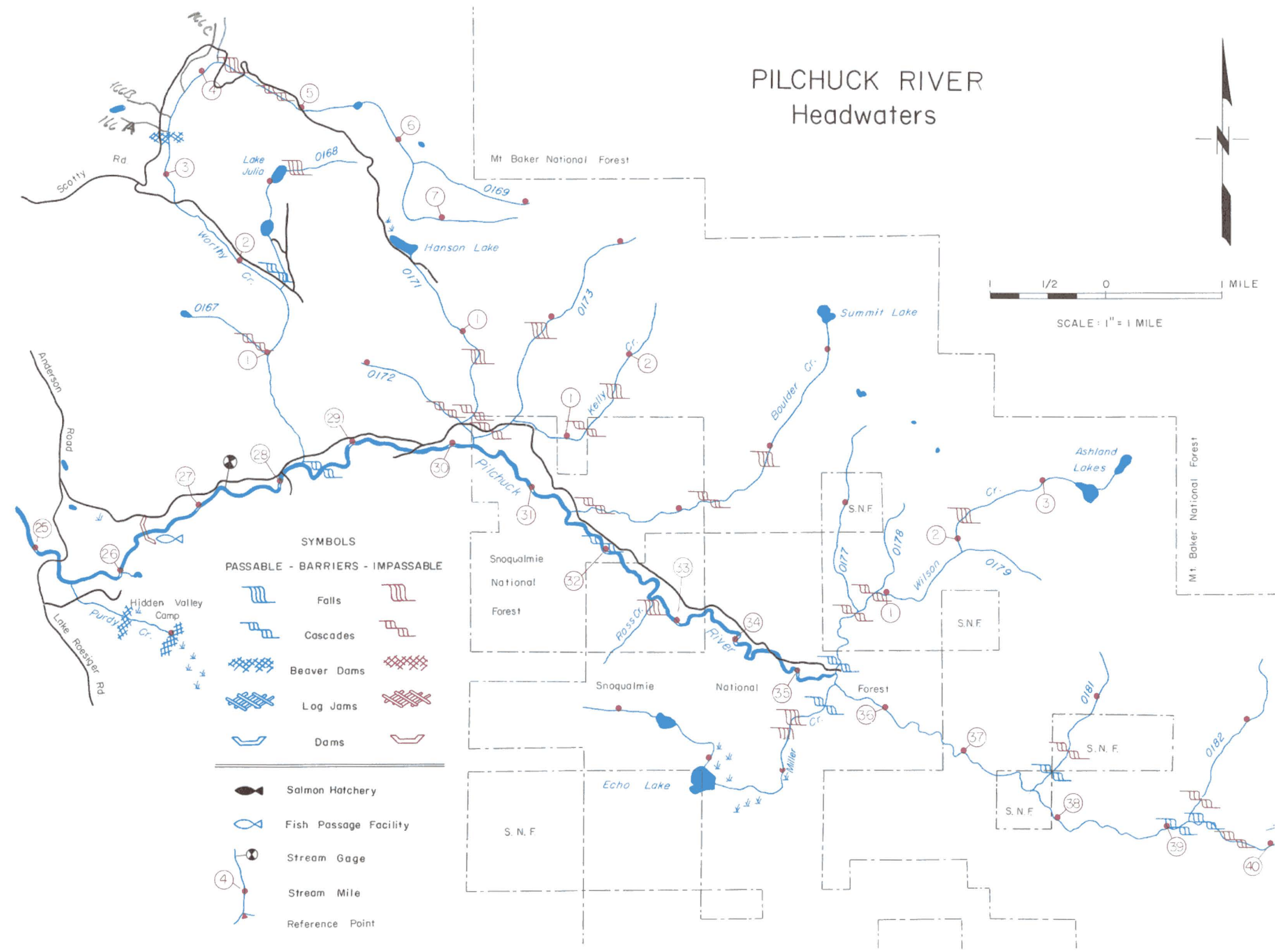
The diversion dam (R.M. 26.4) presents some limitation to migrating pink or chum salmon ascending this far. Steep gradients and intermittent summer flows prohibit extensive use of most tributaries. Clear-cut logging, plus certain road building practices, occasionally cause localized water quality degradation or formation of temporary fish migration barriers. Sudden, often severe, runoff is also a problem, with much of the effect occurring over down-river production areas.

Beneficial Developments

The diversion dam is equipped with a fishway providing access mainly for chinook and coho salmon to the upper river. No other facilities or programs have been undertaken in this section to benefit salmon production.

Habitat Needs

The major requirement to maintain fish production is to preserve existing stream cover and natural pool-riffle conditions that exist. Coordination of logging and road building with habitat needs is a must. In some logged tributary basins, quick replacement of stream-side cover is highly desirable.


PILCHUCK RIVER
Headwaters
Mt Baker National Forest
Lake Julia
Hanson Lake
Summit Lake
Ashland Lakes
Echo Lake
Hidden Valley Camp
Purdy Cr.
Lake Roesiger Rd
Anderson Road
Scotty Rd
Worthy Cr.
Kelly Cr.
Boulder Cr.
Wilson Cr.
Pass Cr.
Miller Cr.
Pilchuck River
Snoqualmie National Forest
S.N.F.
0167
0168
0169
0171
0172
0173
0177
0178
0179
0181
0182
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
1/2 0 1 MILE
SCALE: 1" = 1 MILE

PILCHUCK RIVER — HEADWATERS
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho Pink, Chum
0125	Pilchuck River				Chin, Coho, Pink
0165	Purdy Creek	LB-25.5	1.1	—	Coho
0166	Worthy Creek	RB-28.3	7.6	7.67	Coho
0168	Unnamed	LB-1.6	1.8	—	Coho
	Unnamed Lake	Outlet-0.55	—	—	
	Lake Julia	Outlet-1.0	—	—	
0169	Unnamed	RB-6.2	1.0	—	None
0170	Kelly Creek	RB-30.2	2.5	—	(Coho)
0171	Unnamed	RB-0.05	1.9	—	Unknown
0172	Unnamed	RB-0.16	1.0	—	Unknown
	Hanson Lake	Outlet-1.9	—	—	
0173	Unnamed	RB-0.41	2.1	—	Unknown
0174	Boulder Creek	RB-31.4	3.2	—	Unknown
	Summit Lake	Outlet-3.2	—	—	
0176	Wilson Creek	RB-35.4	3.7	—	(Coho)
0177	Unnamed	RB-0.7	1.7	—	None
	Lake Ashland (lower lake)	Outlet-3.3	—	—	
	Lake Ashland (upper lake)	Outlet-3.7	—	—	
0180	Miller Creek	LB-35.5	3.3	—	(Coho)
	Echo Lake	Outlet-1.7	—	—	
	Unnamed Lake	Outlet-2.5	—	—	
0181	Unnamed	RB-37.7	1.4	—	Unknown
0182	Unnamed	RB-39.2	1.6	—	Unknown

SNOHOMISH-SKYKOMISH RIVERS
Monroe Area

This section encompasses the mainstem Snohomish River from R.M. 14.0, near Snohomish, upstream to the Snoqualmie River confluence (R.M. 20.5), and continues as the Skykomish River to about R.M. 30, east of Monroe. It includes about 15 miles of river plus more than 85 total miles in tributary drainage, excluding Snoqualmie River (Snohomish 600) and Woods Creek (Snohomish 1500).

Stream Description

From R.M. 30, the Skykomish River winds west four miles to Monroe, then southwest five miles to the Snoqualmie River. It continues as the Snohomish, flowing northwest more than six miles toward the town of Snohomish. In addition to the Snoqualmie and Woods Creek, principal tributaries include Barr and French creeks.

The Skykomish-Snohomish Valley is quite broad and flat, ranging up to two miles wide. It presents mainly cleared farmland with intermittent strips or thickets of deciduous growth. Bordering hillsides are moderately steep, most with relatively dense conifer-deciduous cover. Agriculture is the major land use, with some logging on adjacent slopes. Gravel mining has recently become important. Scattered rural and suburban residences exist in a number of areas across the valley, as well as over some surrounding slopes. Monroe is the major community development. Extensive recreation activity also occurs in this area, principally fishing and hunting.

The lower 9.5 miles of Skykomish River, from R.M. 30.0 down to the Snoqualmie, offer moderate-gentle gradient conditions. The channel is quite broad with early fall flows covering 30 to 45 yards in width. A good pool-riffle balance exists through this stretch, with a number of channel splits that add considerably to spawning and rearing habitat. The bottom is quite stable, with mostly gravel-rubble composition and just a few short stretches with boulder or sand deposits. Extensive, high-quality riffles predominate, and are generally separated by deep pools or long, slow-moving glides. Most banks are naturally stable, consisting of relatively low, natural earth cuts or long, broad, gently sloping gravel-rubble beaches. Stream-side cover consists mainly of strips or small thickets, deciduous trees, and underbrush that offer little shade to the broad river.

Below the Snoqualmie, the Snohomish River presents a moderate-gentle gradient through the remainder of this reach. The channel is broad with fall flows covering 40 to 60 yards, not including side channels and channel splits that exist. The bottom over the lower 2.5 miles is stable gravel and small rubble. A number of long, broad riffles are separated by large, deep pools. Over the remaining four miles, below Lake Beecher outlet, bottom material is mainly gravel and sand, with only a few gravel riffles existing. Snohomish River banks are mostly low natural earth cuts, with numerous broad, gently sloped gravel-sand beaches. Stream-side cover is sparse, consisting of occasional strips or thickets of deciduous growth.

Most tributaries exhibit moderate to gentle gradient over lower reaches, with steeper conditions above the valley floor. Generally they offer fair-to-good pool-riffle conditions, with mainly gravel or small rubble bottoms. Their surrounding cover is usually moderate to dense deciduous growth.

PHOTO 07-18. French Creek flood control pumping station.

Salmon Utilization

This reach provides transportation for all salmon species utilizing upper river basins. Also, this section provides some of the most extensive, most heavily utilized spawning area within the entire drainage. Chinook, coho, pink, and chum salmon use this area, spawning in the main river and its numerous side channels. Each species, to some extent, also uses each of the accessible tributaries. Juvenile rearing takes place within all accessible waters in the reach.

Limiting Factors

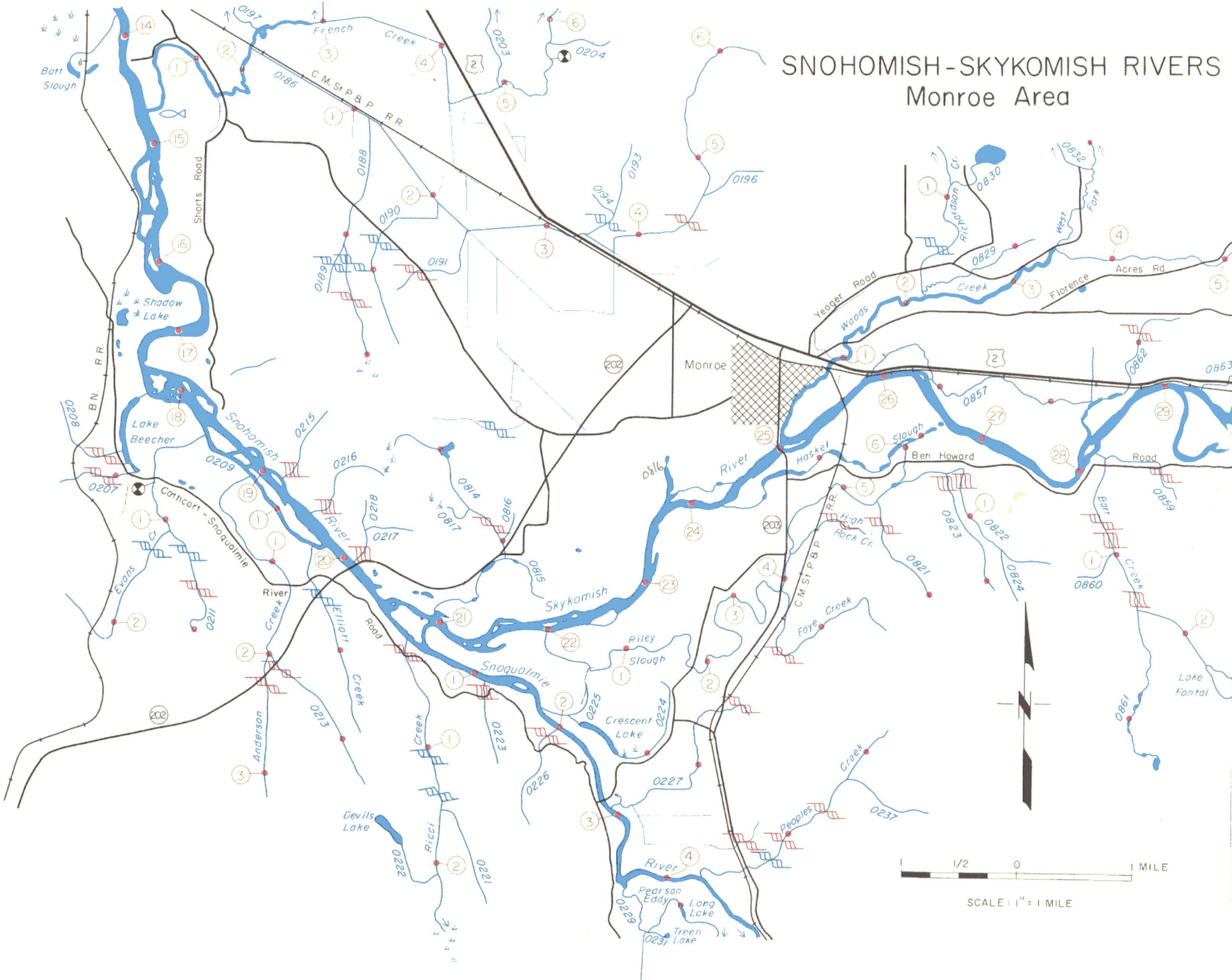
A major factor which could severely limit salmon production involves gravel removal where it affects spawning areas. Another potential limiting factor is water quality degradation through waste discharge or certain water-use developments upstream.

Beneficial Developments

Upstream and downstream fish passage facilities at the French Creek flood control station is the only specific project to benefit salmon production. Juvenile salmon plants, plus periodic stream maintenance activities, are undertaken in some tributaries.

Habitat Needs

The principal requirement to maintain salmon production potential in this reach is to protect the quantity and quality of existing spawning habitat, principally in the Skykomish and upper two miles of Snohomish River. An additional requirement is maintenance of water quality.


SNOHOMISH-SKYKOMISH RIVERS
Monroe Area
Batt Slough
French Creek
C.M.St.P.&P. R.R.
Shorts Road
Shadow Lake
B.N. R.R.
Lake Beecher
Snohomish River
Cathcart - Snoqualmie
Evans Creek
Elliott Creek
Anderson Creek
Devils Lake
Ricci Creek
Monroe
Yeager Woods
Richardson Cr.
West Fork Woods Creek
Florence Acres Rd
Haskel Slough
Ben Howard Road
High Rock Cr.
Foye Creek
Skykomish River
Snoqualmie River
Riley Slough
Crescent Lake
Pearson Eddy
Long Lake
Treen Lake
Peoples Creek
Lake Fontal
Barr Creek
1/2 0 1 MILE
SCALE: 1" = 1 MILE

SNOHOMISH-SKYKOMISH RIVERS — MONROE AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0184	French	RB-14.7	8.6	—	Coho
0186	Unnamed	LB-2.2	6.5	—	Coho
0188	Unnamed	LB-1.15	2.0	—	Unknown
0190	Unnamed	LB-2.1	1.6	—	Unknown
0192	Drainage Ditch	LB-2.45	~ 5.0	—	Unknown
0198	Unnamed	RB-3.0	1.95	—	Coho
0202	Drainage Ditch	LB-4.5	~ 2.0	—	Unknown
0203	Unnamed	RB-4.9	2.0	—	Coho
0205	Unnamed	RB-6.51	2.2	—	Coho
0207	Unnamed	LB-17.7	1.4	—	Unknown
	Lake Beecher	Outlet-0.1	—	—	
0209	Unnamed Side Channel	LB-18.35	1.55	—	Coho, Pink, Chum
0210 .	Evans Creek	LB-0.1	2.7	—	(Coho), (Chum)
0211	Unnamed	RB-1.1	1.1	—	Unknown
0212	Anderson Creek	LB-0.65	3.2	—	(Coho), (Chum)
0213	Unnamed	RB-2.0	1.4	—	Unknown
0214	Elliott Creek	LB-1.45	1.7	—	Unknown
0219	Snoqualmie River	LB-20.5	84.55	—	Chin., Coho, Pink, Chum
	(See Snohomish 603)				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
0814	Unnamed	RB-20.95	2.5	—	Coho, (Chum)
	Unnamed Lake	Outlet-1.9	—	—	
0818	Riley Slough	LB-22.0	6.0	—	Coho, (Chum)
0819	Foye Creek	LB-3.9	1.85	—	Coho, (Chum)
0821	Unnamed	LB-5.4	1.0	—	Unknown
0822	Unnamed	LB-5.6	1.9	—	(Coho)
0823	Unnamed	LB-0.45	1.1	—	Unknown
0825	Haskel Slough	LB-24.3	2.2	—	(Coho), (Chum)
0826	Woods Creek	(RB-25.05	17.5	—	Chin., Coho, Pink, (Chum)
	(See Snohomish 1503)				
0857	Unnamed	RB-25.9	2.8	—	(Coho), (Chum)
0858	Barr Creek	LB-28.2	3.1	—	Coho, (Pink), (Chum)

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0861	Unnamed	LB-1.5	1.5	—	None
	Lake Fontal	Outlet-2.3	—	—	
	Unnamed Lake	Outlet-3.1	—	—	
0862	Unnamed	RB-28.25	1.5	—	(Coho), (Chum)
	(Cont. Snohomish 1603)				

SNOQUALMIE RIVER
Lower Mainstem

This drainage section includes the lower 12 miles of Snoqualmie River from a few miles above Duvall downstream to the confluence with the Skykomish River (R.M. 20.5). Eleven tributaries enter in this section, adding more than 83 total stream miles. Principal access in this northwest King-southwest Snohomish counties section is provided by State Highway 203 running south from Monroe.

Stream Description

From stream mile 12.0 the Snoqualmie River meanders northeast approximately five miles to Cherry Creek, then northwest to the confluence with the kykomish River. Principal tributaries include Tuck, Cherry, and Peoples creeks.

The flat valley floor is two miles wide and is cleared with only occasional strips or small thickets of deciduous trees and underbrush. The low, rolling hills bordering the valley are moderately steep-sloped with deciduous and some mixed conifer cover. Land use is almost exclusively agricultural pasture land. Recreation use is heavy, consisting of both fishing and hunting. The only community development is Duvall; however, there are a few widely scattered rural residences within this section. Some logging occurs in the upper Cherry Creek watershed.

Through this section, the Snoqualmie River is contained within a broad channel ranging from 30 to 45 yards during fall months. The gradient is gentle with a few nearly flat stretches. The channel meanders back and forth across the valley, forming oxbows. Stream flow is sluggish in many stretches, with numerous long, deep pools and slow-moving glides predominating. Stream bottom is primarily sand and silt, with only a few short, scattered gravel-riffle sections, generally heavily silted. Most banks are moderately high, sharply sloped earth cuts, with a few gently sloped sand-gravel beaches. Some bank protection work has taken place at certain locations within this stretch of river in the form of artificial contour and rock riprap, cabled logs, and discarded car bodies or other large debris to divert flow from easily eroded banks.

Bank cover is sparse to moderately dense, consisting almost entirely of intermittent strips or small thickets of deciduous trees and underbrush. In many areas this growth actually overhangs the banks, and with numerous logs and accumulated debris extending out from the shore, provides favorable protective cover for fish life.

Tributaries in this section exhibit gentle to moderate gradients over their lower reaches as they course across the valley floor. Their upper slopes, however, are quite steep and generally offer limited access to salmon. Through their accessible reaches, most of these streams contain good pool-riffle conditions within relatively narrow stream channels. Stream bottoms are predominantly gravel and sand over the lower reaches, with gravel and some rubble materials above. Tributary cover is usually moderate to dense growth of mainly deciduous trees and underbrush.

Salmon Utilization

This lower Snoqualmie River section provides transportation for all salmon utilizing the upper drainage. Chinook, coho, pink, and chum salmon inhabit these waters. Only limited spawning habitat is available in the Snoqualmie; however, tributaries, including Cherry, Peoples, and Tuck creeks, support good to excellent spawning populations. These tributaries as well as this section of mainstem river provide important rearing habitat for juvenile salmon.

Limiting Factors

One factor limiting salmon production is low summer stream flow in some of the smaller tributaries. This restricts rearing potential and, when continuing into the fall months, can inhibit adult salmon access. One activity which could potentially limit production is clear-cut logging over some reaches of upper tributary drainages. Such logging can influence the productive capacity of streams emerging from such areas, as well as affect production in their drainagesbelow. Another potential limiting condition involves water quality throughout the lower mainstem Snoqualmie. The slow-moving water lacks cover and is more easily warmed, and offers the potential for concentrating pollutants that could severely affect the natural production capabilities. Occasionally, heavy poaching activity occurs on adult salmon in some of the smaller tributaries.

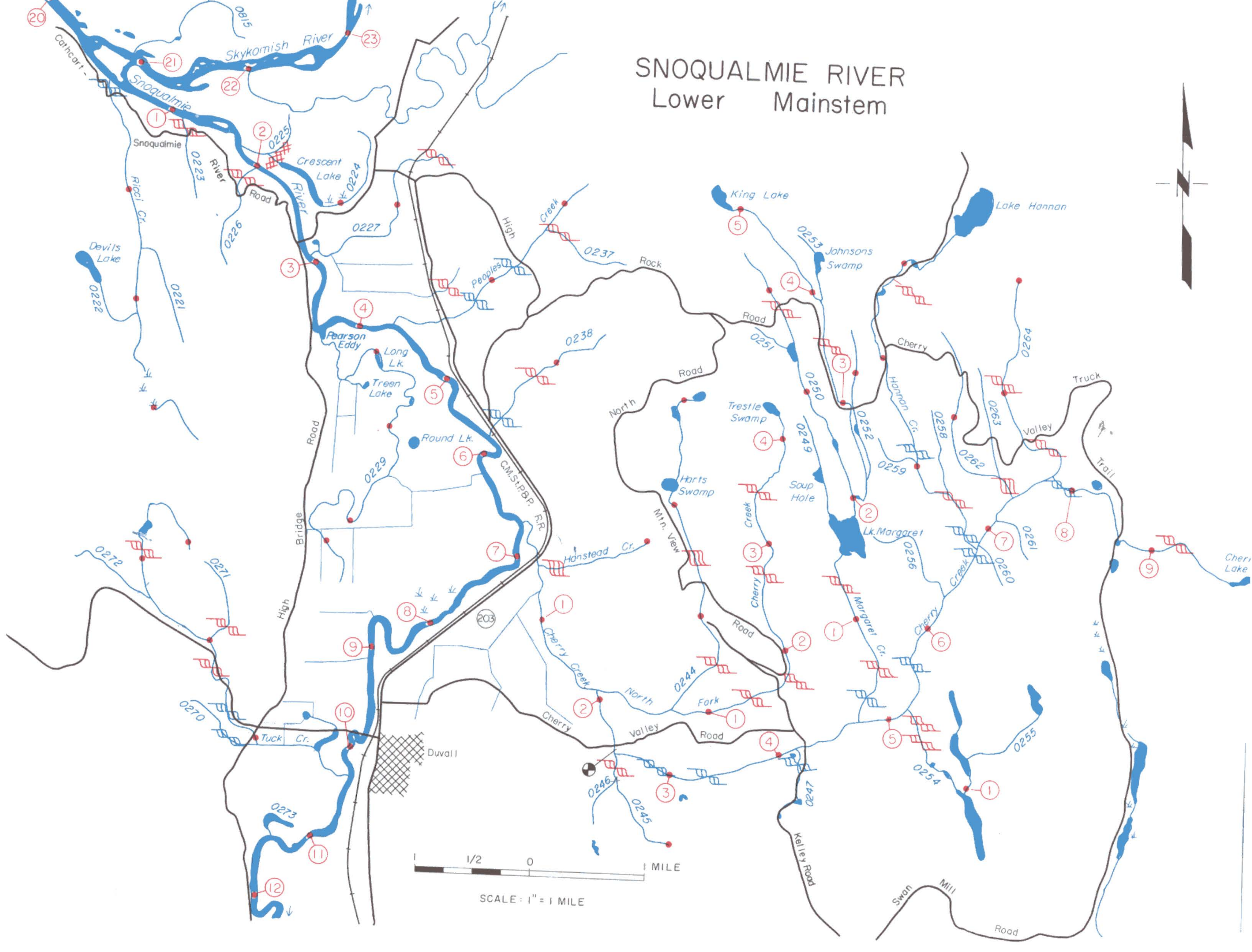
Beneficial Developments

No facilities or programs have been undertaken in this drainage section to specifically benefit salmon production. Occasionally, stream maintenance activities involving removal of minor jams are undertaken on small streams.

Habitat Needs

The major requirement to maintain salmon production potential in this section is to protect the natural conditions that presently exist, i.e. natural stream cover, pool-riffle character, quantity and quality of stream gravel, good water quality, etc. Restoration of natural stream cover where it has already been eliminated is highly desirable, particularly on the tributary drainages.

PHOTO 07-19. Confluence of the Skykomish and Snoqualmie Rivers.


SNOQUALMIE RIVER
Lower Mainstem
Skykomish River
Snoqualmie River
Crescent Lake
Devils Lake
Ricci Cr.
Pearson Eddy
Long Lk.
Treen Lake
Round Lk.
King Lake
Johnsons Swamp
Lake Hannan
Trestle Swamp
Harts Swamp
Soup Hole
Lk. Margaret
Hanstead Cr.
Cherry Creek
Margaret Cr.
Hannan Cr.
Tuck Cr.
Cherry Lake
Duvall
High Rock Road
Cherry Valley Road
North Road
Mtn. View Road
High Bridge Road
Kelley Road
Swan Mill Road
Truck Trail
C.M.St.P.&P. R.R.
Snoqualmie River Road
Cathcart
SCALE: 1" = 1 MILE
1/2
0
1 MILE

SNOQUALMIE RIVER — LOWER MAINSTEM
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho Pink, Chum
0219	Snoqualmie River	LB-20.5	84.55	693.0	Chin., Coho, Pink, Chum
0220	Ricci Creek	LB-0.4	3.5	—	(Coho)
0224	Unnamed	RB-1.7	1.7	—	Unknown
	Crescent Lake	Outlet-0.35	—	—	
0227	Unnamed	RB-2.9	1.9	—	(Coho)
	Drainage Ditch	LB-0.2	~ 2.1	—	Unknown
0229	Pearson Eddy Creek	LB-3.6	4.35	—	Unknown
	Long Lake	Outlet-1.0	—	—	
0233	Drainage Ditch	RB-3.85	~ 1.3	—	Unknown
0236	Peoples Creek	RB-4.3	2.3	—	Coho
0238	Unnamed (Duvall Cr)	RB-5.7	1.5	—	(Coho)
0240	Cherry Creek	RB-6.7	9.9	—	Chin., Coho, Pink, (Chum)
0241	Hanstead Creek	RB-0.5	1.0	—	Unknown
0242	Drainage Ditch	LB-0.75	~ 3.5	—	Unknown
0243	N. Fk. Cherry Cr.	RB-1.9	4.2	—	Coho, (Pink), (Chum)
0244	Unnamed	RB-0.7	3.1	—	(Coho)
	Harts Swamp	Outlet-2.15	—	—	
	Unnamed Lk.	Outlet-2.8	—	—	
	Unnamed Lk.	Outlet-3.1	—	—	
	Trestle Swamp	Outlet-4.2		—	
0245	Unnamed	LB-2.5	1.0	—	Unknown
0248	Margaret Creek	RB-4.7	5.1	—	(Coho)
	Margaret Lk.	Outlet-1.55	—	—	
0250	Unnamed	RB-2.0	2.4	—	None
	Roth's Sw.	Outlet-0.45	—	—	
	Unnamed Lk.	Outlet-1.35	—	—	
0252	Unnamed	LB-2.2	1.3	—	
	King Lake	Outlet-5.1	—	—	
0254	Unnamed	LB-5.2	1.6	—	Unknown
	Unnamed Lk.	Outlet-0.7	—	—	
	Unnamed Lk.	Outlet-0.85	—	—	
	Unnamed Lk.	Outlet-1.15	—	—	
	Unnamed Lk.	Outlet-1.6	—	—	
0257	Hannan Cr.	RB-6.8	3.55	—	(Coho)

SNOQUALMIE RIVER — LOWER MAINSTEM
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	Unnamed Lk.	Outlet-2.65	—	—	
	Lake Hannan	Outlet-3.55	—	—	
0262	Unnamed	RB-7.4	1.9	—	None
0264	Unnamed	RB-7.8	2.0	—	(Coho)
	Cherry Lake	Outlet-9.9	—	—	
0267	Tuck Creek	LB-10.3	4.05	—	Coho, (Chum)
0268	Drainage Ditch	LB-0.4	~ 1.1	—	Unknown
	Unnamed Lake	Outlet-3.25	—	—	
	(Cont. Snohomish 703)				

SNOQUALMIE RIVER
Carnation Area

This reach of the Snoqualmie River contains 13 river miles between Duvall and Carnation in King County. There are seven tributaries, excluding the Tolt River (Snohomish 800), adding about 22 stream miles. Access is provided by State Highway 203 following the valley's east side, and the Carnation and West River roads.

Stream Description

The Snoqualmie River from R.M. 25.0, just south of the Tolt River, flows generally north to R.M. 12.0, south of Duvall. It meanders through this stretch with continuous oxbows below R.M. 22.0. The flat valley averages approximately one mile in width. Valley walls rise steeply to 400-500 foot elevation to rolling hills on the west slope and more gradual gradients on the east slope. The hillsides are heavily forested with firs and deciduous trees, and heavy stands of brush. The land use is mostly agricultural with extensive pasture in the valley's rich bottomlands. There is also some logging and gravel mining in this section. The town of Carnation is the largest community, with small settlements and landmarks such as Stillwater, Stuart, and Novelty located along the east side of the river. Aside from these small communities, the area contains mostly scattered rural residences. The Novelty Hill Road Bridge, the Carnation Road Bridge, and the Tolt Hill Road Bridge cross the Snoqualmie River in this reach.

The mainstem Snoqualmie has very shallow gradient over this reach. Channel widths in the fall range from 75 to 100 feet below R.M. 22.0, and from 120 to 150 feet above. Some channel splitting occurs between R.M. 22.5 and 20.0. There are extensive gravel bars along the shorelines above R.M. 18.0. The bottom composition is mostly heavy rubble covered with vines, and with heavy silt deposits below R.M. 20.0. Only scattered rcffle areas are available. Good to excellent gravel composition occurs above R.M. 21.0 upstream to the mouth of the Tolt. There is little natural stream cover along this reach. Some shade is provided, however, where the river courses against the high west bank above the Carnation Bridge.

Of the seven tributaries in this section, Harris Creek is the largest and provides ideal salmon habitat. It originates from groundwater drainages in several large swamps and beaver ponds along the Swan Mill Road about 1.5 miles north of Lake Joy. Harris Creek is about 6.5 miles in length and contains more than 2.5 miles of tributaries. A small fish ladder is located at R.M. 5.0. This stream is extremely brushy with overhanging vegetation and dense tree cover. It also contains good spawning gravel with excellent pool-riffle balance. Ames Creek originates from the outlet of Ames Lake and contains 5.2 miles of stream, of which about half is suitable for coho production.

Salmon Utilization

The lower ten miles of mainstem Snoqualmie River in this stretch is transportation and rearing water. Chinook, coho, chum, and pink salmon spawn and rear in the mainstem above R.M. 21.0. There is concentrated spawning for chinook, pink, and chum salmon in the channel split areas between R.M. 22.0 and 25.0. Coho and chum utilize Harris Creek, with chum spawning in the lower 1.5 miles. Coho spawn throughout the stream. Both coho and chum spawn and rear in Ames Creek. The other small tributaries are believed to have only limited importance for salmon production.

Limiting Factors

Channelization, flood control diking, and gravel removal have been the major limiting factors in the Snoqualmie. Considerable siltation stemming from Tolt River slide and gravel operations have also affected the mainstem river. Some tributary sections have suffered from channelizing, and particularly from stream bank clearing, and residential development.

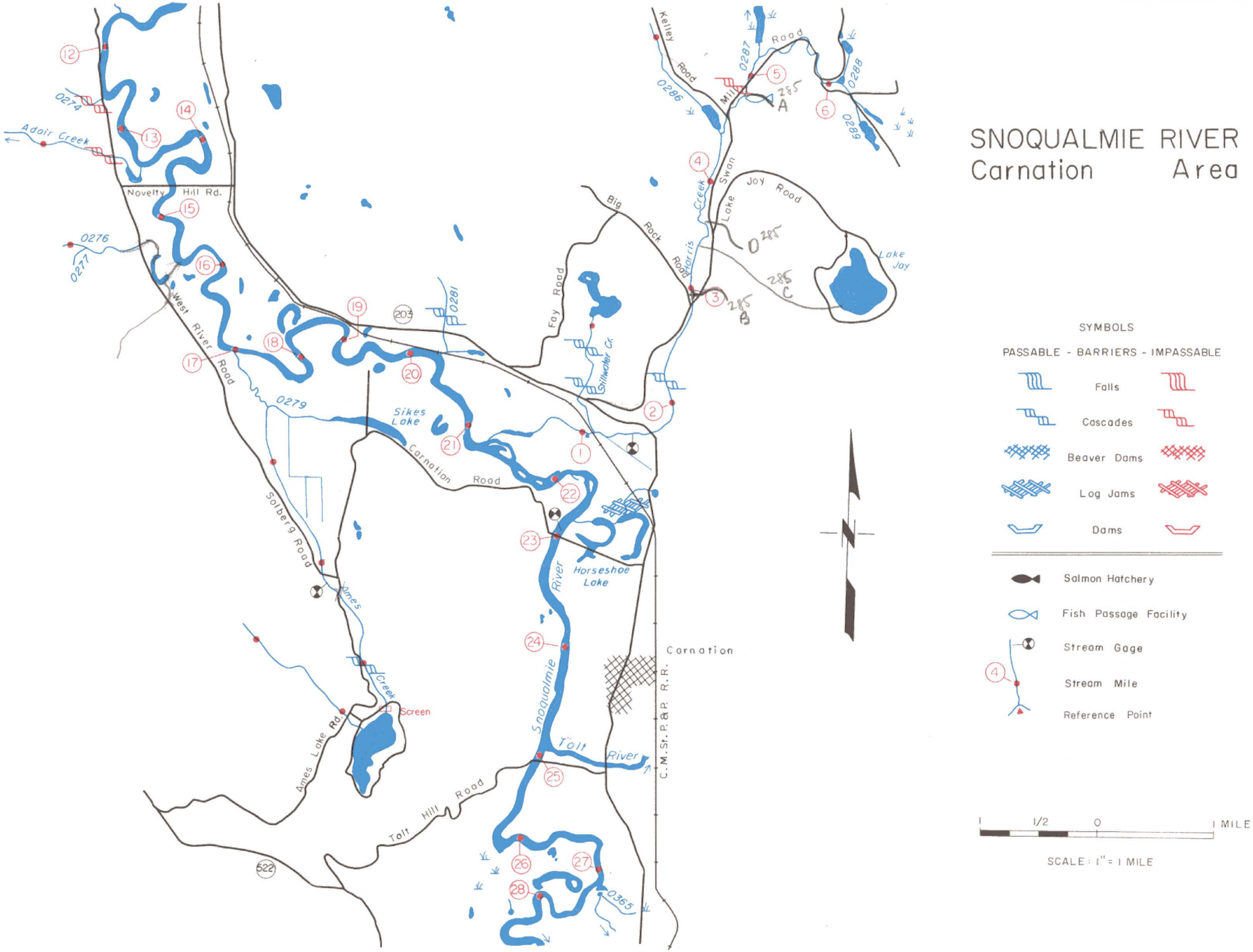
Beneficial Developments

A small fish ladder in Harris Creek provides access through a culvert drop. There has been no other facilities or programs to benefit salmon production in this reach.

Habitat Needs

Major requirements for maintaining the fish production habitat include preserving existing stream cover and restricting gravel removal and flood control activities. A sound watershed management plan should be developed that will prevent encroachment and detrimental land alterations.

PHOTO 07-20. A two-step fishway through a road culvert on upper Harris Creek.


SNOQUALMIE RIVER
Carnation Area
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
1/2
0
1 MILE
SCALE: 1" = 1 MILE
Novelty Hill Rd.
West Valley Road
Adair Creek
Kelley Road
Mill Creek
Swan Lake
Joy Road
Lake Joy
Big Rock Road
Morris
Fay Road
Stillwater Cr.
Sikes Lake
Carnation Road
Salberg Road
Ames Creek
Ames Lake Rd.
Screen
Horseshoe Lake
Snoqualmie River
Tolt River
Tolt Hill Road
C.M.St.P.&P. R.R.
Carnation
0274
0276
0277
0279
0281
0285
0286
0287
0288
0289
0365
203
522

SNOQUALMIE RIVER — CARNATION AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0219	Snoqualmie River				Chin., Coho, Pink, Chum
0275	Adair Creek	LB-13.35	1.65	—	Unknown
0276	Unnamed	LB-15.1	1.05	—	Unknown
0278	Ames Creek	LB-17.0	5.2	—	Coho, (Chum)
0279	Unnamed	RB-0.55	0.7	—	Unknown
0280	Drain. Ditch	LB-0.25	~ 1.6	—	Unknown
	Sikes Lake	Outlet-0.7			
	Ames Lake	Outlet-3.5	—	—	
0283	Harris Creek	RB-21.3	6.45	—	Coho, (Chum)
	Unnamed Lake	Outlet-0.2	—	—	
0284	Stillwater Cr.	RB-1.11	1.1	—	Coho
0286	Unnamed	RB-4.45	1.1	—	Coho
	Unnamed Lake	Outlet-6.1	—	—	
	Unnamed Lake	Outlet-6.45	—	—	
0291	Tolt River	RB-24.9	26.2	—	Chin., Coho, Pink, (Chum)

(See Snohomish 803)
(Cont. Snohomish 1003)

LOWER TOLT RIVER

This section includes the lower 9.0 miles of Tolt River with nine tributaries, excluding the South Fork, providing an additional 13.2 stream miles. The Tolt River originates in the range of mountains including Mt. Index, Red Mountain, and Mt. Phelps east of the Snoqualmie River, then flows southwest to its confluence with the Snoqualmie (R.M. 24.9) near the town of Carnation. The entire watershed lies within King County and road access to the lower river is provided by the Tolt River Road along the north bank, upstream from about six miles, and by the Bunker Road on the south bank from the mouth to river mile 1.8. Stossel Creek is the principal tributary and is accessible from the Tolt Truck Trail. The upper watershed will be discussed with Map 901.

Stream Description

The lower Tolt River includes the 9.0 miles below the confluence of the North and South forks. Flows are controlled by the spillway releases from the Seattle Water Supply Reservoir on the South Fork. The peaks of the upper watershed mountain range extend to 5,000-foot elevation and drop rapidly from steep canyon boulder zones to the 450 -foot elevation near the forks. The Tolt River Valley broadens below this point and becomes predominantly of floodway character. Stream width varies from 45 to 75 feet above river mile 5.0 and extends to 90 feet in the lower river. Channel splitting and overflow side channels occur below river mile 4.0. Above river mile 5.0 the streambed is comprised mostly of rubble and boulders with few patch gravel areas. Flows are mostly of fast riffle character with a few rapids. Below river mile 5.0 the bottom composition changes, with the streambed exhibiting rubble and gravel with a few boulder-strewn sections. Proceeding downstream from R.M. 5.0 there are increasing sections of gravel riffles and generally good pool-riffle balance.

Land use is confined to a few permanent small rural farms in the lower 2 miles, with heavy recreational use up to river mile 6.0 at the end of the Tolt River Road. Some logging occurs in the upper section near the forks. Stossel Creek is the principal tributary providing 4.45 miles of accessible stream. This tributary contains several reaches of beaver ponds. There are 8 short tributaries that also provide considerable drainage runoff to this system. These contain good shade cover and some sections suitable for salmon production.

Salmon Utilization

Chinook, coho, chum and pink inhabit the lower Tolt River with chinook and coho ascending this entire section and chum and pink utilizing the lower 4.0 miles, particularly the channel splits and overflow channels. Coho ascend all of the accessible portions of the tributaries, particularly Stossel Creek and Langlois Creek.

Limiting Factors

Steep gradients, cascades and falls restrict some fish use in the smaller unnamed tributaries. Gravel removal, particularly in the lower river, has altered the streambed conditions. Riprapping and other flood control measures below river mile 4.0 has tended to eliminate natural overflow channels and construct the main channel in some cases. Cleared logged-off slopes in the upper watershed contribute to the flash flooding and silting in the basin. Large boulders in the streambed limit the spawning areas. The Seattle-Tolt Water Reservoir controls the flows from the South Fork, reducing summer rearing capacity.

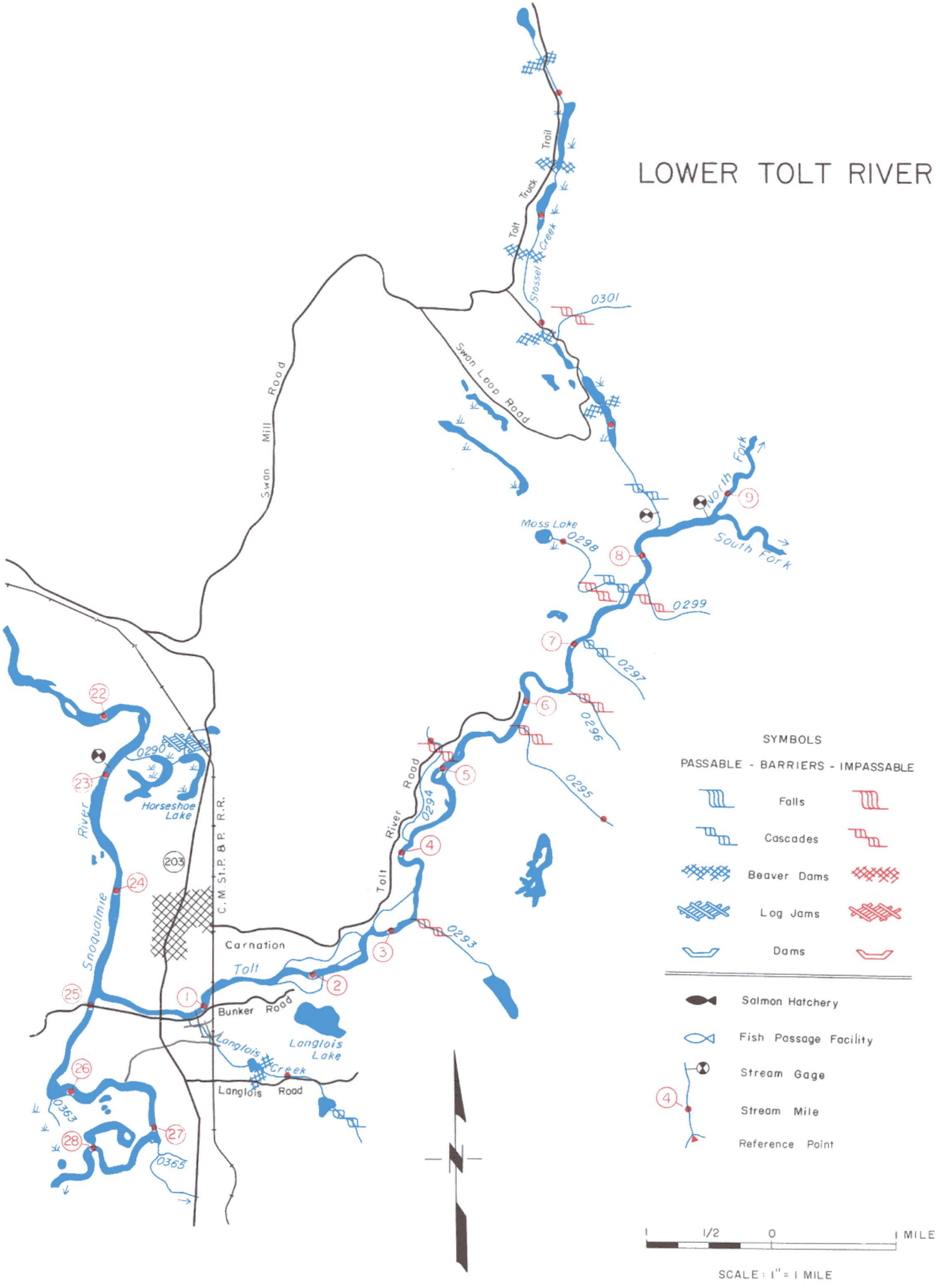
Beneficial Developments

A U.S.G.S. gaging station, located about 0.5 mile downstream of the confluence of the South Fork, has continuously recorded stream flow measurements from the Seattle Water Reservoir since 1952. Another U.S.G.S. gaging station, with records dating back to 1928, is located near the mouth of Stossel Creek. Negotiations for minimum flow releases for fish use were initiated in 1957 but have never been consummated into a formal agreement. Based on average flows of 200 cfs from September 15 to June 1, and 125 cfs from June 1 to September 15, as measured below Stossel Creek, releases from the Seattle Storage Dam would amount to 38 cfs in the winter period and 24.5 cfs in the summer period. In critical water years, which occur one out of ten, the reduction of 30% in these quantities would be made in the monthly release schedule.

Habitat Needs

A firm minimum flow agreement should be negotiated through the Department of Ecology with Seattle Water Department for Tolt River Reservoir releases for fish use. Gravel removal operations in the lower Tolt River should be prohibited as recruitment of gravel is minimal in this river.

PHOTO 07-21. Set back levees on lower Tolt River allows the river to meander.


LOWER TOLT RIVER
Truck Trail
Tolt
Stossel Creek
0301
Swan Mill Road
Swan Loop Road
North Fork
South Fork
9
Moss Lake
0298
8
0299
7
0297
6
0296
0295
5
River Road
0294
4
Tolt
0293
3
2
1
Carnation
Tolt
Bunker Road
Langlois Lake
Langlois Creek
Langlois Road
C.M St.P.&P. R.R.
203
22
0290
23
Horseshoe Lake
River
Snoqualmie
24
25
26
0363
28
27
0365
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

LOWER TOLT RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0219	Snoqualmie River				Chin., Coho, Pink, Chum
0291	Tolt River	RB-24.9	26.2	—	Chin., Coho, Pink, (Chum)
0292	Langlois Creek	LB-0.85	1.85	—	Coho
	Unnamed Lk.	Outlet-0.7	—	—	
	Unnamed Lk.	Outlet-1.4	—	—	
0294	Unnamed	RB-4.1	1.1	—	(Chin), Coho
0295	Unnamed	LB-5.8	1.1	—	Unknown
0298	Unnamed	RB-7.5	1.15	—	(Coho)
0300	Stossel Cr.	RB-8.3	4.45	—	Coho
	Unnamed Lk.	Outlet-0.8	—	—	
	Unnamed Lk.	Outlet-1.2	—	—	
	Unnamed Lk.	Outlet-1.56	—	—	
	Unnamed Lk.	Outlet-2.9	—	—	
	Unnamed Lk.	Outlet-3.4	—	—	
	Unnamed Lk.	Outlet-4.45	—	—	
0302	S. Fork Tolt R.	LB-8.8	16.8	—	Chin., Coho
	(See Snohomish 903)				
	Tolt R. cont. as	@ mi. 8.81)	—	—	
	No. Fk. Tolt R.				
	(Cont. Snohomish 903)				

UPPER TOLT RIVER

This section covers the upper Tolt River basin. Above the South Fork (R.M. 8.8) it continues as North Fork more than 17 miles. Some 22 tributaries and 50 stream miles. The South Fork is also about 17 miles long, with 15 tributaries adding 30 stream miles. The area is located six miles east of Carnation, in north-central King County. Access is via logging roads from the town of Snoqualmie. The North Fork and tributaries above R.M. 18 are within Snoqualmie National Forest. Also, much of the area is managed as watershed by the City of Seattle.

Stream Description

From the northwest slopes of Red Mountain the North Fork flows first northwest, then west about eight miles, then southwest nine miles to the South Fork confluence. The only large tributary other than the South Fork is North Fork Creek.

Over its upper 6-7 miles the North Fork cuts through a narrow, steep-sloped valley. The upper three or so miles hold dense conifer forest; the lower slopes mostly clear-cut. Downstream from Titicaca Creek (R.M. 20.6) the valley shallows and broadens for six miles, showing many clear-cuts and various stages of reforestation. The lower six miles cut through deep ravine-canyon terrain, where most side slopes are thickly forested. Similar mountain terrain exists over the South Fork; however, most slopes here hold dense forest cover. Little development has occurred in the upper drainage. Principal activity is logging, with some recreation.

The North Fork's upper six miles are mostly steep, the stream's narrow channel holding some falls, numerous cascades, a few short pool-riffle stretches. Widths range 2-6 yards, the bottom mainly boulder and rubble, little gravel.

The gradient over the next six miles is mostly moderate. Fall widths range 5-10 yards, with some channel splitting. There are a number of good pool-riffle stretches, with the bottom being mainly rubble and gravel, and a few boulder areas. Banks are mostly low earth or rock cuts, with a few gravel-rubble beaches. Cover consists of patches or strips of mainly deciduous growth and some mixed conifer.

Over the next 3-4 miles, the ravine-canyon area presents mostly steep gradient, with numerous falls, cascades, and rapids, and only a few deep pools and short riffles. One large falls, exceeding 25 feet, is located about R.M. 10.8. Stream widths above the falls range from 4 to 9 yards. The bottom is mostly large rock and boulders, with some bedrock and a few rubble-patch gravel stretches.

The lower two miles of the reach present moderately steep gradient. The channel remains confined, ranging 5-12 yards in width in the fall, exhibiting numerous cascades and rapids, and occasional pools and short riffles. The bottom is boulder and rubble, with some patch gravel. Banks are steep -sloped, maintaining moderate to dense deciduous/conifer cover where logging has not occurred.

The South Fork's upper three miles is steep gradient stream, with conditions much the same as in the upper North Fork. For the next three miles, the gradient is moderately steep, with the stream presenting mostly fast riffles, a few cascades, and some short pool-riffle stretches. Here, fall widths range 3-5 yards, with the bottom composed mostly of rubble and scattered boulders, and some patch gravel areas. Cover is mostly conifer timber, with some mixed deciduous growth. Seattle's South Fork Tolt Reservoir encompasses the next 3.5 miles (R.M. 8.5-12.0). A large falls is located just downstream from the dam. Over the remaining eight or so miles the South Fork presents moderately steep to steep gradient, with mostly fast riffles and some cascades, particularly in a short canyon (R.M. 2.5-3.5). Stream widths range from 5 to 14 yards. Some deep pools, with a few short riffles, exist along this lower stretch. The bottom is mainly rubble and boulders, with a few short gravel riffles and patch gravel strips. The South Fork banks are generally sharp earth or rock cuts holding dense cover, except for the lower river stretches where clear-cut logging has occurred.

Nearly all smaller tributaries exhibit steep mountain stream character, with numerous cascades and rapids, and mostly boulder and rubble bottoms.

Salmon Utilization

This section receives limited salmon use, some chinook and coho ascending the North Fork about a mile, the South Fork as far as eight miles. Chinook juveniles rear for a short time in these waters, coho having year-round habitation.

Limiting Factors

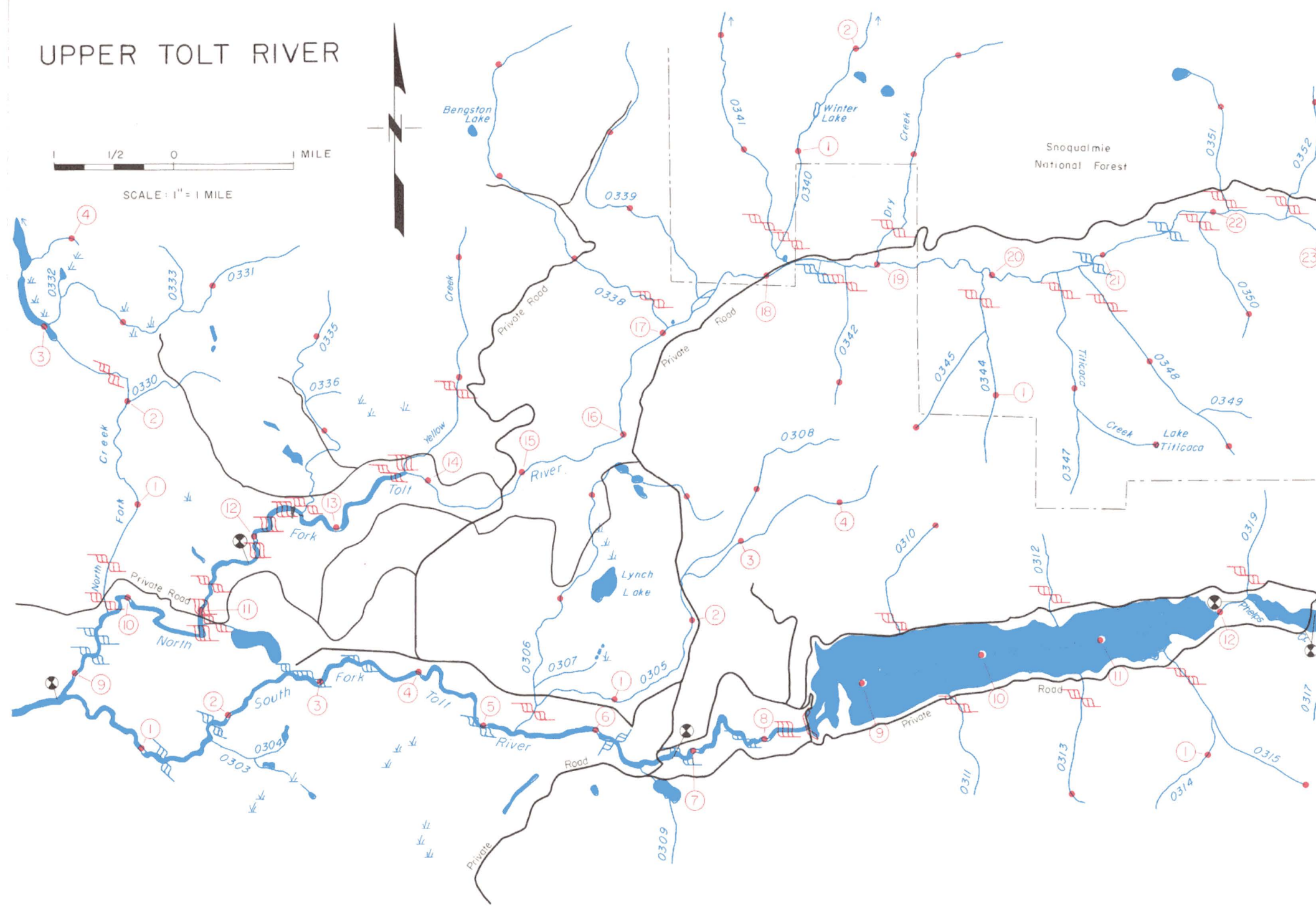
Natural salmon production limitations include the North Fork and South Fork falls, plus the steep gradient restricting spawning habitat within accessible stream reaches. Additional factors include low flows during critical dry seasons, and occasional heavy siltation from a South Fork slide.

Beneficial Developments

The only programs to benefit salmon production is a minimum flow agreement with the City of Seattle to insure against severe flow reductions.

Habitat Needs

Requirements to maintain production habitat include preserving stream side cover, and maintaining stream conditions in a near natural state. Containment of the South Fork slide would benefit the more productive areas downstream.


UPPER TOLT RIVER
1 1/2 0 1 MILE
SCALE: 1" = 1 MILE
Bengston Lake
Winter Lake
Dry Creek
Snoqualmie National Forest
Private Road
Yellow Creek
Tolt River
North Fork
South Fork
Lynch Lake
Lake Tiricoca
Tiricoca Creek
Phelps
0301
0302
0303
0304
0305
0306
0307
0308
0309
0310
0311
0312
0313
0314
0315
0317
0319
0330
0331
0332
0333
0335
0336
0338
0339
0340
0341
0342
0344
0345
0347
0348
0349
0350
0351
0352

UPPER TOLT RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0219	Snoqualmie River				Chin., Coho, Pink, Chum
0291	Tolt River				Chin., Coho, Pink, (Chum)
0302	S. Fork Tolt R.	LB-8.8	16.8	—	Chin., Coho
0305	Unnamed	RB-5.3	4.5	—	Unknown
0306	Unnamed	RB-0.3	3.4	—	None
	Unnamed Lake	Outlet-2.3	—	—	
	Unnamed Lake	Outlet-2.5	—	—	
0308	Unnamed	RB-2.45	1.9	—	None
	Tolt-Seattle Water Sup. Res.	Outlet-8.4	—	—	
0310	Unnamed	RB-9.4	1.0	—	None
0313	Unnamed	LB-10.8	1.1	—	None
1314	Unnamed	LB-11.5	1.6	—	None
0315	Unnamed	RB-0.7	1.0	—	None
0316	Phelps Cr.	LB-12.3	2.2	—	None
0320	Unnamed	RB-12.9	1.0	—	None
0323	Unnamed	RB-14.5	1.0	—	None
	Tolt R. cont. as N. F. Tolt R.	@ mi. 8.81	—	49.3	
0329	N. Fork Creek	RB-9.7	4.1	7.53	Unknown
	Unnamed Lake	Outlet-2.85	—	—	
0331	Unnamed	LB-3.0	2.8	—	None
	Unnamed Lake	Outlet-3.55	—	—	
0335	Unnamed	RB-12.6	2.5	—	None
0337	Yellow Creek	RB-13.8	2.2	—	None
0338	Unnamed	RB-17.05	3.7	—	None
0339	Unnamed	RB-17.4	2.9	—	None
0340	Unnamed	RB-18.25	3.0	—	None
0341	Unnamed	RB-0.15	2.7	—	None
	Winter Lake	Outlet-1.35	—	—	
0342	Unnamed	LB-18.7	1.2	—	None
0343	Dry Creek	RB-19.0	2.4	—	None
0344	Unnamed	LB-19.9	1.6	—	None
0345	Unnamed	LB-0.5	1.0	—	None

UPPER TOLT RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0346	Titacaca Creek	LB-20.6	1.9	—	None
	Lk. Titicaca	Outlet-1.9	—	—	
0348	Unnamed	LB-20.8	2.1	—	None
0350	Unnamed	LB-21.9	1.2	—	None
0351	Unnamed	RB-22.1	1.4	—	None
0352	Unnamed	RB-22.6	1.1	—	None
0353	Unnamed	RB-23.1	1.2	—	None
0354	Unnamed	RB-23.39	1.4	—	None
0355	Titicaed Cr.	LB-23.4	1.65	—	None
	Titicaed Lk.	Outlet-1.65	—	—	
0358	Unnamed	RB-23.55	1.1	—	None

SNOQUALMIE RIVER
Tolt Area

Thirteen miles of main Snoqualmie River are covered in this section from Tolt River upstream to Tokul Creek, plus fourteen tributaries exclusive of the Raging River, providing an additional 51.0 stream miles. The principal town in this valley section is Fall City located near the confluence of the Raging River with the Snoqualmie River at mile 36.0. Access along this stretch of river is by the Fall City to Monroe State Highway 203 on the east valley, and by the west valley road which connects to the Redmond-Fall City State Highway 522 two miles northwest of Fall City. This portion of the Snoqualmie River lies within King County. The Raging River will be presented in Map 1101.

Stream Description

This section of the Snoqualmie River from river mile 25.0 at the mouth of the Tolt River upstream to river mile 39.3 near Tokul Creek, about a mile below Snoqualmie Falls, provides the floodway for the extensive mountainous headwaters of this watershed above the falls. The Snoqualmie River winds in shallow bends downstream to river mile 33.5, below which it forms extensive oxbows and zigzags across the valley floor in serpentine fashion downstream to the town of Carnation. The valley averages about 1.5 miles in width with hillsides rising to the 400-foot elevation, forming valley walls on either side. Many large side sloughs formed by overflow waters are located in this stretch, with the largest group located on the east valley side between river mile 36.0 and 33.0 below Fall City. The mainstem Snoqualmie varies in width from 150 to 400 feet, averaging about 250 feet over much of the distance. Gradient is extremely shallow, descending from 100-foot elevation to 55-foot elevation within this 13.8 mile distance, with only a five-foot drop in the lower 6 miles. Below river mile 33.0 the river becomes a slow, deep slough, confined within diked banks with heavy mud and silt bottoms. Few patch gravel shoreline bars are present even on inside curves. Long gravel riffles with goo gravel composition occur between river mile 34.0 and 35.0. Above this point, the river again becomes deep and slow moving. Good tree cover with brush-covered banks occurs throughout this section. Land use is essentially agricultural and pastural. Due to annual flooding in the valley, there are only scattered rural homes.

Griffin Creek is a major tributary providing some 13 stream miles of drainage. The creek ranges from 10 to 25 feet in width with fair gravel composition. The average flow from 20 years of record is 42.3 cfs. Many beaver dams and swamps occur above stream mile 5.0 and much of the upper watershed has been logged off. Many summer homes are located on the lower stream.

Patterson Creek is 9.25 miles in length with an additional 9.7 miles of tributaries. It is a typical lowland-type stream with fair to good gravel, good pool-riffle balance and excellent shade and cover. Average discharge for 19 years of record is 32.2 cfs.

Salmon Utilization

Chinook, coho, chum and pink salmon utilize the mainstem Snoqualmie within this section for transportation, spawning and rearing. Chinook spawning is intense between river mile 34.0 and 35.0 with some chum and pink utilizing this same area as well as the mouth of the Raging River. Below R.M. 33.5 there is minimal spawning area with only a few shoreline gravel sections. Coho utilize mainly the tributaries; especially Griffin Creek, Patterson Creek, Skunk Creek, and the lower accessible portions of the other small unnamed tributaries. In Griffin Creek the main coho spawning occurs between R.M. 3.0 and 5.1 at the outlet of the lower swamp lake.

Limiting Factors

Heavy snowmelts and runoffs from above Snoqualmie Falls create heavy flooding in the valley. The I-90 road construction on Snoqualmie Pass Highway causes heavy silt loads in the lower river. Heavy deposits of silt and mud are found throughout the deep, slow oxbows of the lower river. Logging in the headwaters of Griffin Creek creates heavy runoff and gravel bed shifting in this stream. Steep gradients and cascades of the small independent tributaries reduce the streams to minimum salmon usage.

Beneficial Developments

No facilities or programs have been undertaken in this section to specifically benefit salmon production.

Habitat Needs

Major requirements for maintaining the fish production habitat in this section include: developing zoning laws preventing construction of permanent buildings within the flood plain; coordinating flood control activities with King County Flood Control; and the development of a good watershed management plan to preserve the environment.

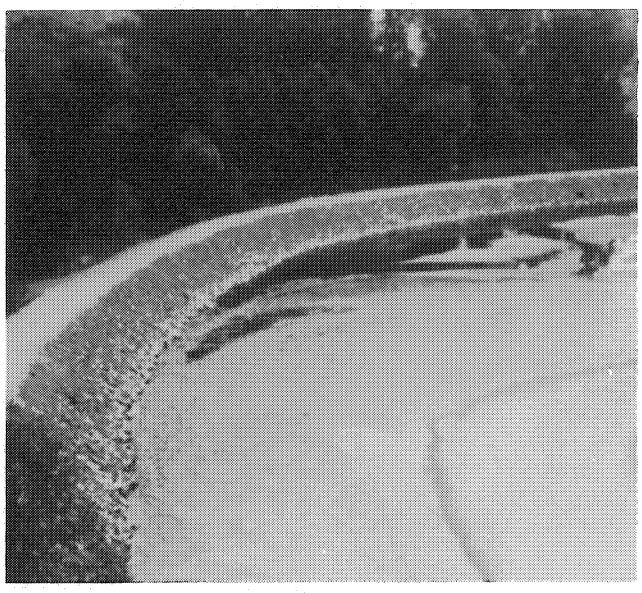
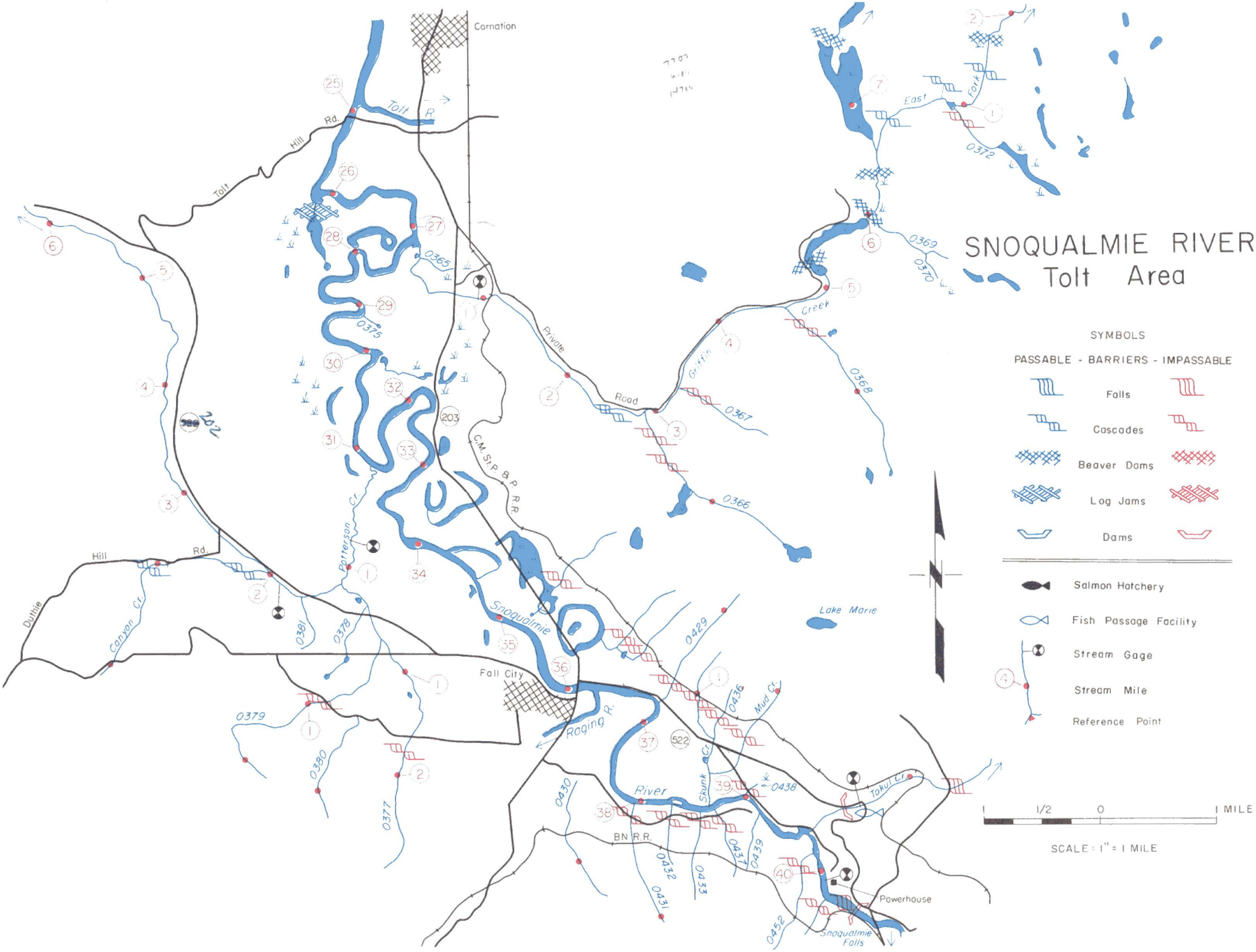


PHOTO 07-22. Good chinook riffles on Snoqualmie River.


SNOQUALMIE RIVER
Tolt Area
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
1/2
0
1 MILE
SCALE: 1" = 1 MILE
Carnation
Tolt R.
Tolt Hill Rd.
Hill Rd.
Duthie
Canyon Cr.
Patterson Cr.
Snoqualmie River
Raging R.
Fall City
Private Road
Griffin Creek
East Fork
C.M. St.P. & P. R.R.
BN R.R.
Lake Marie
Mud Cr.
Skunk Cr.
Tokul Cr.
Powerhouse
Snoqualmie Falls
0365
0366
0367
0368
0369
0370
0372
0375
0377
0378
0379
0380
0381
0429
0430
0431
0432
0433
0436
0437
0438
0439
0452
203
522
202

SNOQUALMIE RIVER — TOLT AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River			—	Chin., Coho, Pink, Chum
0219	Snoqualmie River	LB-20.5		—	Chin., Coho, Pink, Chum
0364	Griffin Creek	RB-27.2	11.4	—	Chin., Coho, Pink, (Chum)
0366	Unnamed	LB-2.9	1.75	—	(Coho)
	Unnamed Lk.	Outlet-0.75	—	—	
	Unnamed Lk.	Outlet-1.75		—	—
0368	Unnamed	LB-4.6	1.7	—	(Coho)
	Unnamed Lk.	Outlet-5.1	—	—	
0371	East Fork	LB-6.6	3.3	—	Coho
	Unnamed Lk.	Outlet-0.9	—	—	
	Unnamed Lk.	Outlet-2.6	—	—	
	Hull Lake	Outlet-3.05	—	—	
	Unnamed Lk.	Outlet-3.3	—	—	
	Unnamed Lk.	Outlet-6.75	—	—	
	Unnamed Lk.	Outlet-7.8	—	—	
	Unnamed Lk.	Outlet-8.9	—	—	
	Unnamed Lk.	Outlet-11.0	—	—	
0376	Patterson Creek	LB-31.2	9.25	—	Coho
0377	Unnamed	RB-1.2	2.9	—	Coho
0379	Unnamed	LB-0.6	2.2	—	Unknown
0380	Unnamed	RB-0.55	1.2	—	Unknown
0382	Canyon Creek	RB-2.0	2.1	—	(Coho)
0383	Unnamed	RB-6.5	1.3	—	Unknown
	Unnamed Lake	Outlet-9.25	—	—	
0384	Raging River	LB-36.2	15.2	—	Chin., Coho, Pink, (Chum)
	(See Snohomish 1103)				
0429	Unnamed	RB-36.8	1.2	—	Unknown
0430	Unnamed	LB-37.65	1.4	—	Unknown
0431	Unnamed	LB-37.95	1.0	—	Unknown
0434	Skunk Creek	RB-38.64	1.4	—	Coho
0435	Mud Creek	LB-0.3	1.1	—	(Coho)
	(Cont. Snohomish 1303)				

RAGING RIVER DRAINAGE

The Raging River drainage is formed from 15.2 miles of mainstem plus 23 tributaries totaling an additional 47.2 stream miles. This section also includes the mainstem Snoqualmie River from R.M. 39.6 at the confluence of Tokul Creek upstream to R.M. 41.5 at the pumping station above Snoqualmie Falls. Snoqualmie tributaries include Tokul Creek, Kimball Creek, and two unnamed streams for a total of 28.5 stream miles. Access to the lower Raging River is on the Fall City to Preston Road. Interstate I-90 bisects the river at Preston and State Highway 18, Auburn to North Bend, bisects the upper river near R.M. 8.0. State Highway 522, North Bend to Fall City, provides access to the Snoqualmie River above and below the town of Snoqualmie. This entire section lies within King County.

Stream Description

The Raging River originates from the southwest slope of Rattlesnake Mountain which lies approximately 2 miles southwest of North Bend, and flows northwesterly for about 10 miles to the town of Preston where it turns and flows northeasterly 4.5 miles to its confluence with the Snoqualmie River at R.M. 36.2 near Fall City. The upper watershed tributaries start near the 3,000-foot elevation and descend through deep ravines to about 900-foot elevation at R.M. 9.5 where the gradient flattens and the stream broadens portraying typical lowland characteristics. Most of the upper watershed has been logged and grown back to second growth. Large stands of big deciduous trees with dense brush occupy much of this mountainous terrain. Access to this area is by old logging roads now deteriorated to jeep trails and by one main private road. From R.M. 8.0 to the mouth the river gradient drops at about 75 feet per mile. There are good pool-riffle reaches interspersed with large rubble and boulders. Good gravel is found in the flatter gradient section between R.M. 5.0 and 7.0. Patch gravel among the large boulders prevails downstream to R.M. 2.0. Flood control dikes have been constructed in the floodway in the lower 2 miles. Stream widths vary from 30 to 50 feet in the mainstem; however, the river becomes twice as wide during flood runoff periods. The entire system is densely covered with conifer and deciduous trees and brush. Gage readings near Fall City for 12 years of record average 146 cfs with summer low flows typically reaching 9 to 15 cfs.

Lake Creek averages about 12 feet wide with a moderate flow (10 cfs) and good gravel riffles interspersed with equal rubble and boulder sections. This is an excellent coho stream in the lower half mile. Deep Creek also contains good salmon habitat below the North Bend Highway 18. Most of the tributaries in the upper watershed appear to have good sjlmon production potential in the accessible areas. Tokul Creek is controlled by the State Game Department with their trout hatchery and rack about 0.4 miles upstream from the mouth.

The Snoqualmie River has stream characteristics similar to those in the section immediately downstream from Tokul Creek, described in Snohomish 1101.

Salmon Utilization

Chinook salmon migrate, spawn and rear in the Raging River below R.M. 7.0; however, there is suitable habitat accessible to this species above this point. It is judged 85% of the chinook spawn in the lower river downstream from Preston. Concentrated spawning occurs in the first half mile below Preston Bridge with scattered patch gravel sections downstream. Coho inhabit the entire accessible river and tributaries with fair spawning in Lake Creek, Deep Creek and the first few hundred yards in the lower portions of the smaller tributary streams. Pink salmon historically were observed in the lower portion of the Raging River; however, the run has failed to migrate this far upstream in recent years. Tokul Creek is inhabited by both chinook and coho and produced some pink salmon prior to 1955. All three species, plus a few chum salmon, spawn in the mainstem Snoqualmie to the falls. No salmon utilize Kimball Creek above Snoqualmie Falls.

Limiting Factors

The Raging River watershed obtained its name and reputation from the fast runoff-flash flooding conditions associated with the steep gradients of the upper watershed and when combined with past logging, high flows have contributed to scouring of streambed throughout the system. Lack of smaller gravels and suitable streambed limit the overall spawning area. Silt deposits have created gravel compaction in the lower sections of the tributaries. Snoqualmie Falls, of course, limits access to the vast upper Snoqualmie watershed.

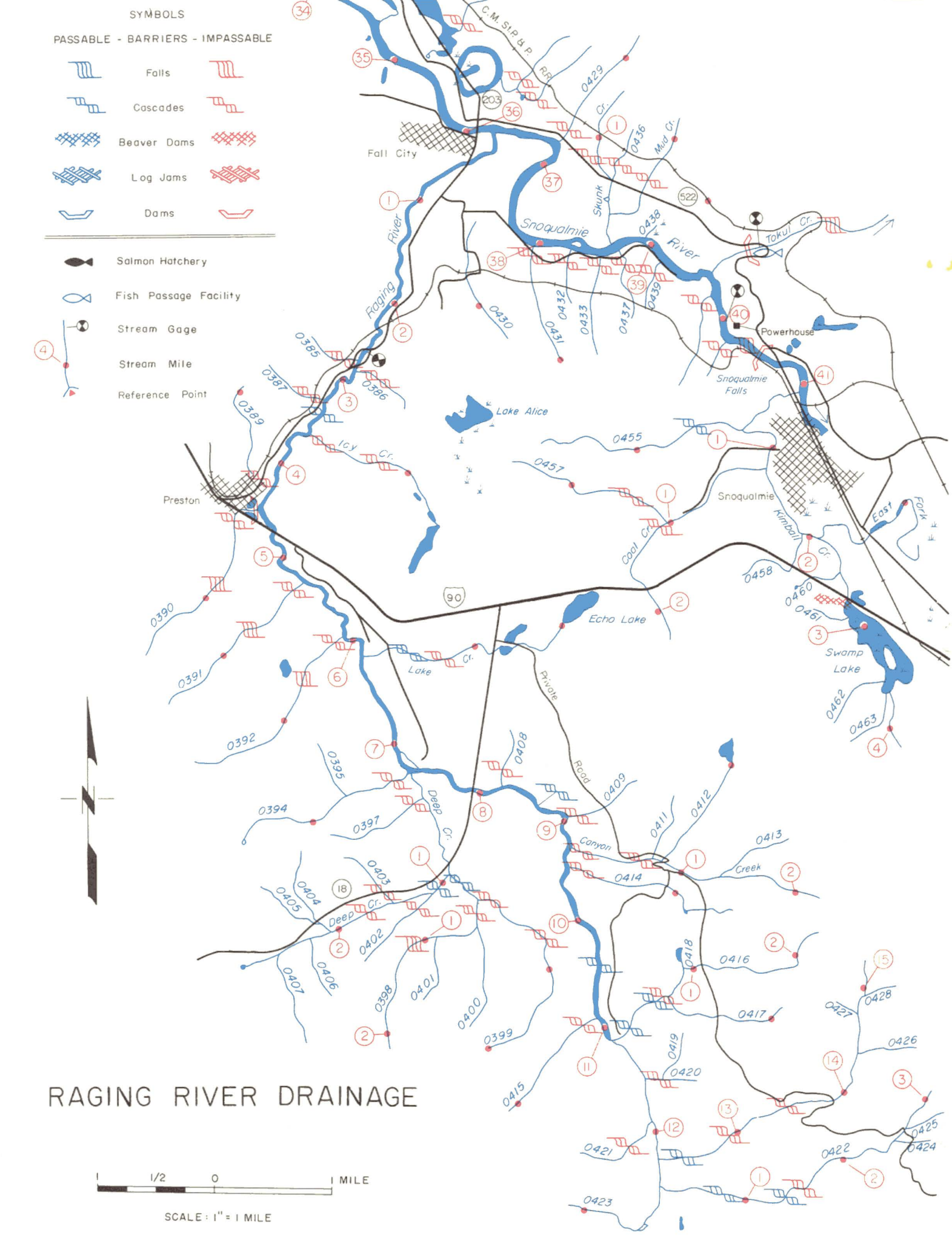
Beneficial Developments

No facilities or programs have been undertaken within this section to specifically benefit salmon production.

Habitat Needs

Streambed controls would be beneficial in the lower 2 miles of the Raging River where flood control dikes confine the flows and channel. Low summer flows restrict the rearing area available.

PHOTO 07-23. Boulders and rubble predominate in the lower Raging river.



RAGING RIVER DRAINAGE

RAGING RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0219	Snoqualmie River				Pink, Chum
0384	Raging River	LB-36.2	15.2	—	Chin., Coho, Pink, (Chum)
0388	Icy Creek	RB-3.6	1.5	—	Unknown
	Unnamed Lake	Outlet-1.35	—	—	
	Unnamed Lake	Outlet-1.5	—	—	
0389	Unnamed	LB-4.1	1.0	—	Coho
0390	Unnamed	LB-4.45	1.75	—	Unknown
0391	Unnamed	LB-5.3	1.6	—	Unknown
0392	Unnamed	LB-5.9	1.9	—	Unknown
0393	Lake Creek	RB-6.2	2.0	—	Coho
	Unnamed Lake	Outlet-1.35	—	—	
	Echo Lake	Outlet-2.0	—	—	
0394	Unnamed	LB-7.35	1.7	—	
	Unnamed Pond	Outlet-1.7			
0396	Deep Creek	LB-7.4	2.9	—	(Chin.), Coho
0398	Unnamed	RB-0.95	2.1	—	Coho
0399	Unnamed	RB-0.25	2.0	—	Unknown
0410	Canyon Creek	RB-9.3	2.2	—	Unknown
0412	Unnamed	RB-0.8	1.0	—	None
0414	Unnamed	RB-9.5	1.6	—	Unknown
0415	Unnamed	LB-10.9	1.1	—	Unknown
0416	Unnamed	RB-11.15	2.25	—	(Coho)
0417	Unnamed	LB-0.65	1.1	—	None
0422	Unnamed	LB-12.3	3.05	—	(Coho)
0423	Unnamed	LB-0.2	1.15	—	(Coho)
	Unnamed Lk.	Outlet-0.4	—	—	
0429	Unnamed	RB-36.8	1.2	—	Unknown
0430	Unnamed	LB-37.65	1.4	—	Unknown
0431	Unnamed	LB-37.95	1.0	—	Unknown
0434	Skunk Creek	RB-38.64	1.45	—	Coho
0435	Mud Creek	LB-0.3	1.1	—	(Coho)
0440	Tokul Creek	RB-39.6	13.0	—	Chin.,Coho,(Pink)
	(See Snohomish 1303)				
0454	Kimball Creek	LB-41.1	4.2	—	None
0455	Unnamed	LB-0.65	1.85	—	None
0456	Coal Creek	LB-1.2	2.3	—	None

RAGING RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0457	Unnamed	LB-1.05	1.5	—	None
0459	East Fork	RB-2.1	1.8	—	None
	Swamp Lake	Outlet-2.71	—	—	
0464	Brockway Creek	RB-42.7	2.2	—	None
0467	S. Fk. Snoqualmie R.	LB-43.85	30.8	—	None
	(Cont. Snohomish 1203)				

SOUTH FORK SNOQUALMIE RIVER

This section covers the entire South Fork Snoqualmie River from its confluence with the mainstem Snoqualmie (R.M. 43.8) upstream nearly 31 miles to its Cascade Mountain headwaters. It includes approximately 30 small tributaries adding nearly 81 linear stream miles. The area is located in the North Bend-Snoqualmie Pass vicinity, in east-central King County, and is accessible via Highway I-90. The South Fork and its tributaries above R.M. 15 are within Snoqualmie National Forest.

Stream Description

From Source Lake the South Fork flows southeast 3 miles to Snoqualmie Pass, then southwest and west 8 miles to the Hanson Creek vicinity (R.M. 20.8), then northwest more than 20 miles to the mainstem about 2 miles north of North Bend. Virtually all tributaries are short, very steep, mountain streams.

A very narrow, ravine-like valley persists over the river's upper 6 miles. Dense conifer forest covers the steep, rugged terrain where some slopes rise to over 4,000 feet. Below ockdale Creek (R.M. 25.1) the valley floor broadens and narrows intermittently over the next 16 miles. The lower 4 miles of this stretch present ravine and canyon-like conditions. Relatively dense deciduous trees and underbrush covering much of the bottomland give way to conifer timber on the steep side slopes. Much of the surrounding area has experienced extensive logging. A short distance below Twin Falls (R.M. 10.5) the valley broadens and flattens, holding intermittent stands of mostly deciduous trees or thickets, with increasing amounts of cleared land. Some rural and suburban residential development exists over this lower ten-mile section with the town of North Bend the only community. Land use includes logging, some farming, and recreation.

Gradient over the river's upper 6 to 7 miles is mostly steep, containing numerous falls, cascades and rapids, separated by short pool-riffle sections. A number of fish migration barriers exist in this stretch. The bottom is mostly boulder and bedrock with only a few rubble-gravel areas. Fall stream widths range from 3 to 7 yards.

Over the next 12 miles, to the vicinity of Change Creek (R.M. 12.9), the river has a moderate gradient and the channel is relatively confined, with a few channel split areas. A good pool-riffle balance exists, with numerous broad and lengthy riffles. Fall widths range 6 to 14 yards. The bottom is predominantly gravel and rubble and has only a few boulder-strewn sections. Banks are relatively stable earth or rock cuts, with several gently sloping gravel-rubble beaches. Cover ranges from moderate to dense deciduous trees and underbrush.

The gradient in the canyon below Change Creek is mostly steep and the river cuts through a narrow channel ranging 7 to 12 yards in width. There are numerous cascades and rapids, and at least two series of relatively large falls. The larger of this is Twin Falls. Cascades are generally separated by short, deep pools and small rubble-gravel riffles. Stream bottom is mostly boulders and bedrock.

Below Twin Falls the gradient decreases. From the vicinity of Boxley Creek (R.M. 8.9) downstream to the mainstem Snoqualmie there is a moderate gradient and the channel remains relatively confined with only a few channel split areas. Stream widths range from 8 to 20 yards. The pool-riffle balance is good, with a number of long, deep pools and broad, lengthy gravel riffles. The bottom is mainly gravel and rubble, with occasional scattered boulders. Most banks are naturally stable; however, considerable artificial contouring and riprapping has taken place along both banks in the vicinity of North Bend. Stream-side cover along this lower stretch consists mainly of intermittent stands of deciduous trees and underbrush, separated by increasing amounts of cleared land.

Salmon Utilization

There is no natural utilization by salmon above Snoqualmie Falls, located a little over 3 miles downstream from the South Fork. Hatchery propagated chinook and coho juveniles are occasionally planted in the South Fork, making use of its available rearing potential. A large portion of the river provides high quality production habitat, suitable for use by adult and juvenile salmon.

Limiting Factors

Snoqualmie Falls, located downstream from the South Fork, blocks all salmon migration. Natural limitations to upstream migration would be imposed by the series of falls located between R.M. 10 and 13, nd by the increasing gradient above R.M. 25. Logging, and highway and road development have had some impact upon the quality and quantity of natural production habitat.

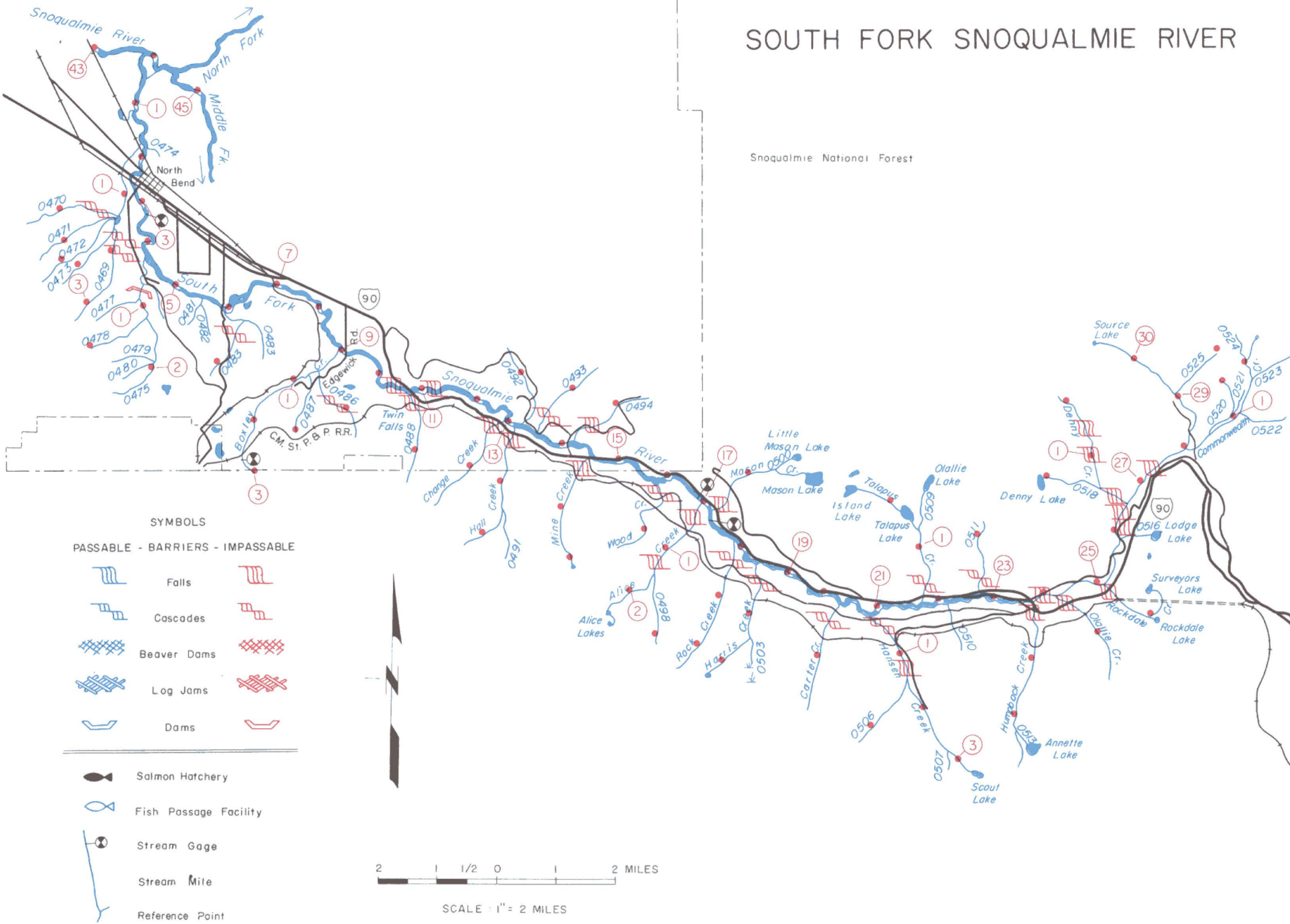
Beneficial Developments

Other than planting of juvenile salmon, no projects, or programs have been developed to specifically benefit salmon production within the South Fork.

Habitat Needs

Requirements to maintain fish production habitat include preserving stream and stream-side habitat in its natural state.

SOUTH FORK SNOQUALMIE RIVER



SOUTH FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
0219	Snoqualmie River				
0467	S. F. Snoqualmie R.	LB-43.85	30.8	—	None
0469	Unnamed	LB-1.65	3.3	—	None
0470	Unnamed	LB-1.45	1.5	—	None
0471	Unnamed	LB-1.5	1.4	—	None
0472	Unnamed	LB-1.51	1.4	—	None
0473	Unnamed	LB-1.75	1.1	—	None
0475	Unnamed	LB-4.3	2.8	—	None
0478	Unnamed	LB-1.1	1.05	—	None
0483	Unnamed	LB-5.95	1.15	—	None
0485	Boxley Creek	LB-8.9	3.0	—	None
0486	Unnamed	RB-0.5	1.6	—	None
0487	Unnamed	RB-0.8	1.0	—	None
0488	Unnamed	LB-10.7	1.6	—	None
0489	Change Creek	LB-12.9	1.9	—	None
0490	Hall Creek	LB-13.05	2.4	—	None
0492	Unnamed	RB-13.2	1.5	—	None
0493	Unnamed	RB-13.4	1.5	—	None
0494	Unnamed	RB-14.2	1.7	—	None
0495	Mine Creek	LB-14.61	2.1	—	None
0496	Wood Creek	LB-15.9	1.6	—	None
0497	Alice Creek	LB-16.91	2.9	—	None
0498	Unnamed	RB-1.45	1.1	—	None
0499	Mason Creek	RB-17.1	1.9	—	None
	Mason Lake	Outlet-1.9	—	—	
0501	Rock Creek	LB-17.8	2.6	—	None
0502	Harris Creek	LB-18.3	2.3	—	None
	Unnamed Lake	Outlet-2.3	—	—	
0504	Carter Creek	LB-20.3	1.9	—	None
0505	Hansen Creek	LB-20.8	3.3	—	None
0506	Unnamed	LB-1.4	1.3	—	None
	Scout Lake	Outlet-3.3	—	—	
0508	Talapus Creek	RB-21.7	2.7	—	None
	Talapus Lk.	Outlet-1.55	—	—	
	Island Lk.	Outlet-2.7	—	—	
0511	Unnamed	RB-22.9	1.4	—	None
0512	Humpback Cr.	LB-23.8	2.9	—	None

SOUTH FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0514	Olallie Cr.	LB-24.1	1.8	—	None
0515	Rockdale Cr.	LB-25.1	1.7	—	None
0517	Denny Cr.	RB-26.6	2.2	—	None
0518	Unnamed	RB-0.55	1.1	—	None
0519	Commonwealth Cr.	LB-28.0	2.4	—	None
0520	Unnamed	RB-0.55	1.1	—	None
0525	Unnamed	LB-29.1	1.0	—	None
	Source Lk.	Outlet-30.8	—	—	

NORTH FORK SNOQUALMIE RIVER

This section covers the North Fork Snoqualmie from the Middle Fork (R.M. 44.5) upstream to headwaters, a total of 26 miles. About 30 tributaries add 130 stream miles. ncluded also is the mainstem Snoqualmie from Middle Fork downstream about 5 miles to Tokul Creek. Eight mainstem tributaries, excluding the South Fork, add 40 stream miles. Location is near North Bend in King County, with access via Highway 10. Much of the upper basin is in Snoqualmie National Forest.

Stream Description

From Kanim Lake vicinity, the North Fork flows west then southwest 26 miles to the Middle Fork. The Snoqualmie below turns northwest 5 miles to Kokul Creek. Principal North Fork tributaries are Lennox, Sunday, Deep, Calligan, and Hancock creeks. Snoqualmie tributaries include Middle Fork (Snohomish 1400), South Fork (Snohomish 1200), and Tokul Creek.

The North Fork's upper 6 miles cuts through a narrow, steep-sloped, densely forested valley. Below Lennox Creek (R.M. 20), for 7 miles, the valley is broad, flat, with mainly deciduous growth. The upper slopes are mostly forested, with some logged areas. Downstream the valley narrows; slopes are steep on the left bank, moderating on the right. From about a mile below Hancock Creek (R.M. 6.2) downstream 4 miles to near the U.S.G.S. gage (R.M. 2.2) the river cuts through a forested ravine. Below, the valley broadens, with bottomland and side slopes supporting conifer and deciduous growth. Some residences exist along this lower stretch, with little other development. Principal activities are logging and recreation. The mainstem Snoqualmie's valley is broad and flat with stands of deciduous trees and underbrush. Increasing cleared land, rural and suburban residences, and the town of Snoqualmie, are encountered, along with a hydroelectric facility diverting water from above 268-foot Snoqualmie Falls (R.M. 30.3) to a powerhouse below.

The upper 5 to 6 miles of North Fork Snoqualmie has steep mountain character with numerous cascades, rapids, and small falls, but relatively few pools or riffles. The bottom is mainly boulders and rubble, with some bedrock. For 7 miles below Lennox Creek, the river has gentle to moderate gradient. The channel is somewhat unstable, with considerable splitting. Widths range 6-12 yards in early fall. There are numerous pools, many long, slow glides, and few shallow riffles. The bottom is mainly gravel, some rubble, with considerable silt over slower areas. Cover is sparse, mainly scattered deciduous and low conifer growth.

Below, the river presents alternately moderate-moderately steep gradient for the next 8 miles. Except for two small falls near Big Creek, and a few cascades, this stretch provides relatively good pool-riffle conditions. The bottom is mainly rubble with some gravel riffles, numerous patch gravel areas, and few boulder sections.

Below Hancock Creek, through the ravine, the river falls over a series of cascades, with some drops exceeding 4 feet. The stream is narrowly confined, ranging 6-15 yards in width, presenting numerous rapids and fast riffles separated by some pools. The bottom is mostly boulders and rubble. From the U.S.G.S. gage to the Middle Fork, the gradient moderates, the stream exhibiting good quality pool-riffle conditions. The bottom is predominantly gravel and rubble, with a few boulder-strewn areas. The Snoqualmie River below presents similar features. Lower North Fork and Snoqualmie banks are mostly low earth cuts, or gravel-rubble beaches. Cover consists of moderate to dense stands of mixed conifer and deciduous growth. Some riprapping exists along the main Snoqualmie.

Most North Fork tributaries are steep, with many cascades and rapids. Bottoms are mostly large rock. Deep and Sunday creeks have lengthy reaches with moderate gradients, good pool-riffle sections, and mostly gravel-rubble bottoms. Except for extensively logged areas, most have dense forest cover. Tokul Creek presents moderate gradient, good pool-riffle balance and gravel-rubble bottom through much of its length. However, a falls about one mile up blocks migration.

Salmon Utilization

There is no natural salmon use above Snoqualmie Falls. Hatchery propagated chinook and coho have been planted in the upper drainages.

Limiting Factors

Factors influencing the stream habitat are cover removal, streambed siltation, and some buildup of logging debris. Natural limitations may be imposed by cascades in the lower 2-5 miles, and by two small falls near Big Creek (R.M. 11.8). A proposed North Fork storage dam would severely impact natural production habitat.

Beneficial Developments

Other than planting of juvenile salmon, there have been no facilities or programs to benefit salmon production in the North Fork. A small water supply dam on lower Tokul Creek has a fishway providing salmon upstream access.

Habitat Needs

Principal requirements to maintain the natural potential are to preserve existing stream and stream-side habitat in as near a natural state as possible.

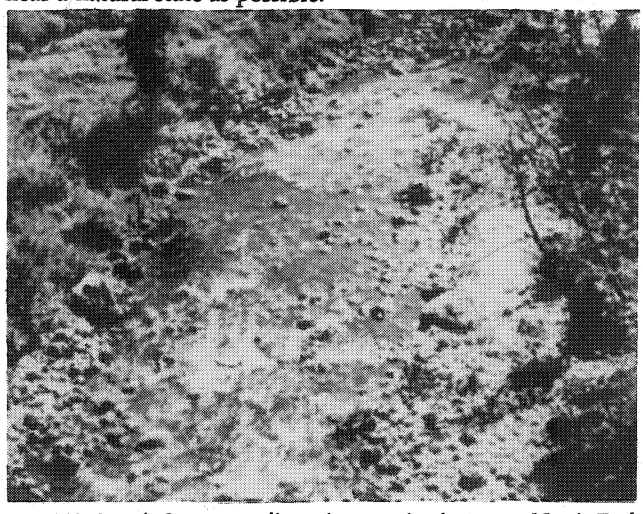
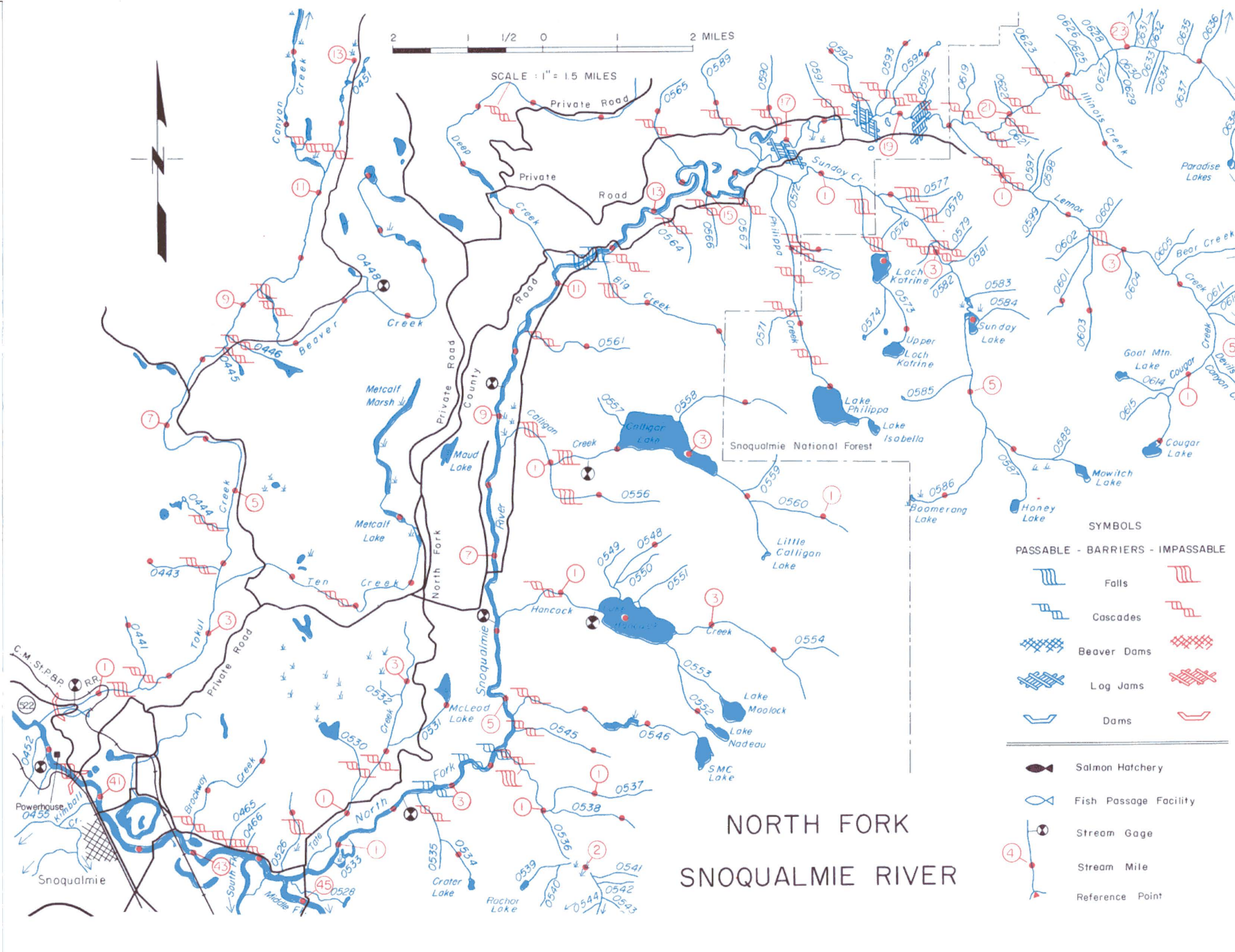


PHOTO 07-24. Stream gradients increase in the upper North Fork Snoqualmie.


2 1 1/2 0 1 2 MILES
SCALE : 1" = 1.5 MILES
NORTH FORK
SNOQUALMIE RIVER
Snoqualmie National Forest
Private Road
Canyon Creek
Deep Creek
Beaver Creek
Metcalf Marsh
Maud Lake
Metcalf Lake
Ten Creek
Takul
Big Creek
Calligan Creek
Calligan Lake
Little Calligan Lake
Hancock Creek
Lake Moolock
Lake Nadeau
SMC Lake
McLeod Lake
Brockway Creek
Kimball Cr.
Powerhouse
Snoqualmie
South Fk
Middle Fk
North Fork
Tate
Crater Lake
Rachor Lake
Sundoy Cr.
Philippa
Loch Katrine
Upper Loch Katrine
Lake Philippa
Lake Isabella
Sunday Lake
Lennox
Illinois Creek
Paradise Lakes
Bear Creek
Goat Mtn. Lake
Cougar
Cougar Lake
Mowitch Lake
Honey Lake
Boomerang Lake
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point

NORTH FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
0219	Snoqualmie River				
0440	Tokul Creek	RB-39.6	13.0	—	Chin.,Coho,(Pink)
0441	Unnamed	RB-1.45	1.1	—	None
0442	Ten Creek	LB-3.7	4.5	—	None
	Fury Lk.	Outlet-3.5	—	—	
	Metcalf Lk.	Outlet-3.9	—	—	
	Metcalf Marsh	Outlet-4.5	—	—	
0443	Unnamed	RB-3.85	1.0	—	None
0447	Beaver Cr.	LB-9.3	6.5	—	None
	Unnamed Lk.	Outlet-6.5	—	—	
0449	Canyon Cr.	RB-11.3	2.05	—	None
	Unnamed Lk.	Outlet-0.15	—	—	
	Unnamed Lk.	Outlet-1.6	—	—	
	Unnamed Lk.	Outlet-2.05	—	—	
0454	Kimball Cr.	LB-41.1	4.2	—	None
	(See Snohomish 1103)				
0464	Brockway Cr.	RB-42.7	2.2	—	None
0467	S. F. Snoqualmie R.	LB-43.85	30.8	—	None*
	(See Snohomish 1203)				
0526	Unnamed	RB-44.35	1.25	—	None
0527	N. F. Snoqualmie R.	RB-44.45	26.0	103.0	None*
0529	Tate Creek	RB-0.35	3.8	—	None
0531	Unnamed	LB-2.1	1.0		
0534	Unnamed	LB-2.5	1.3	—	None
	Crater Lk.	Outlet-1.3	—	—	
0536	Unnamed	LB-4.3	3.1	—	None
0537	Unnamed	RB-1.0	1.8	—	None
0538	Unnamed	LB-0.1	1.2	—	None
0545	Unnamed	LB-4.5	1.3	—	None
0546	Unnamed	LB-4.7	2.8	—	None
	Unnamed Lk.	Outlet-1.45	—	—	
	SMC Lk.	Outlet-2.8	—	—	
0547	Hancock Cr.	LB-6.2	4.9	—	None*
	Lake Hancock	Outlet-1.6	—	—	
0548	Unnamed	RB-1.9	1.3	—	None

* *Above natural anadromous fish use. Juvenile salmon planting program supplies rearing stock to accessible streams.*

NORTH FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0552	Unnamed	LB-2.55	1.2	—	None
	Lk. Nadeau	Outlet-1.2	—	—	
0555	Calligan Cr.	LB-8.6	4.8	9.22	None
0556	Unnamed	LB-1.0	1.8	—	None
	Calligan Lk.	Outlet-2.0	—	—	
0558	Unnamed	RB-2.7	1.6	—	None
0560	Unnamed	RB-4.1	1.4	—	None
	Little Calligan Lk.	Outlet-4.8	—	—	
0561	Unnamed	LB-10.3	1.6	—	None
0562	Deep Creek	RB-11.2	5.7	—	None
	Unnamed Lk.	Outlet-1.3	—	—	
0563	Big Creek	LB-11.8	2.2	—	None
0565	Unnamed	RB-14.4	1.5	—	None
0568	Sunday Cr.	LB-16.4	6.9	17.4	None*
0569	Philippa Cr.	LB-0.3	3.8	—	None*
	Lk Philippa	Outlet-3.0	—	—	
	Lk Isabella	Outlet-3.8	—	—	
0572	Unnamed	LB-0.5	1.2	—	None
0573	Unnamed	LB-1.5	2.2	—	None
	Loch Katrine	Outlet-0.9	—	—	
	Upper Loch Katrine	Outlet-2.2	—	—	
	Sunday Lk.	Outlet-3.7	—	—	
0586	Unnamed	LB-5.5	1.4	—	None
	Mowitch Lk.	Outlet-6.9	—	—	
0589	Unnamed	RB-16.45	1.8	—	None
0590	Unnamed	RB-16.5	1.7	—	None
0592	Unnamed	RB-18.7	1.1	—	None
0593	Unnamed	RB-18.75	1.1	—	None
0594	Unnamed	RB-18.9	1.2	—	None
0596	Lennox Cr.	LB-20.0	6.8	14.5	None*
0601	Unnamed	LB-2.45	1.3	—	None
0603	Unnamed	LB-2.5	1.5	—	None
0606	Bear Cr.	RB-3.8	2.1	—	None
	Bear Lk.	Outlet-2.1	—	—	

** Above natural anadromous fish use. Juvenile salmon planting program supplies rearing stock to accessible streams.*

NORTH FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0612	Cougar Cr.	LB-4.6	2.0	—	None
	Cougar Lk.	Outlet-2.0	—	—	
0616	Unnamed	RB-5.75	1.2	—	None
0624	Illinois Cr.	LB-21.8	1.5	—	None
0636	Unnamed	RB-24.0	1.0	—	None
	Lake Kanim	Outlet-26.0	—	—	

MIDDLE FORK SNOQUALMIE RIVER

The mainstem Snoqualmie River continues as the Middle Fork above the confluence with the North Fork (R.M. 44.5). This section encompasses the entire Middle Fork drainage, including 40 miles of mainstem, plus over 60 tributaries that add about 210 linear stream miles. The area is northeast of North Bend in central King County. Access is via Highway 10, and Forest Service roads. The river and tributaries above R.M. 60 are within Snoqualmie National Forest.

Stream Description

From the Chain Lakes region, the Middle Fork courses southwest 10 miles to Burntboot Creek (R.M. 76.6), then swings northwest and west 9 miles to the Taylor River (R.M. 65.0). From here it turns southwest again for 16 miles to the vicinity of North Bend, then northwest 4 miles to the North Fork. Principal tributaries include the Taylor and Pratt rivers, Burntboot, Dingford, Cripple, and Granite creeks.

Over its upper 10 miles the river cuts through a very narrow valley, with steep mountain side slopes rising to over 6,000 feet. Cover ranges from nearly barren snowfields above timberline down through sparse, low-growing alpine timber, to dense conifer forest near Burntboot Creek. Over the next 9 miles the valley floor broadens and narrows intermittently and side slopes remain steep. Below the Taylor River the valley is fairly broad and slopes gently back to steeper hillsides. Deciduous growth predominates on the bottomland, giving way to dense conifer forest on adjacent slopes. The valley floor becomes quite broad and flat near North Bend, with cover consisting of intermittent stands or thickets of deciduous trees and underbrush and increasing cleared land. North Bend is the single community within the drainage with additional development extremely limited. Principal activities in the basin include logging, some mining, and considerable recreation use.

From headwaters to Burntboot Creek the river exhibits typical mountain stream character, flowing swiftly within a confined channel over mostly steep gradient. It presents numerous cascades, rapids and fast riffle stretches, occasional falls and few pools. The bottom consists mainly of boulders and rubble, some bedrock, and few small riffles or patch gravel areas. Stream widths range from 3 to 7 yards.

Below Burntboot Creek the river assumes mostly a moderate gradient for 18 to 19 miles, to just below Granite Creek (R.M. 56.3). The channel remains confined with only a few channel split areas. It offers a good pool-riffle balance, with numerous broad, lengthy riffles and a number of large, deep pools. Fall widths range 6 to 30 yards, averaging 10 yards above the Taylor River, 14 yards below the Pratt River (R.M. 61.1). Banks are stable low earth or rock cuts, with an increasing number of broad gravel-rubble side beaches. Cover is mostly dense deciduous timber and underbrush, with some mixed conifer.

A moderately steep gradient prevails over the next 8 miles from Granite Creek to just east of North Bend. Here, the stream is contained within a broad, stable channel ranging from 15 to over 40 yards in width. It presents fast riffle character, with a few rapids and short cascades and a number of large deep pools separating fast water stretches. The bottom is predominantly rubble and boulder, with a number of patch gravel and short gravel riffle sections.

Over its lower 4 miles the Middle Fork offers a moderate to gentle gradient. The channel remains confined with few split areas. Widths range from 10 to over 25 yards. A good pool-riffle balance exists over most of this stretch, with a number of broad, lengthy riffles. The bottom is predominantly gravel and rubble. Banks are stable, low natural earth cuts, or relatively broad, gently sloping gravel-rubble side beaches. Stream-side vegetation consists of intermittent stands of deciduous trees and underbrush providing relatively good cover and shading.

Both the Pratt and Taylor rivers contain lengthy reaches with mostly moderate gradients, good pool-riffle conditions, and gravel-rubble stream bottoms. Most other tributaries have steep mountain character, swift flowing with numerous cascades and falls, and boulder-rubble bottoms. Forest cover is dense over most tributaries.

Salmon Utilization

There is no natural salmon utilization above Snoqualmie Falls or in the Middle Fork drainage. Juvenile chinook and coho salmon are occasionally planted to make use of natural rearing potential.

Limiting Factors

Steepening gradient conditions above Burntboot Creek would present a natural limitation. Future logging operations could alter the habitat, and a proposed storage dam could restrict future fish use.

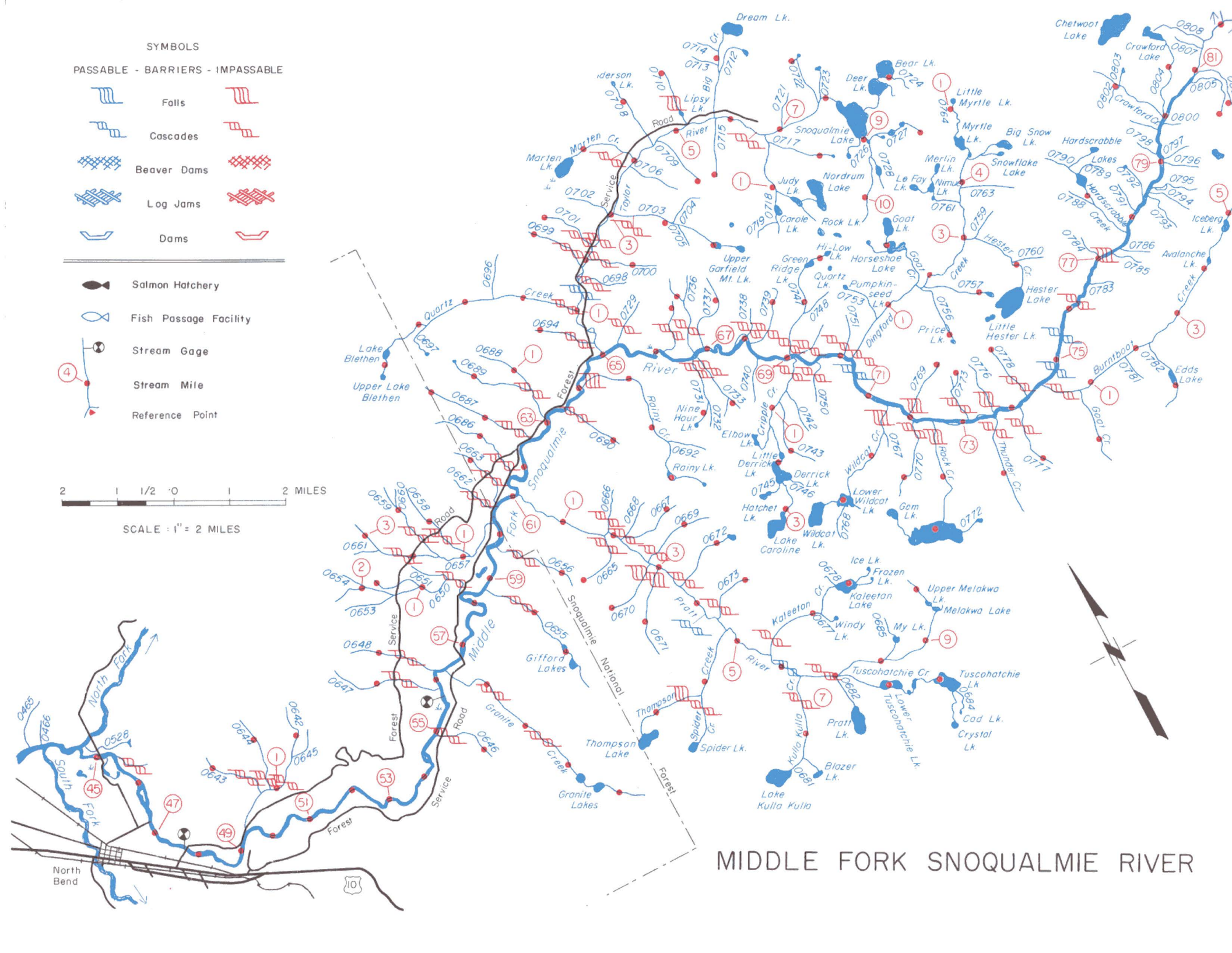
Beneficial Developments

Other than occasional salmon plants, there have been no projects or programs to benefit salmon production within this reach.

Habitat Needs

Requirements to maintain production potential include preserving stream-side cover, and maintaining existing stream and streambed conditions.

PHOTO 07-25. Typical section of upper Middle Fork.


SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
2 1 1/2 0 1 2 MILES
SCALE : 1" = 2 MILES
MIDDLE FORK SNOQUALMIE RIVER
North Bend
Dream Lk.
Bear Lk.
Deer Lk.
Little Myrtle Lk.
Myrtle Lk.
Big Snow Lk.
Snowflake Lake
Merlin Lk.
Nimue Lk.
Le Fay Lk.
Snoqualmie Lake
Nordrum Lake
Judy Lk.
Carole Lk.
Rock Lk.
Goat Lk.
Lipsy Lk.
Marten Lk.
Marten Cr.
Upper Garfield Mt. Lk.
Green Ridge Lk.
Hi-Low Lk.
Horseshoe Lake
Quartz Lk.
Pumpkin-seed Lk.
Dingford Cr.
Price Lk.
Hester Lake
Little Hester Lk.
Hester Cr.
Goat Cr.
Chetwoot Lake
Crawford Lake
Hardscrabble Lakes
Hardscrabble Creek
Iceberg Lk.
Avalanche Lk.
Avalanche Creek
Burntboot Creek
Edds Lake
Lake Blethen
Upper Lake Blethen
Quartz Creek
Rainy Cr.
Rainy Lk.
Nine Hour Lk.
Elbow Lk.
Crippple Cr.
Little Derrick Lk.
Derrick Lk.
Hatchet Lk.
Lake Caroline
Wildcat Cr.
Lower Wildcat Lk.
Wildcat Lk.
Gem Lk.
Rock Cr.
Thunder Cr.
Ice Lk.
Frozen Lk.
Kaleetan Lake
Upper Melakwa Lk.
Melakwa Lake
Windy Lk.
My Lk.
Kaleetan Cr.
Pratt Creek
Pratt Lk.
Spider Cr.
Spider Lk.
Thompson Lake
Thompson Cr.
Tuscohatchie Cr.
Tuscohatchie Lk
Lower Tuscohatchie Lk.
Cad Lk.
Crystal Lk.
Kulla Kulla Cr.
Lake Kulla Kulla
Blazer Lk.
Granite Creek
Granite Lakes
Gifford Lakes
Middle Fork
South Fork
North Fork
Snoqualmie River
Snoqualmie National Forest
Service Road
Taylor River Road

MIDDLE FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				Chin., Coho, Pink, Chum
0219	Snoqualmie River				Chin., Coho, Pink, Chum
	Snoqual. R. cont. as M.F. Snoqualmie R.	@ mi. 44.46	—	—	None*
0642	Unnamed	RB-49.4	2.4	—	None
0643	Unnamed	RB-0.7	1.3	—	None
0644	Unnamed	RB-0.9	1.4	—	None
0646	Unnamed	LB-54.9	1.1	—	None
0647	Unnamed	RB-55.8	1.9	—	None
0648	Unnamed	RB-56.1	1.6	—	None
0649	Granite Cr.	LB-56.3	4.3	—	None*
	Lower Granite Lk.	Outlet-3.2	—	—	
	Upper Granite Lk.	Outlet-3.6	—	—	
0650	Unnamed	RB-58.4	2.6	—	None
0652	Unnamed	LB-1.05	1.1	—	None
0655	Unnamed	LB-58.8	2.8	—	None*
0656	Unnamed	LB-59.8	1.3	—	None
0657	Unnamed	RB-60.2	3.3	—	None*
0658	Unnamed	LB-0.9	1.8	—	None
0659	Unnamed	LB-1.6	1.6	—	None
0663	Unnamed	RB-60.7	1.4	—	None
0664	Pratt River	LB-61.1	10.2	28.3	None*
0665	Unnamed	LB-1.8	1.0	—	None
0667	Unnamed	RB-2.1	1.1	—	None
0669	Unnamed	RB-2.8	1.5	—	None
0670	Unnamed	LB-2.81	1.0	—	None
0671	Unnamed	LB-3.0	1.6	—	None
0672	Unnamed	RB-3.6	1.3	—	None
0673	Unnamed	RB-4.5	1.0	—	None
0674	Thompson Cr.	LB-4.7	2.6	—	None
	Thompson Lk.	Outlet-2.6	—	—	
0676	Kaleetan Cr.	RB-5.65	2.4	—	None
	Kaleetan Lk.	Outlet-1.7	—	—	
	Frozen Lk.	Outlet-2.4	—	—	
0680	Kulla Kulla Cr.	LB-6.4	1.8	—	None

* *Above natural anadromous fish use. Juvenile salmon planting program supplies rearing stock to accessible streams.*

MIDDLE FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	L. Kulla Kulla	Outlet-1.8	—	—	
0683	Tuscohatchie Cr.	LB-7.05	2.8	—	None
	Lower Tusco-hatchie Lk.	Outlet-0.8	—	—	
	Tusco-hatchie Lk.	Outlet-1.9	—	—	
	Crystal Lk.	Outlet-2.8	—	—	
	Melakwa Lake	Outlet-9.4	—	—	
	Up. Melakwa Lk.	Outlet-9.6	—	—	
0686	Unnamed	RB-61.5	1.8	—	None
0687	Unnamed	RB-62.6	2.1	—	None
0688	Unnamed	RB-63.1	1.8	—	None
0689	Unnamed	RB-0.6	1.6	—	None
0690	Unnamed	LB-63.5	1.1	—	None
0691	Rainy Cr.	LB-64.0	3.8	—	None
	Rainy Lk.	Outleo-2.8	—	—	
	Unnamed Lk.	Outlet-3.8	—	—	
0693	Taylor River	RB-65.0	10.5	30.6	None*
0694	Unnamed	RB-0.3	1.1	—	None
0695	Quartz Cr.	RB-1.0	4.2	—	None
	Lk. Blethen	Outlet-3.75	—	—	
	U. Lk. Blethen	Outlet-4.2	—	—	
0699	Unnamed	RB-1.8	1.1	—	None
0700	Unnamed	LB-2.0	1.4	—	None
0701	Unnamed	RB-2.2	1.0	—	None
0703	Unnamed	LB-3.0	2.4	—	None
	Low. Garfield Mountain Lk.	Outlet-1.95 Outlet-1.95	— —	— —	
	Up. Garfield Mountain Lk.	Outlet-2.4	—	—	
0707	Marten Creek	RB-4.0	1.3	—	None
	Marten Lk.	Outlet-1.3	—	—	
0708	Unnamed	RB-4.4	1.3	—	None
0709	Unnamed	LB-4.5	1.0	—	None
0710	Unnamed	RB-5.2	1.0	—	None
0711	Big Creek	RB-5.7	1.5	—	None
	Dream Lake	Outlet-1.5	—	—	

* *Above natural anadromous fish use. Juvenile salmon planting program supplies rearing stock to accessible streams.*

MIDDLE FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0715	Unnamed	LB-5.75	1.0	—	None
0716	Unnamed	LB-6.6	1.75	—	None
0717	Unnamed	RB-0.15	1.2	—	None
	Judy Lk.	Outlet-1.3	—	—	
	Nordrum Lk.	Outlet-1.75	—	—	
0722	Unnamed	RB-7.75	1.0	—	None
	Snoqualmie Lk.	Outlet-8.2	—	—	
0724	Unnamed	RB-8.6	1.4	—	None
	Deer Lk.	Outlet-0.4	—	—	
	Bear Lk.	Outlet-0.75	—	—	
0727	Unnamed	RB-9.05	1.0	—	None
0730	Unnamed	RB-66.1	1.1	—	None
0731	Unnamed	LB-66.7	1.3	—	None
	Nine Hour Lk.	Outlet-1.3	—	—	
0733	Unnamed	LB-66.75	1.15	—	None
0735	Unnamed	RB-66.8	1.3	—	None
0737	Unnamed	RB-66.95	1.4	—	None
0739	Unnamed	RB-68.2	1.2	—	None
0741	Cripple Creek	LB-69.1	3.05	—	None
0743	Unnamed	RB-0.9	1.4	—	None
	Ltl. Derrick Lk.	Outlet-1.9	—	—	
	Derrick Lake	Outlet-2.05	—	—	
	Lake Caroline	Outlet-3.05	—	—	
0747	Unnamed	RB-69.11	2.05	—	None
	Green Ridge Lk.	Outlet-1.6	—	—	
	Hi-Low Lk.	Outlet-2.05	—	—	
0752	Dingford Cr.	RB-70.3	4.9	—	None
0754	Goat Creek	RB-1.65	1.15	—	None
	Horseshoe Lk.	Outlet-0.7	—	—	
	Goat Lk.	Outlet-1.15	—	—	
0756	Unnamed	LB-1.75	1.0	—	None
0757	Unnamed	LB-1.8	1.1	—	None
0758	Hester Creek	LB-2.95	1.5	—	None
	Hester Lk.	Outlet-1.5	—	—	
0764	Unnamed	RB-4.4	1.1	—	None
	Myrtle Lk.	Outlet-0.2	—	—	
	Ltl. Myrtle Lake	Outlet-1.1	—	—	

MIDDLE FORK SNOQUALMIE RIVER
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	Big Snow Lk.	Outlet-4.9	—	—	
0766	Wildcat Creek	LB-71.4	2.4	—	None
	Low. Wildcat Lk.	Outlet-1.9	—	—	
	Up. Wildcat Lk.	Outlet-2.4	—	—	
0769	Unnamed	RB-71.9	1.0	—	None
0770	Unnamed	LB-72.0	1.3	—	None
0771	Rock Creek	LB-72.4	2.9	—	None
	Snow Lk.	Outlet-1.8	—	—	
	Gem Lk.	Outlet-2.9	—	—	
0773	Unnamed	RB-73.0	1.0	—	None
0775	Thunder Cr.	LB-73.5	1.8	—	None
0777	Unnamed	LB-74.1	1.2	—	None
0778	Unnamed	RB-74.3	1.0	—	None
0779	Burntboot Cr.	LB-74.6	5.3	8.41	None
0780	Goat Creek	LB-0.7	1.4	—	None
0782	Unnamed	LB-2.2	1.45	—	None
	Avalanche Lk.	Outlet-4.0	—	—	
	Iceberg Lake	Outlet-4.6	—	—	
0787	Hardscrabble Cr.	RB-77.7	1.8	—	None
	Lower Hardscrabble Lk.	Outlet-1.1	—	—	
	Upper Hardscrabble Lk.	Outlet-1.8	—	—	
0801	Crawford Creek	RB-80.0	1.5	—	None
0804	Unnamed	RB-80.05	1.5	—	None
0805	Unnamed	LB-80.75	1.0	—	None
0806	Unnamed	LB-80.95	1.1	—	None
0810	Unnamed	RB-82.55	1.5	—	None
0811	Unnamed	LB-0.3	1.2	—	None
	Williams Lk.	Outlet-83.6	—	—	
	Chain Lakes	Outlet-84.55	—	—	

WOODS CREEK DRAINAGE

The Woods Creek drainage includes 17.5 miles of mainstem plus 11 tributaries providing an additional 53.1 linear miles of stream which flows south from the Lake Roesiger foothills area to its confluence with the Skykomish River at R.M. 25.0 at the town of Monroe. The main access up the Woods Creek system from the town of Monroe, where U.S. Route 2 crosses the creek, is on the Yeager Road which leads to the upper watershed. Lower Woods Creek, up to R.M. 6.0, is accessible from the Florence Acres Road out of Monroe. This entire watershed is located in Snohomish County.

Stream Description

The upper watershed of Woods Creek originates in the foothills immediately south of the Pilchuck River around the 1,800-foot elevation east of Lake Roesiger. It drops rapidly for the first 2 miles, reaching the 600-foot elevation. From here the descent is gradual, dropping at about 35 feet per mile. Woods Creek originates from springs, and also the outflow from Lake Roesiger, and flows through well defined channels over most of its length. It is a typical lowland type stream containing marshy areas, swamps and side pools in some sections. Otherwise it is composed of good pool-riffle-glide balance throughout the heavy, brushy areas as well as open grass and pasturelands. Bottom composition is almost entirely small gravel. At stream mile 7.4 the creek flows through a ravine where a rock ledge forms a 50-foot falls which is a complete barrier to fish passage. At least 5 miles of excellent spawning habitat lies above this falls. Several large log and debris jams are located 1 to 2 miles above the falls. The 22 years of stream gage recordings through 1968 (the last year of record) on Woods Creek near Monroe averaged 155 cfs, with summer low flows around 20 cfs in August and September and winter flows near 300 cfs.

The overflow from Lake Roesiger forms Roesiger Creek that drains southeast for 2.3 miles and converges with Woods Creek at stream mile 11.3. West Fork Woods Creek originates from springs and swampy areas of Carpenter Creek at the 500-foot elevation approximately 2 miles west of Lake Roesiger. A gentle gradient drops about 15 feet per mile below Carpenter Creek. Many beaver dams and pools are located throughout Carpenter Creek. Log and debris jams are common in this stream. A deep ravine occurs in the West Fork between stream mile 3.5 and 4.5 which contains dense underbrush of alder and other hardwood growth. Log jams and obstructions are also present in the West Fork. The bottom composition here is similar to Woods Creek, consisting mainly of small gravel. It also has good stream cover. Richardson Creek and Carpenter Creek are the principal tributaries of the West Fork, with the smaller unnamed tributaries providing minimal salmon habitat.

Land use in the watershed is mainly agriculture with larger farms located in the lower creek areas near Monroe. The upper watershed is cut-over and second growth conifers around the Lake Roesiger and Lake Chaplain area. Summer homes and permanent residences are concentrated around Lake Roesiger. Pasturelands border the stream banks on the upper and lower West Fork.

Salmon Utilization

Chinook, coho, pink, and chum salmon utilize Woods Creek below the falls and up the lower 2 miles of the West Fork system. Coho, pink, and possibly chum ascend into Richardson Creek to the cascades about 0.5 miles. Only coho salmon are able to ascend into Carpenter Creek after winter flows have swelled the stream. Barren area plants of coho, fry, and fingerling are made annually into the headwaters above the falls. The entire Woods Creek drainage is an excellent coho stream.

Limiting Factors

Low summer flows reduce the available rearing area in the upper watershed. Beaver dams and log jams on the West Fork become barriers to coho upstream migrations during certain low-flow water stages; however, they also create rearing habitat. The falls on Woods Creek at R.M. 7.3 is a total barrier to salmon migration; however, it is not economically feasible to build a fishway here. Cascades and falls also form barriers on the steeper tributary streams.

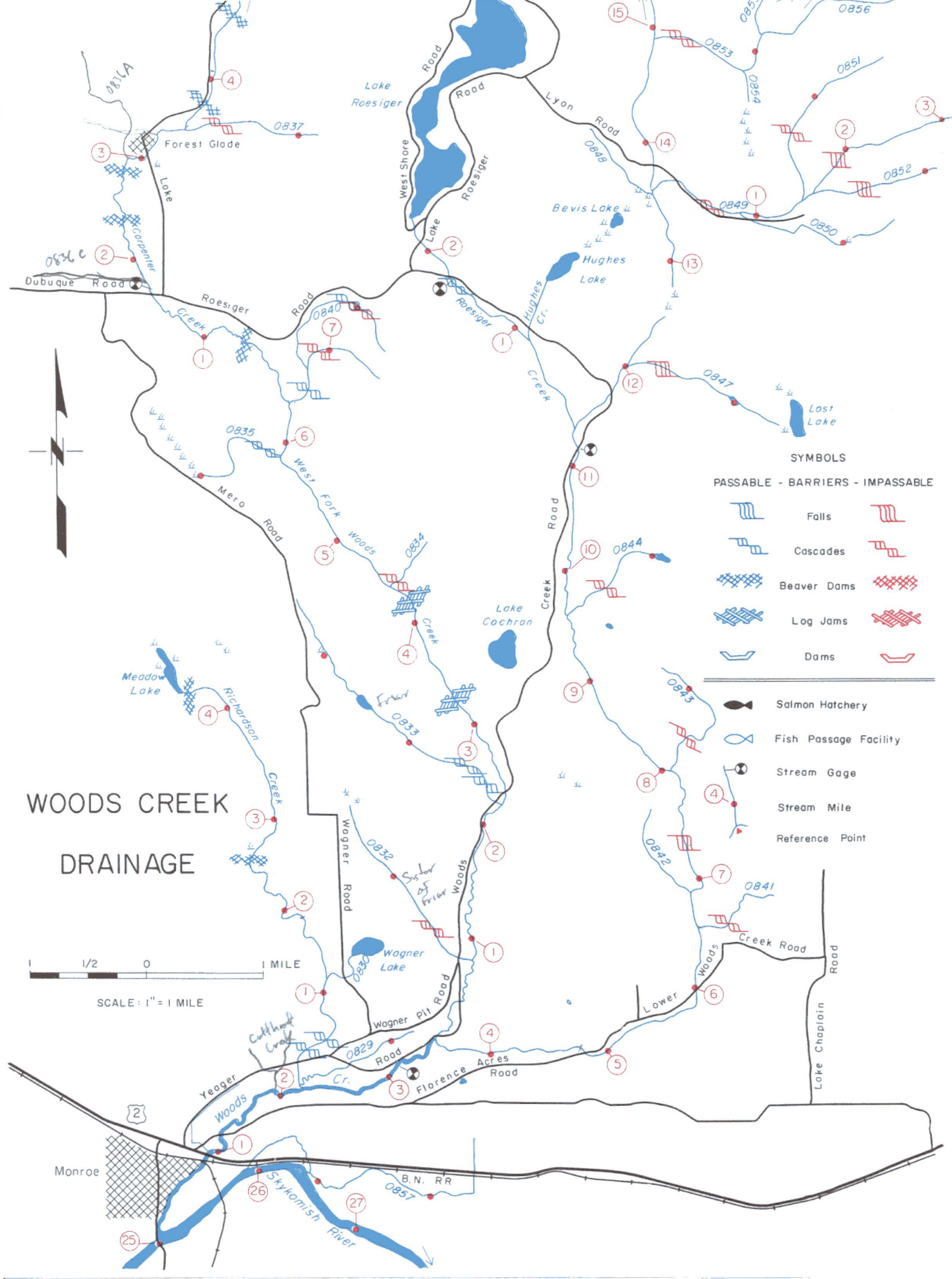
Beneficial Developments

No programs or facilities have been undertaken within this watershed to specifically benefit salmon production. The Washington State Department of Game maintains a fish screen at the outlet of Lake Roesiger to prevent trout from escaping the lake or planted coho in Roesiger Creek getting into the lake.

Habitat Needs

Major requirements for maintaining the salmon production capabilities within this drainage basin includes preserving the existing stream flows, stream bank cover, and natural salmon habitat. Since the watershed lies within an area of increasing population growth and expansion, it is imperative that a sound "watershed management plan" be established under the Shoreline Management Act by the town of Monroe and Snohomish County. Future logging in the upper watershed should adhere to strict forest practices for preservation of fish habitat.

PHOTO 07-26. Impassable falls on East Fork Woods Creek.


WOODS CREEK
DRAINAGE
SCALE : 1" = 1 MILE
1/2
0
1 MILE
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
Lake Roesiger
West Shore Road
Roesiger Lake Road
Lyon Road
Forest Glade
Lake Carpenter
Dubuque Road
Roesiger Creek
Roesiger Road
Bevis Lake
Hughes Lake
Hughes Cr.
Lost Lake
Mero Road
West Fork Woods Creek
Lake Cochran
Creek Road
Meadow Lake
Richardson Creek
Wagner Road
System of Friar Woods
Wagner Lake
Wagner Pit Road
Cutthroat Creek
Yeager Woods Cr.
Florence Acres Road
Lower Woods Creek Road
Lake Chaplain Road
Monroe
B.N. RR
Skykomish River
0831A
0836
0837
0840
0835
0834
0833
0832
0830
0829
0857
0847
0844
0843
0842
0841
0853
0854
0851
0852
0849
0850
0848

WOODS CREEK DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish R.	@ mi. 20.51	—	—	
0826	Woods Creek	RB-25.05	17.5	—	Chin., Coho, Pink, (Chum)
0828	Richardson Creek	RB-2.2	4.4	—	Coho, (Pink), (Chum)
0829	Unnamed	LB-0.01	1.2	—	Unknown
	Meadow Lk.	Outlet-4.4	—	—	
0831	W. Fk. Woods Cr.	RB-3.5	7.5	26.7	(Chin), Coho, (Pink), (Chum)
0832	Unnamed	RB-0.8	1.7	—	(Coho)
0833	Unnamed	RB-2.2	2.5	—	(Coho)
0835	Unnamed	RB-5.85	1.0	—	Unknown
0836	Carpenter Cr.	RB-6.3	7.4	—	Coho
0837	Unnamed	LB-3.5	1.1	—	Coho
0838	Unnamed	RB-5.5	1.1	—	Unknown
0840	Unnamed	RB-6.7	1.4	—	Unknown
0843	Unnamed	LB-7.95	1.25	—	None*
0844	Unnamed	LB-9.6	1.0	—	None*
0845	Roesiger Cr.	RB-11.3	2.3	—	None*
	Lake Roesiger	Outlet-2.3	—	—	
0847	Unnamed	LB-12.0	1.4	—	None
0849	Unnamed	LB-13.6	3.1	—	None
0850	Unnamed	LB-0.85	1.4	—	None
0851	Unnamed	RB-1.4	1.6	—	None
0852	Unnamed	LB-1.5	1.1	—	None
0853	Unnamed	LB-14.9	2.7	—	None*
0855	Unnamed	RB-1.15	1.5	—	None

** Above natural anadromous fish use. Juvenile salmon planting program supplies rearing stock to accessible streams.*

SKYKOMISH RIVER
Sultan Area

This section covers eight miles of Skykomish River from R.M. 31.0 upstream to R.M. 39.0 near Startup in Snohomish County. Eight tributaries, excluding the Sultan and Wallace rivers, and more than 35 linear stream miles. Access is via Stevens Pass Highway 2, through Sultan.

Stream Description

From R.M. 39.0 the Skykomish drains generally west eight miles to below Sultan. Major tributaries include the Sultan River (Snohomish 1700), Wallace River (Snohomish 1800), and Wagleys, Elwell, and McCoy creeks, plus Sky Slough and numerous lengthy side channels and shorter channel splits.

The Skykomish courses over a broad valley, up to 3 miles in width, but averaging less than 1 mile in most sections. The valley floor is relatively flat with the river bounded by cleared and partially cleared land. Side valley terrain rises gradually from the bottomland, and is densely forested with mixed conifer and deciduous timber. Land use is mainly agriculture, with some clear-cut logging at higher elevations. Development consists of rural residences plus the communities of Sultan and Startup.

This Skykomish River section contains extensive channel splits winding through large islands of gravel. Usable river length is essentially doubled with these channels. Excellent pool-riffle and glide areas prevail with moderate gradient throughout. The bottom is comprised mostly of ideal spawning gravel with some larger rock and rubble. The pools and long glide areas are sufficiently deep and large enough for use as resting areas and holding waters for maturation of adult salmon. Individual channel widths vary from 20 to over 400 feet. Most banks are naturally stable, relatively low earth cuts or broad, gently sloping gravel-rubble beaches. Stream-side cover consists of strips or stands of mostly deciduous trees and underbrush.

Elwell Creek (R.M. 31.8) flows generally north from mountain foothills about six miles south of Sultan, dropping through steep ravines to its confluence with the Skykomish. Its lower two miles provide the best fish production area with a moderate gradient, good gravel composition and ideal pool-riffle areas. Excellent shade and protection are provided from deciduous growth and cut banks. Lower McCoy Creek contains similar physical features, but does not contain the watershed found in Elwell Creek. Sky Slough has been formed over the years from flood waters breaking through stream banks between R.M. 36.5 and 37.0, and cutting through the bottomland for almost two miles. It contains moderate-gentle gradient, mixed gravel with some rubble, and excellent shade and protection.

Salmon Utilization

This section of the Skykomish provides transportation for adult and juvenile salmon using the extensive upriver production areas. Chinook, pink, chum, and some coho salmon also spawn in this reach, and in its accessible tributaries. Juvenile salmon rear throughout these accessible waters. Superb salmon production, particularly for summer-fall chinook, pink, and chum salmon occurs within the main river channels. Elwell Creek produces chinook, coho, chum, and some pink salmon. McCoy Creek contains coho, pink, and a few chum. Wagleys Creek contains coho and a few chum, mainly in its lowermost reaches.

Limiting Factors

Principal factors limiting salmon production within this section are flooding and channel scouring, gravel removal, and low summer flows, especially in smaller tributaries. Some side channels occasionally suffer changing flow patterns from gravel shifting at their point of divergence.

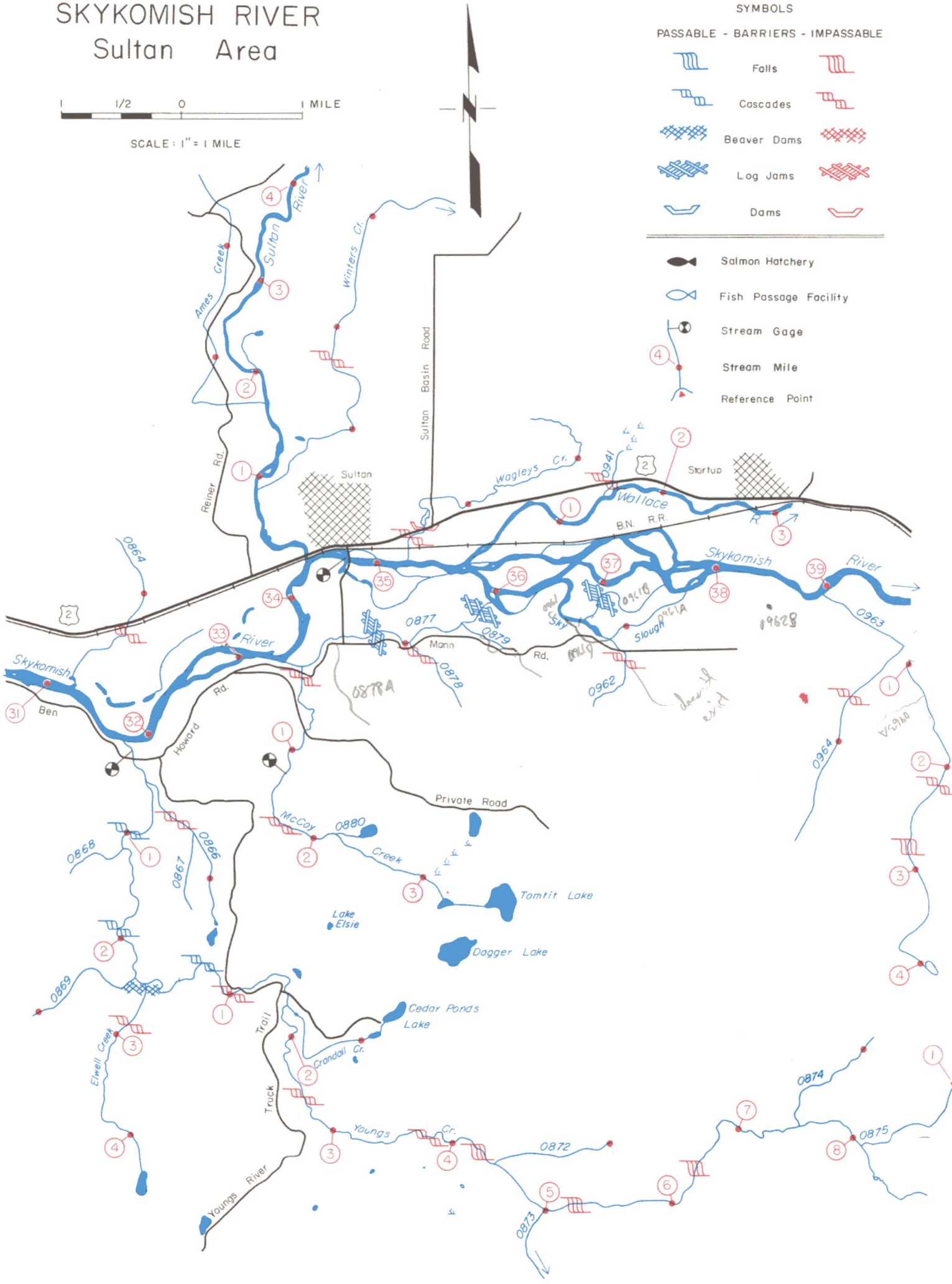
Beneficial Developments

To keep the river within its natural floodway channel, levees were constructed in 1968 between the main Skykomish and Wallace rivers, and below the Sultan. A large rearing pond created on Wagleys Creek is used for rearing of coho salmon. Also, a state salmon hatchery on the Wallace River provides significant plants to local streams.

Habitat Needs

Principal requirements for maintaining this exceptional fish production habitat include preserving existing stream and streambed conditions in as near a natural state as possible.

PHOTO 07-27. Elwell Creek contains spawning gravels.


SKYKOMISH RIVER
Sultan Area
1 1/2 0 1 MILE
SCALE: 1" = 1 MILE
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
Sultan River
Ames Creek
Winters Cr.
Sultan Basin Road
Reiner Rd.
Sultan
Wagleys Cr.
0941
Startup
Wallace R.
B.N. R.R.
Skykomish River
0864
0877
0879
Mann Rd.
0878
0878A
0962
0963
0964
Howard Rd.
Ben
Private Road
McCoy Creek
0880
0868
0867
0866
Tomtit Lake
Lake Elsie
Dagger Lake
0869
Ewell Creek
Truck Trail
Cedar Ponds Lake
Crandall Cr.
Youngs Cr.
Youngs River
0872
0873
0874
0875

SKYKOMISH RIVER — SULTAN AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
0864	Unnamed	RB-31.2	1.5	—	Unknown
0865	Elwell Cr.	LB-31.8	4.3	—	Chin., Coho, Pink, (Chum)
0866	Unnamed	RB-0.4	1.4	—	(Coho)
	Unnamed Lk.	Outlet-1.4	—	—	
0869	Unnamed	LB-2.4	1.05	—	Unknown
0870	Youngs Cr.	RB-2.5	8.9	—	Coho
0871	Crandall Cr.	RB-1.7	1.25	—	None
	Unnamed Lk.	Outlet-1.05	—	—	
	Cedar Ponds Lk.	Outlet-1.25	—	—	
0872	Unnamed	RB-4.4	1.0	—	None
0874	Unnamed	RB-7.5	1.1	—	None
0875	Unnamed	RB-8.1	1.1	—	None
	Unnamed Lk.	Outlet-4.3	—	—	
0876	McCoy Creek	LB-33.4	3.6	—	Coho,Pink,(Chum)
0877	Unnamed Side Chan.	RB-0.15	1.9	—	Coho,Pink,(Chum)
	Unnamed Lake	Outlet-3.25	—	—	
	Tomtit Lk.	Outlet-3.6	—	—	
0881	Sultan River	RB-34.4	30.4	—	Chin., Coho, Pink, Chum
	(See Snohomish 1703)				
0939	Wagleys Creek	RB-35.2	2.6	—	Coho, (Chum)
	Unnamed Pond	Outlet-0.36	—	—	
0940	Wallace River	RB-35.7	15.1	58.4	Chin., Coho, Pink, Chum
	(See Snohomish 1803)				
0961	Sky Slough	LB-36.5	1.6	—	Chin., Coho, Pink, Chum
0963	Unnamed	LB-38.9	4.0	—	Coho,Pink,(Chum)
	(See Snohomish 1903)				
	(Cont. Snohomish 1903)				

SULTAN RIVER DRAINAGE

This section covers the 30 miles of the Sultan River plus 32 tributaries adding 91 linear stream miles. Location is 8 miles east of Monroe in central Snohomish County, with access via Highway 2. Much of the upper river is in Snoqualmie National Forest, with considerable state and private land below.

Stream Description

From the Vesper Peak vicinity the Sultan courses west more than 19 miles, then south-southwest 11 miles to the Skykomish River at Sultan. Principal tributaries are the South Fork Sultan, Elk, Williamson, Marsh, Chaplain and Winters creeks.

Over its upper 11 miles to Spada Lake (R.M. 19.5) the river cuts through a narrow steep-sloped, densely forested valley. The next 3 miles are through Spada Lake, a City of Everett reservoir impounded by the high, earth-fill Culmback Dam (R.M. 16.5). Below Culmback, the river cuts nearly 14 miles through a deep ravine. The steep side slopes above are densely forested with conifer and mixed deciduous growth. At R.M. 9.7 the Everett diversion dam directs water to Lake Chaplain, a second reservoir in the water supply system. Near mile 3 the Sultan emerges from the canyon onto a broad, relatively flat valley floor containing intermittent stands or strips of deciduous trees, underbrush and some mixed conifers. The drainage is managed primarily for water supply and timber harvest, with some mineral mining in the upper basin. The lower 3 miles contain numerous small farms, scattered residences, and the town of Sultan. Although access is limited, there is much recreational activity in the basin.

From Sultan River headwaters to Elk Creek (R.M. 22.8) the river has mostly steep gradient, its narrow channel containing small falls, many cascades and rapids, and a few short pool-riffle stretches. The bottom is rubble and boulder with some patch gravel. Fall stream widths range 3-7 yards. From Elk Creek to Spada Lake the gradient is moderate with only a few steeper areas and channel widths of 4-12 yards. It possesses a fairly good pool-riffle balance, with the bottom mainly rubble and gravel and a few boulders. Banks are natural earth or rock cuts, with mostly dense conifer forest. Much of Spada Lake shoreline cover has been removed, and periodic lake drawdowns reveal extensive barren shoreline.

Below Culmback Dam, for 13-14 miles, the Sultan has mostly steep gradients, confined channel, and numerous cascades and rapids separated by short pool-riffle stretches. The bottom is mainly large rock and boulders, some bedrock, and only a few patch gravel areas. Widths in the canyon range 5-15 yards. Much of the bank is sheer rock face or large rock cuts.

Over its lower 3 miles the river is of moderate gradient with a number of channel split sections. Fall widths range from 8 to over 20 yards. A good pool-riffle balance prevails, with numerous long, broad riffles. The bottom is mostly rubble and gravel, with a few boulder-strewn areas. Banks are low earth cuts or broad gravel-rubble beaches. Cover consists of stands of deciduous trees and underbrush separated by intermittent cleared areas.

Most tributaries exhibit typical mountain stream character over most of their lengths: steep gradients; narrow channels; numerous cascades and falls; and bottoms mainly of boulder and rubble. Only Winters and Ames creeks enter the lower river and have moderate gradient over their lower reaches, good pool-riffle conditions, and gravel bottoms. Most tributaries have dense cover.

Salmon Utilization

The Sultan River provides transportation, spawning and rearing for chinook, coho, pink, and chum. Adult fish may ascend to the diversion dam; however, most utilize the main river below R.M. 3. The lower tributaries support mainly coho.

Limiting Factors

The diversion dam at mile 9.7 is a barrier to upstream migration. Flow fluctuation and/or prolonged low flows have presented severe limitations. Extensive clear-cut logging in some sections, mainly below the diversion, has at times created excessive siltation over the lower river. Also, some gravel removal has impacted lower river production habitat.

Beneficial Developments

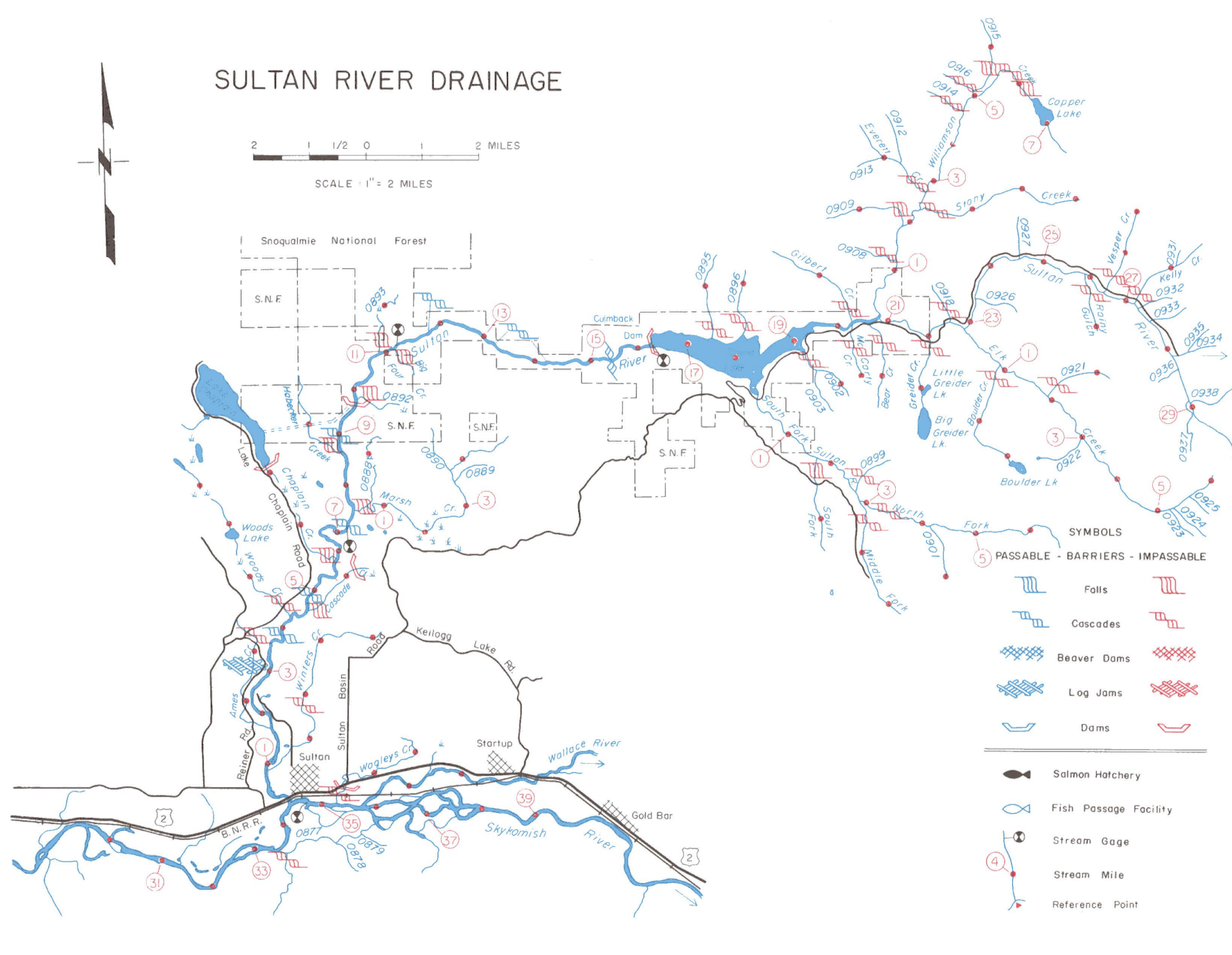
At present a water control schedule with the City of Everett, under agreement authorized by the Federal Power Commission, provides at least minimum fish use water during critical periods. Some planting of hatchery juveniles takes place in the drainage.

Habitat Needs

A major requirement will be to continue close coordination of flow control for the lower river. Stream-side cover should be preserved, and stream and streambed conditions maintained in as near natural state as possible. Gravel removal operations should be carefully monitored to not disrupt spawning habitat.

PHOTO 07-28. Diversion dam on the Sultan River.

SULTAN RIVER DRAINAGE



SULTAN RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
0881	Sultan River	RB-34.4	30.4	—	Chin., Coho, Pink, Chum
0882	Winters Creek	LB-0.9	4.2	—	Coho, (Pink), (Chum)
0883	Ames Creek	RB-1.7	2.75	—	Coho, (Pink), (Chum)
0884	Woods Creek	RB-4.3	3.5	—	(Coho)
	Woods Lake	Outlet-1.7	—	—	
	Unnamed Lake	Outlet-3.5	—	—	
0885	Cascade Creek	LB-4.7	1.4	—	None
0886	Chaplain Creek	RB-5.9	2.2	—	None
0887	Marsh Creek	LB-7.6	4.9	6.38	None
0888	Unnamed	RB-0.25	1.4	—	None
0891	Habecker Creek	RB-8.7	1.9	—	None
0893	Unnamed	RB-10.85	1.4	—	None
	Spada Reservoir	Outlet-16.5	—	—	
0895	Unnamed	RB-17.4	1.5	—	None
0896	Unnamed	RB-18.1	1.2	—	None
0897	S. Fk. Sultan R.	LB-18.2	6.8	—	None
0898	S. Fork	LB-1.7	1.6	—	None
0900	Middle Fork	LB-2.9	2.3	—	None
	S. F. Sultan R. cont. as North Fk.	@ mi. 2.91	—	—	
0901	Unnamed	LB-4.2	1.0	—	None
0902	Unnamed	LB-18.9	1.2	—	None
0904	McCarty Creek	LB-20.4	1.0	—	None
0905	Gilbert Creek	RB-20.45	1.9	—	None
0906	Bear Creek	LB-20.75	1.6	—	None
0907	Williamson Creek	RB-20.9	7.6	15.8	None
0909	Unnamed	RB-1.9	1.6	—	None
0910	Stony Creek	LB-2.4	3.0	—	None
0911	Everett Creek	RB-2.7	1.7	—	None
0915	Unnamed	RB-5.0	1.5	—	None
	Copper Lake	Outlet-6.4	—	—	
0917	Greider Creek	LB-22.0	1.3	—	None
	Ltl. Greider Lk.	Outlet-1.0	—	—	

SULTAN RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	Big Greider Lk.	Outlet-1.3	—	—	
0919	Elk Creek	LB-22.8	6.1	12.2	None
0920	Boulder Creek	LB-0.9	2.1	—	None
0921	Unnamed	RB-1.9	1.2	—	None
0928	Rainy Gulch Creek	LB-26.0	1.1	—	None
0929	Vesper Creek	RB-26.5	2.1	—	None
0930	Kelly Creek	RB-27.1	1.7	—	None
0934	Unnamed	RB-28.11	1.1	—	None
0938	Unnamed	RB-28.95	1.1	—	None

WALLACE RIVER DRAINAGE

The Wallace River watershed is comprised of 15.1 miles of mainstem plus 12 tributaries providing an additional 47.8 linear stream miles. It originates in the Ragged Ridge mountain range within the Snoqualmie National Forest at the 3,200-foot elevation and flows generally westerly to its confluence with the Skykomish River at R.M. 35.7 between the towns of Sultan and Startup. Access to the lower Wallace River is via the U.S. Highway 2 which crosses near the town of Startup at R.M. 3.6. County roads provide access to several upper watershed areas.

Stream Description

The mainstem Wallace River originates between Mt. Stickeny and the Ragged Ridge range of mountains. Wallace Falls consist of three large water falls from the 1,800-foot to the 1,200-foot elevations above R.M. 9.0. The North Fork Wallace originates from Shaw Lake which drains southerly into Jay Lake and then into Wallace Lake and finally converges with the Wallace River at R.M. 8.4. Below this point the mainstem Wallace descends rapidly to Camp Houston at R.M. 7.0. From here the valley flattens and descends with a gradient of about 17 feet per mile to the confluence with the Skykomish River.

May Creek is formed from the outlet of Lake Isabel. Two large falls are located below the lake and a cascade occurs at R.M. 4.9. Below this point the creek winds across a wide flat valley entering the Wallace River at R.M. 4.0. Olney Creek originates from the outlet of Lake Stickney at the base of Mt. Stickney and flows northwest nea the Sultan Basin where it turns and meanders west and south for 13.2 miles to its confluence with themainstem Wallace River at R.M. 4.5. Olney Falls forms a total block at R.M. 0.6. The towns of Gold Bar and Startup obtain their domestic water suppy from a diversion above the falls. Bear Creek is formed from ground drainage and swamps between Winters Lake and Kellogg Lake and drains southeast to its confluence with the mainstem Wallace at R.M. 3.8. A 12-foot impassable falls over rock outcropping is formed at R.M. 1.5. Much of Bear Creek is extremely brushy and flows through many swamp areas.

Portions of the upper Wallace watershed lie in the Snoqualmie National Forest while much of the watershed is comprised of private timber holdings. Most of the watershed has been logged and contains second growth timber. The high mountain terrain is generally rugged rock formations with tributary streams flowing over bedrock, rubble, and boulders. The lower valley varies in width from 1 to 1.5 miles. The Wallace River below R.M. 7.0 contains excellent gravel substrate with good pool-riffle-glide balance. Deciduous trees and brush border the stream banks. Some flood control diking occurs from R.M. 6.0 to 6.5.

Land use is largely agricultural with small berry farms and some pasturelands interspersed with mixed conifer and deciduous trees. It is sparsely settled with rural homes, and a few summer homes along the mainstem Wallace and May Creek stream banks. A stream flow gage at Gold Bar with 32 years of record show an average discharge from the Wallace River of 163 cfs.

Salmon Utilization

Chinook, coho, pink, and chum migrate, spawn, and rear in all accessible portions of the mainstem Wallace River. Coho and chum enter tributary streams after the fall rains have provided sufficient flows. The Skykomish Salmon Hatchery, on May Creek, successfully produces coho and chinook. Chinook and pink spawners enter the Wallace River about mid-September with peak spawning occurring in October. Coho and chum enter the main river in November with major spawning of coho in early December, while chum spawning peaks the last week of December.

Limiting Factors

Major limiting factors curtailing fish production in this watershed include low summer flows, barriers, and stream flow withdrawals. Low summer flows seriously reduce the stream carrying capacity for rearing fingerling coho. Water withdrawals from the watershed reduces the available fish production in Olney Creek, May Creek, and the Wallace River. Falls and steep cascades form barriers to fish passage, eliminating area suitable for salmon production.

Beneficial Developments

Construction of an artificial spawning channel, 1,000 feet long by 18 feet wide, was completed in 1974 to accommodate 1,000 natural spawning female pink or chum salmon or 2,500,000 eggs. In 1971, four additional 20-foot by 80-foot, 6-foot deep rearing ponds with automatic feeders were built at the Skykomish Hatchery. A new double rack facility was also constructed in May Creek and an additional 10 cfs of Wallace River water was diverted into hatchery use to supplement the 9 cfs originally utilized from May Creek.

Habitat Needs

A major requirement for maintaining salmon production in this watershed is maintaining fish passage at all river stages. There is need to develop means to make barren area fry plants in the tributaries upstream of the falls and barriers to provide additional rearing area. The towns of Sultan, Startup, and Gold Bar need to develop a watershed management plan to preserve the existing streams and natural salmon habitat.

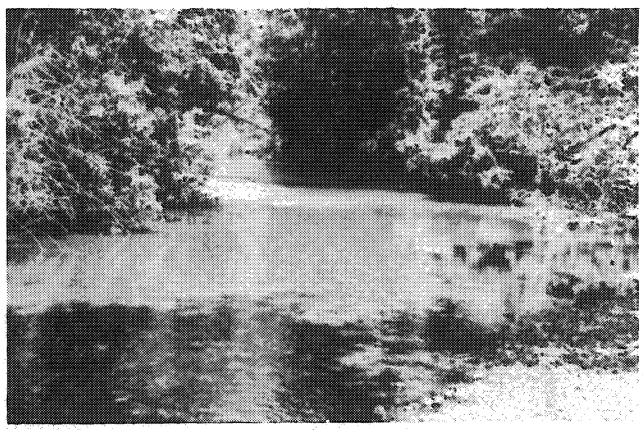
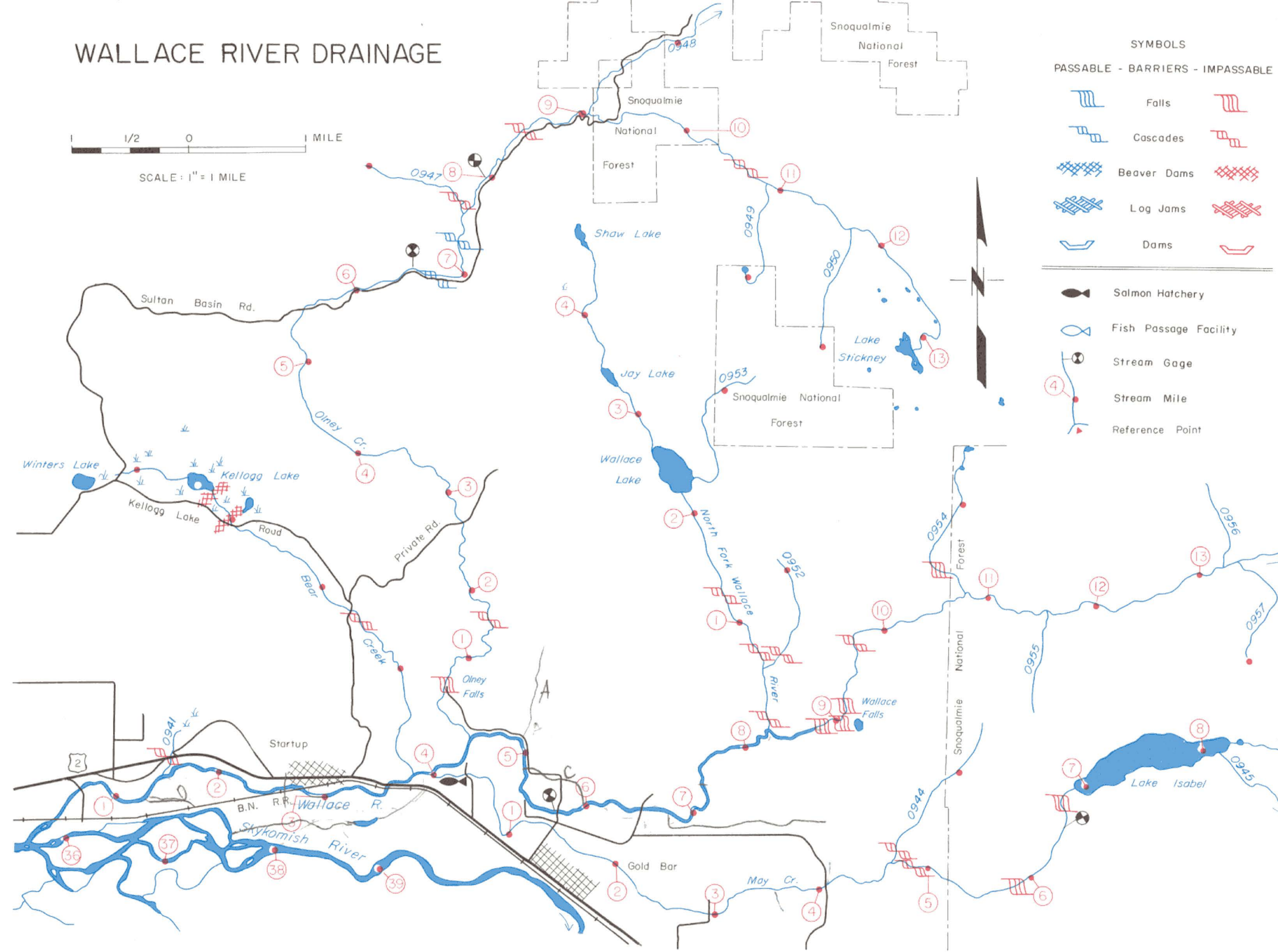


PHOTO 07-29. The Wallace River contains excellent salmon habitat.

WALLACE RIVER DRAINAGE



WALLACE RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
0940	Wallace River	RB-35.7	15.1	58.4	Chin., Coho, Pink, Chum
0942	Bear Creek	RB-3.85	4.2	—	Coho, (Pink) (Chum)
	Kellogg Lake	Outlet-3.3	—	—	
0943	May Creek	LB-4.0	9.1	—	Chin., Coho, Pink, Chum
0944	Unnamed	RB-4.7	1.5	—	Unknown
	Lake Isabel	Outlet-6.9	—	3.26	
0945	Unnamed	LB-8.1	1.0	—	None
	Unnamed Lake	Outlet-9.1	—	—	
0946	Olney Creek	RB-4.5	13.2	20.2	Chin., Coho, Pink, Chum
0947	Unnamed	RB-7.6	1.0	—	None
0948	Unnamed	RB-9.1	1.6	—	None
0949	Unnamed	LB-10.9	1.0	—	None
0950	Unnamed	LB-11.7	1.0	—	None
	Lake Stickney	Outlet-13.2	—	—	
0951	N. Fk. Wallace R.	RB-8.4	4.6	—	Unknown
0952	Unnamed	LB-0.5	1.1	—	None
	Wallace Lake	Outlet-2.2	—	—	
0953	Unnamed	LB-2.3	1.3	—	None
	Jay Lake	Outlet-3.3	—	—	
	Shaw Lake	Outlet-4.6	—	—	
0954	Unnamed	RB-10.8	1.5	—	None
0957	Unnamed	LB-13.3	1.0	—	None
0959	Unnamed	LB-14.1	1.3	—	None

SKYKOMISH RIVER
Startup to Forks

This drainage section covers approximately 11 miles of the mainstem Skykomish River from R.M. 38.0 near the town of Startup upstream to R.M. 49.6 at the confluence of the North and South forks. Eight tributary streams flow into this section, adding more than 37.0 linear stream miles. Most of the headwaters of the tributaries within this section lie within the Snoqualmie National Forest above R.M. 43.0. The Stevens Pass Highway 2 parallels and crosses the river throughout this stretch. Burlington Northern Railroad also parallels the river on the north side.

Stream Description

Below the confluence of the North Fork and South Fork Skykomish Rivers at R.M. 49.6 the mainstem enlarges and slows down as it enters the more gradual gradient of the lower valley. Below the confluence the valley is fairly restricted to about 0.25 mile in width, but gradually fans out to approximately 3 miles in the vicinities of the towns of Gold Bar and Startup. Within this section the river contains occasional huge boulders and large rubble that have washed downstream due to heavy flooding conditions. Above R.M. 43.0 near Proctor's Eddy the river assumes the typical mountain-type stream conditions with many large boulders, heavy rubble along the shoreline, and good patch gravel riffle areas with large pool and glide sections. Below Proctor's Eddy the river broadens from 200 to 400 feet in width and is contained within a fairly well-defined channel with extensive gravel bars on both banks. This lower portion of river contains excellent pool-riffle sections with good quality gravel and excellent holding waters.

Land use within this section is divided approximately equal, with agricultural activities in the lower half and the logging activities in the upper half. Rock quarries and gravel mining are also prevalent in the upper portion. The Burlington Northern Railroad maintains rock quarries within this section as well as a railroad siding. The entire area supports heavy recreational use, with scattered rural roads and many jeep trails.

The main Skykomish River descends from the 700-foot elevation near the forks to approximately 150-foot elevation at Startup. A stream gage is located near Proctor's Eddy at R.M. 43.0. The 32-year average reveals an annual range, with summer low flows near 1200 cfs to winter flows of 10,000 cfs. Dense stands of mixed conifer and deciduous thickets cover the stream banks along the main river as well as its tributaries. Major tributaries include Duffy Creek, Proctor Creek, and Anderson Creek on the south banks. On the north bank the principal streams are Hogarty Creek, Austin Creek, and Deer Creek. Due to the steep hillside terrains only the lower sections of these streams below the cascade areas are accessible to fish.

Salmon Utilization

This section of the Skykomish River provides transportation for adult and juvenile salmon that utilize this river section plus those that use the mainstem and tributaries upstream. Spawning area in this mainstem reach is utilized by chinook, pink, chum and coho salmon. These species also inhabit Proctor Creek for about the lower mile and one-half. Coho, pink and chum utilize the lower 2.5 miles of the unnamed tributary south of Startup at R.M. 39.0. Anderson Creek is also known to contain both coho and pink salmon in the lower half mile. Juvenile salmon rearing also takes place in the main river and throughout the accessible length of the tributary streams.

Limiting Factors

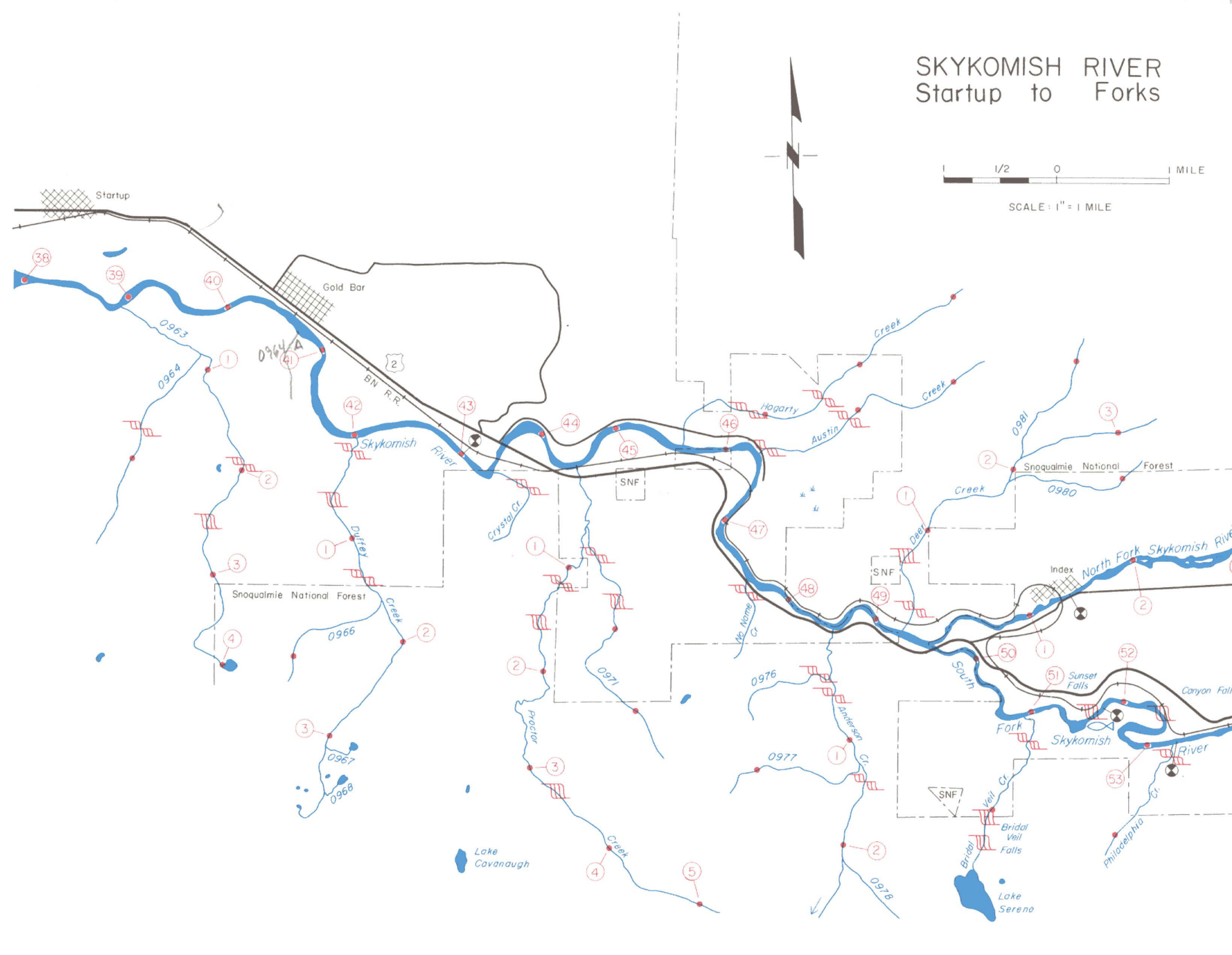
The principal limiting factors for salmon production within this section are sedimentation in the more quiet waters, scouring in the narrow river sections, and gravel removals. Heavy logging activity has taken place downstream from the National Forest boundaries resulting in increased runoff from these areas. Flood control activities have been fairly well confined to the lower portion of this river below R.M. 44.0.

Beneficial Developments

No specific facilities or programs have been undertaken to benefit salmon production within this area. The Game Department is constructing large steelhead rearing ponds between Austin and Hogarty creeks at this time.

Habitat Needs

Reforestation in the foothills outside of the Snoqualmie National Forest are needed where heavy stands of young alder trees and other deciduous brush have overtaken the land. A good river basin management plan should be established under the Watershed Management Act by the local communities of Sartup and Gold Bar to maintain the natural pristine environment of the area and excellent water quality. Gravel mining operations within the watershed should be closely evaluated.


SKYKOMISH RIVER
Startup to Forks
1/2 0 1 MILE
SCALE: 1" = 1 MILE
Startup
Gold Bar
BN R.R.
Skykomish River
Crystal Cr
Hogarty Creek
Austin Creek
Deer Creek
Index
North Fork Skykomish River
South Fork Skykomish River
Sunset Falls
Canyon Falls
Bridal Veil Falls
Bridal Veil Cr
Philadelphia Cr
Duffey Creek
Proctor Creek
Anderson Cr
Mt. Nome Cr
Lake Cavanaugh
Lake Serene
Snoqualmie National Forest
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SKYKOMISH RIVER — STARTUP TO FORKS
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish R.	@ mi. 20.51	—	—	
0963	Unnamed	LB-38.9	4.0	—	Coho,Pink,(Chum)
0964	Unnamed	LB-0.8	1.8	—	(Coho)
	Unnamed Lake	Outlet-4.0	—	—	
0965	Duffey Creek	LB-42.0	3.8	—	(Coho)
0966	Unnamed	LB-1.6	1.2	—	None
0970	Proctor Creek	LB-44.5	5.2	—	Chin., Coho, Pink, (Chum)
0971	Unnamed	RB-0.6	2.5	—	Unknown
0972	Hogarty Creek	RB-45.65	3.1	—	Coho
0973	Austin Creek	RB-46.3	2.3	—	Coho
0975	Anderson Creek	LB-48.5	2.8	—	Coho, Pink
0977	Unnamed	LB-1.2	1.3	—	None
0979	Deer Creek	RB-49.3	3.3	—	Unknown
0980	Unnamed	LB-1.9	1.2	—	None
0981	Unnamed	RB-2.1	1.2	—	None
0982	N. Fk. Skykomish R.	RB-49.6	28.5	147.0	Chin., Coho, Pink, (Chum)
	(See Snohomish 2003)				
	Skykomish R. cont. as N. Fk. Skykomish R.	@ mi. 49.61	—	—	
	(Cont. Snohomish 2203)				

NORTH FORK SKYKOMISH
Index Area

This segment includes the lower North Fork Skykomish River from its confluence with the mainstem, near Index, upstream approximately 10 miles to the vicinity of Silver Creek. Fourteen tributaries enter along this stretch providing more than 92 linear stream miles. The area is located approximately 14 miles east of Sultan in southeastern Snohomish County. Access is via Highway 2, and the North Fork River Road out of Index. Except for a relatively short section near the town of Index, the entire drainage is within Snoqualmie National Forest.

Stream Description

From the Silver Creek area the North Fork flows generally southwest a little more than 10 miles to its confluence with the mainstem Skykomish River (R.M. 49.6). Principal tributaries include Salmon, Howard, Trout, Excelsior, and Lewis creeks.

In this section the river courses through a relatively narrow, very steep-sloped valley, with river bottom cover of mostly dense deciduous and conifer timber, and dense conifer forest over the upper slopes. Along much of this area the sidehills rise sharply away from the valley floor to well over 3,000 feet and some nearby peaks exceeding 5,000 feet. A few scattered summer cabins and vacation residences are located along this stretch. The valley broadens slightly over the lower 2 to 3 miles, supporting some rural and suburban residences, and the town of Index. Land use is forestry with some logging activity, particularly over the higher mountain slopes, generally away from the river. Also, the area receives relatively intense recreation use, much of it oriented to river activity.

The stream gradient is moderately steep through most of this section, with just a few relatively short, more gently sloping stretches. The channel appears stable with numerous channel splits which essentially serve as high water channels. Widths range from 12 to over 30 yards during early fall, averaging about 20 yards. Stream character is predominantly fast riffle, with a few cascade series, mainly over a 1 to 2 mile stretch above Trout Creek, and in the section just above Salmon Creek. There are a few stretches along this reach possessing relatively long, broad riffles and a number of deeper pools. The bottom is comprised mainly of boulders and large rubble, with scattered clean gravel riffles or patch gravel strips. Stream banks appear quite stable, consisting of either low natural earth or rock cuts, or relatively narrow boulder-rubble side beaches. Stream-side cover is moderate to dense stands of deciduous trees and underbrush, with some mixed conifer timber.

Nearly all tributaries exhibit steep mountain characteristics over virtually their entire length. They contain narrow channels with numerous cascades and small falls, few riffles or pools, and their bottoms are generally of boulder and rubble material. More moderate gradients occur along the lower tributary reaches with good pool-riffle sections and smaller gravel substrate. Each of these tributaries has mostly dense cover provided by the adjacent forest canopy. A few have received some section logging over portions of their upper drainage.

Salmon Utilization

The North Fork Skykomish, in this section, provides access and transportation for adult salmon that utilize the upper watershed's production areas. Chinook are the principal species spawning in the mainstem. Some coho, pink, and chum also use these waters of the lower North Fork, although in smaller numbers than chinook. Juvenile chinook and coho find extensive rearing habitat along this lower stretch of river. The young chinook use these waters through the spring months, while the coho inhabit them year-round.

Limiting Factors

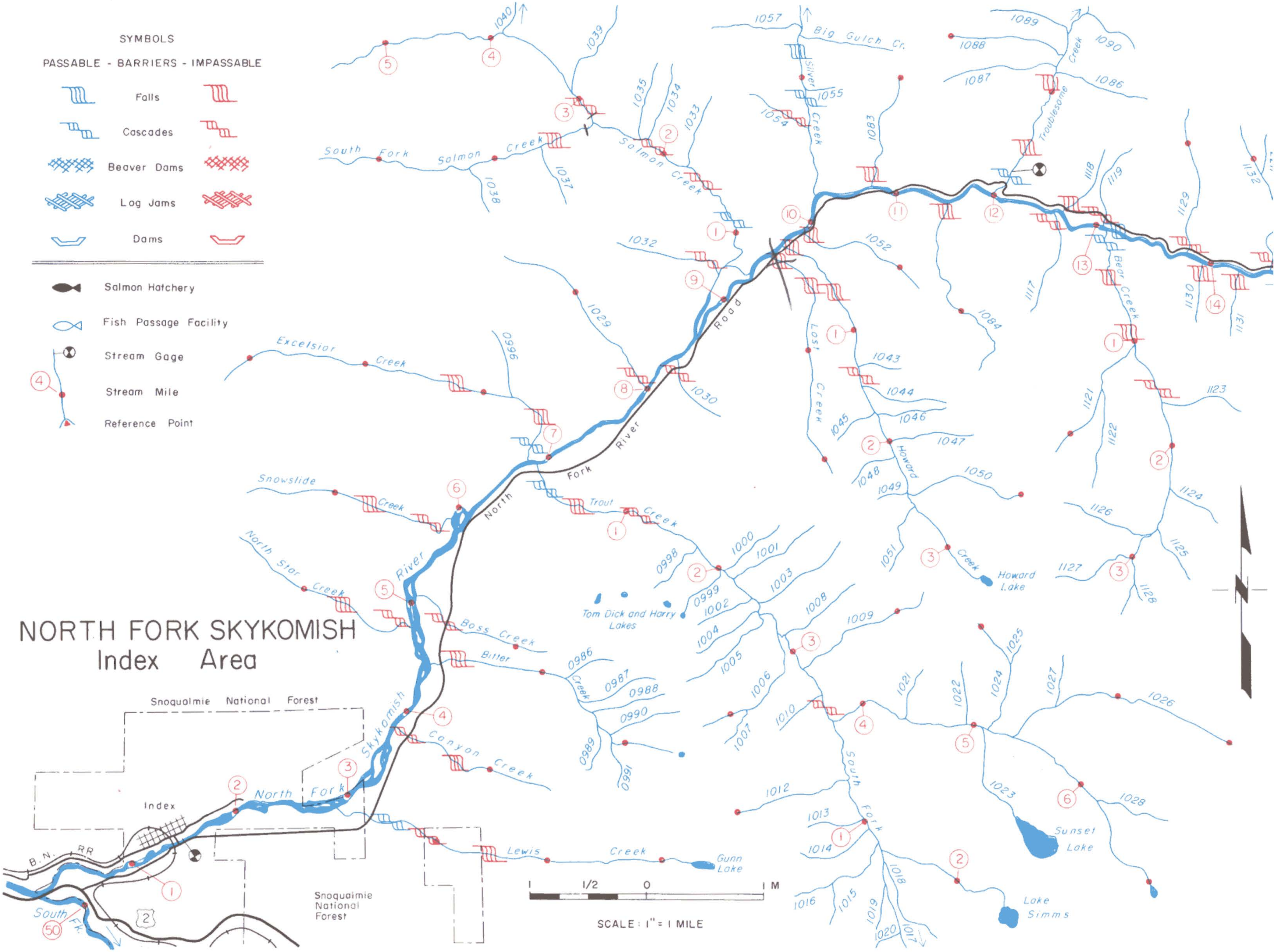
Other than the natural limitations imposed by such conditions as restricted amount of available spawning area, there are presently no factors which impact production potential along this stretch. Any increase in land clearing, particularly through riverside development or logging could present a limitation condition.

Beneficial Developments

Other than occasional planting of hatchery produced juvenile salmon there have been no facilities, projects, or programs designed specifically to benefit salmon production in this section of river.

Habitat Needs

The principal requirements to maintain the natural production conditions within this stream section include preserving existing stream-side cover, and maintaining stream and streambed conditions in as near a natural state as possible.


NORTH FORK SKYKOMISH
Index Area
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
South Fork Salmon Creek
Salmon Creek
Big Gulch Cr.
Silver Creek
Troublesome Creek
Bear Creek
Excelsior Creek
Snowslide Creek
North Star Creek
Boss Creek
Bitter Creek
Canyon Creek
Trout Creek
Lost Creek
Howard Creek
Howard Lake
Tom Dick and Harry Lakes
North Fork River Road
North Fork Skykomish River
Lewis Creek
Gunn Lake
Sunset Lake
Lake Simms
South Fork
Snoqualmie National Forest
Index
B.N. RR
SCALE: 1" = 1 MILE
1/2
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NORTH FORK SKYKOMISH — INDEX AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish R.	@ mi. 20.51	—	—	
0982	N. Fk. Skykomish R.	RB-49.6	28.5	147.0	Chin., Coho, Pink, (Chum)
0983	Lewis Creek	LB-2.85	3.2	—	(Coho)
	Gunn Lake	Outlet-3.2	—	—	
0984	Canyon Creek	LB-3.8	1.5	—	Unknown
0985	Bitter Creek	LB-4.5	2.4	—	
0992	N. Star Creek	RB-4.8	1.7	—	Unknown
0993	Boss Creek	LB-5.1	1.2	—	(Coho)
0994	Snowslide Creek	RB-5.9	1.7	—	(Coho)
0995	Excelsior Creek	RB-6.8	3.3	—	(Coho)
0997	Trout Creek	LB-6.9	7.0	15.2	(Chin.), Coho, (Pink)
1006	Unnamed	LB-2.75	1.25	—	None
1009	Unnamed	RB-3.2	1.3	—	None
1011	S. Fork	LB-3.7	2.6	—	None
1012	Unnamed	LB-0.6	1.0	—	None
1017	Unnamed	LB-1.3	1.0	—	None
	Lake Simms	Outlet-2.6	—	—	
1024	Unnamed	RB-5.15	1.05	—	None
1026	Unnamed	RB-5.3	2.0	—	None
	Unnamed Lake	Outlet-7.0	—	—	
1029	Unnamed	RB-8.0	1.7	—	Unknown
1031	Salmon Creek	RB-8.6	5.5	—	(Chin.), (Coho), (Pink)
1036	South Fork	RB-2.7	2.5	—	None
1041	Lost Creek	LB-9.6	2.1	—	Unknown
1042	Howard Creek	LB-9.7	3.4	—	Unknown
1050	Unnamed	RB-2.46	1.0	—	None
	Howard Lake	Outlet-3.4	—	—	
1052	Unnamed	LB-9.9	1.2	—	Unknown
1053	Silver Creek	RB-10.3	6.4	12.8	(Chin.), Coho, (Pink)
	(See Snohomish 2103)				
1083	Unnamed	RB-10.8	1.0	—	Unknown
1084	Unnamed	LB-11.5	1.7	—	Unknown

NORTH FORK SKYKOMISH — INDEX AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1085	Troublesome Cr.	RB-12.0	5.95	—	(Chin.), Coho, (Pink)
	(See Snohomish 2103)				
1120	Bear Creek	LB-13.1	3.5	—	(Chin.), (Coho)
1121	Unnamed	LB-1.0	1.2	—	None
1129	Unnamed	RB-13.8	1.3	—	None
1132	Unnamed	RB-14.55	1.3	—	None
	(Cont. Snohomish 2103)				

NORTH FORK SKYKOMISH
Headwaters

This section encompasses the upper North Fork Skykomish River above R.M. 10. It includes nearly 19 river miles, with about 50 tributaries adding more than 176 linear stream miles. The area is located 10 miles northeast of Index, in southeast Snohomish County. Access is via Highway 2, and the North Fork River Road. The entire area is within Snoqualmie National Forest.

Stream Description

The North Fork heads near the Cascade Crest, north of Skykomish Peak. It travels southwest 13 miles to West Cady Creek (R.M. 17), then generally west 6 miles to Silver Creek (R.M. 10.3). Principal tributaries include Quartz, Goblin, West Cady, San Juan, Bear, Troublesome, and Silver creeks.

The upper 10 miles cover steep mountain terrain with the stream flowing through a narrow, occasional canyon-like valley. Steep, densely forested side slopes prevail, some rising quickly to over 6,000 feet. The valley broadens slightly between Goblin Creek (R.M. 18.5) and San Juan Creek (R.M. 15.2). Bottomland supports moderate to dense deciduous trees and underbrush with some mixed conifers while the steep side slopes maintain dense conifer forest. Downstream over the section's lower 5 miles the valley again narrows with rugged, heavily timbered sidehills often rising steeply away from the stream. Little development has occurred within this section. Principal activities are logging, some mining, and heavy recreation use.

The North Fork's upper 10 miles present mostly steep gradient with the river confined within a relatively narrow channel ranging 2-6 yards in width. There are many falls and cascades, separated by short rapids or occasional pool-riffle stretches. The bottom is mostly boulder and rubble, some bedrock and a few patch gravel areas. Banks are mostly stable earth or rock cuts maintaining dense forest cover.

From Goblin Creek 1.5 miles downstream to West Cady Creek, the river maintains a moderate to moderately steep gradient. The stream remains mostly confined, exhibiting some channel splitting. Fall widths range from 4 to over 8 yards. It is mostly fast riffle stretches with relatively good pool-riffle conditions. The bottom is mostly rubble and gravel with a few boulders.

Over the lower 7 miles, below West Cady Creek, the river offers mostly moderate gradient with only a few steeper sections. There are relatively few channel split areas, and these generally above San Juan Creek. Widths range from 6 to over 18 yards, averaging 10 yards during early fall months. The stream exhibits mainly fast riffles with a number of good pool-riffle stretches. A few cascades appear along this lower section with one relatively steep drop just upstream from Bear Creek (R.M. 13.1). Through this lower reach the bottom material is mainly rubble with scattered boulders, a few broad, lengthy gravel riffles, and numerous patch gravel strips. Banks are mostly stable earth or rock cuts with some gently sloping rubble side beaches. Stream-side cover ranges from moderate to dense mixed deciduous and conifer growth.

Virtually all tributaries in this section exhibit steep mountain character over their entire length. They present numerous cascades, falls, and rapids within narrow, confined channels. Stream bottoms are mainly boulder and rubble. Tributaries just above the confluence with the North Fork have short, moderate gradient stretches. Most have dense forest cover throughout their lengths; however, clear-cut logging has taken place over upper drainage basins.

Salmon Utilization

The upper North Fork receives mainly chinook and coho salmon. Chinook spawn in the mainstem and in accessible reaches of larger tributaries, while coho utilize the large stream's shallower stretches, plus available tributaries. Juveniles rear throughout the accessible waters, with coho having year-round habitation.

Limiting Factors

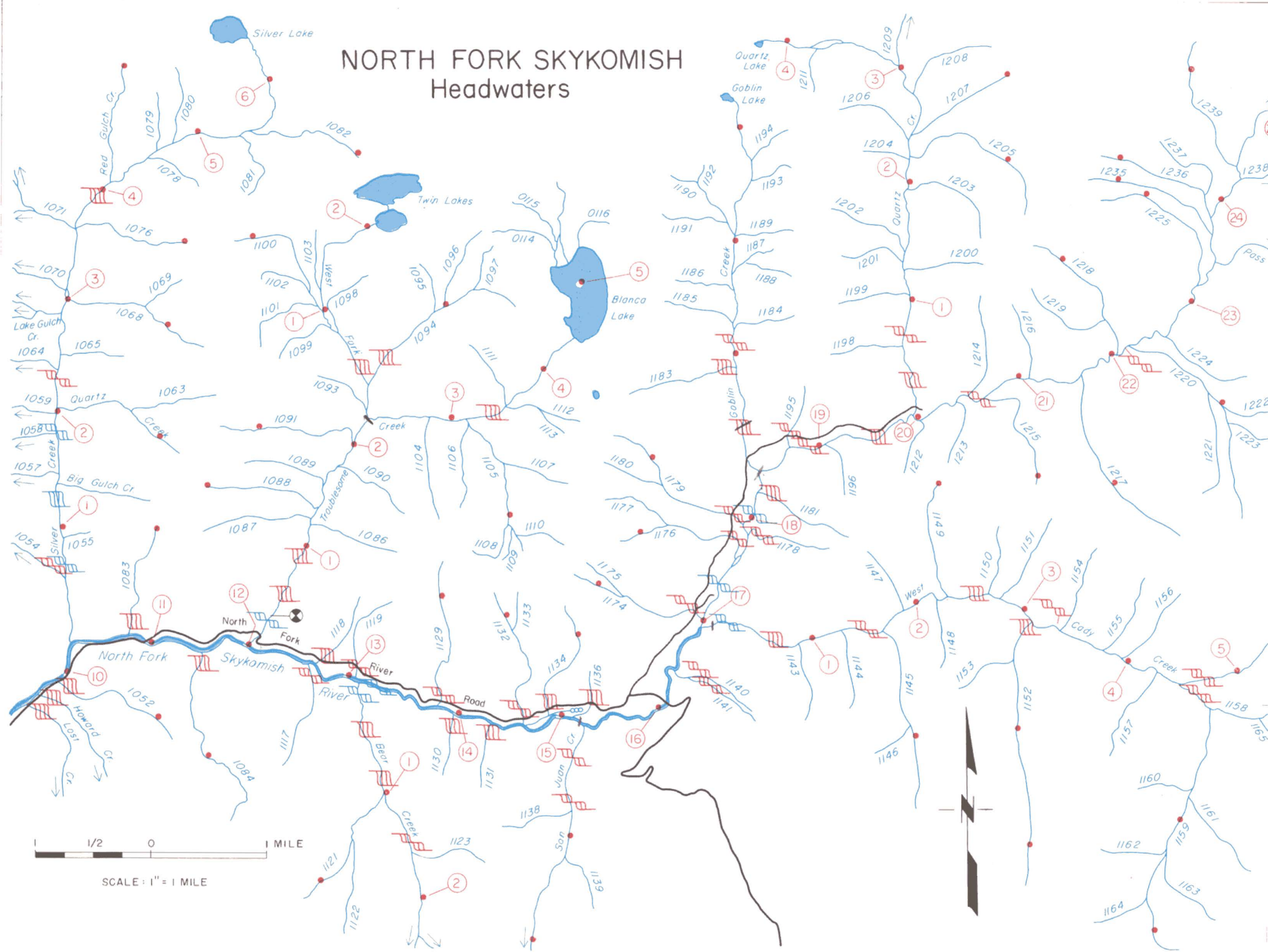
The natural increase in gradient, presenting numerous cascades and falls, prohibits much salmon use above Goblin Creek. A sharp cascades just above Bear Creek may hinder some adult migration. A potential limiting factor involves loss of extensive stream-side cover, or any natural stream channel alterations that may occur as a result of logging or future development.

Beneficial Developments

Occasionally, juvenile salmon are planted into the North Fork. Other than this there have been no projects, or programs to benefit salmon production. The habitat shows potential for a spring chinook rehabilitation program.

Habitat Needs

Principal requirements to maintain production potential include preserving existing stream-side cover, and maintaining stream and streambed conditions in as near a natural state as possible. Easing fish passage conditions over sharp cascades near Bear Creek would ensure best utilization of the stream above.


NORTH FORK SKYKOMISH
Headwaters
Silver Lake
Red Gulch Cr.
Twin Lakes
Blanca Lake
Lake Gulch Cr.
Quartz Creek
Big Gulch Cr.
Silver Creek
Troublesome Creek
West Fork
Goblin Creek
Quartz Lake
Goblin Lake
Quartz Cr.
Pass Creek
Cady Creek
Howard Cr.
Lost Cr.
Bear Creek
Juan Cr.
San Juan Cr.
North Fork Skykomish River
North Fork Road
1 1/2 0 1 MILE
SCALE : 1" = 1 MILE

NORTH FORK SKYKOMISH — HEADWATERS
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish R.	@ mi. 20.51	—	—	
0982	N. Fork Skykomish R.	RB-49.6	28.5	—	Chin., Coho, Pink, (Chum)
1053	Silver Creek	RB-10.3	6.4	12.8	(Chin.), Coho, (Pink)
1062	Quartz Creek	LB-2.05	1.2	—	Unknown
1068	Unnamed	LB-3.0	1.3	—	None
1071	Unnamed	RB-3.6	1.3	—	None
1076	Unnamed	LB-3.61	1.0	—	None
1077	Red Gulch Creek	RB-4.1	1.0	—	None
1082	Unnamed	LB-5.4	1.0	—	None
	Silver Lake	Outlet-6.4	—	—	
1083	Unnamed	RB-10.8	1.0	—	Unknown
1084	Unnamed	LB-11.5	1.7	—	Unknown
1085	Troublesome Creek	RB-12.0	5.95	—	(Chin.), Coho, (Pink)
1088	Unnamed	RB-1.35	1.0	—	None
1091	Unnamed	RB-2.0	1.3	—	None
1092	W. Fk. Trouble-some Creek	RB-2.3	2.1	—	None
1094	Unnamed	LB-0.3	1.65	—	None
1100	Unnamed	RB-1.05	1.15	—	None
1105	Unnamed	LB-3.1	1.3	—	None
	Blanca Lake	Outlet-4.5	—	—	
1120	Bear Creek	LB-13.1	3.5	—	(Chin.), (Coho)
	(See Snohomish 2003)				
1129	Unnamed	RB-13.8	1.3	—	None
1132	Unnamed	RB-14.55	1.3	—	None
1134	Unnamed	RB-14.6	1.3	—	(Coho)
1137	San Juan Creek	LB-15.2	3.5	—	(Coho)
1142	W. Cady Creek	LB-16.95	7.5	17.8	(Chin.), (Coho)
1145	Unnamed	LB-1.65	1.6	—	None
1149	Unnamed	RB-2.3	1.0	—	None
1152	Unnamed	LB-3.1	2.3	—	None
1158	Unnamed	LB-4.5	2.8	—	None
1159	Unnamed	LB-0.3	2.3	—	None
1174	Unnamed	RB-17.0	1.2	—	Unknown
1176	Unnamed	RB-17.6	1.15	—	Unknown

NORTH FORK SKYKOMISH — HEADWATERS
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1179	Unnamed	RB-17.95	1.4	—	None
1182	Goblin Creek	RB-18.45	3.3	—	(Chin.), (Coho)
	Goblin Lake	Outlet-3.3	—	—	
1197	Quartz Creek	RB-20.0	4.2	6.5	None
1205	Unnamed	LB-2.21	1.5	—	None
1207	Unnamed	LB-2.4	1.0	—	None
1209	Unnamed	LB-3.0	1.0	—	None
	Quartz Lake	Outlet-4.2	—	—	
1215	Unnamed	LB-20.7	1.05	—	None
1217	Unnamed	LB-21.6	1.7	—	None
1218	Unnamed	RB-22.1	1.25	—	None
1220	Unnamed	LB-22.2	1.95	—	None
1225	Unnamed	RB-23.2	1.35	—	None
1226	Pass Creek	LB-23.45	3.35	—	None
1230	Unnamed	LB-1.5	1.2	—	None
1234	Unnamed	RB-2.1	1.4	—	None
1235	Unnamed	RB-23.7	1.2	—	None
1236	Unnamed	RB-23.85	1.1	—	None
1239	Unnamed	RB-24.4	1.3	—	None
1241	Unnamed	LB-25.85	1.9	—	None

SOUTH FORK SKYKOMISH
Sunset Falls Area

This section includes 15 miles of South Fork Skykomish River from the North Fork upstream to the town of Skykomish. Nineteen tributaries add more than 72 linear stream miles, excluding Money Creek (Snohomish 2300) and Miller River (2400). The Snohomish-King County boundary intersects the river near Baring (R.M. 56.0). Stevens Pass-Highway 2 parallels the river along its northern bank. Most of this watershed area, except for sections along the main river, is within Snoqualmie National Forest.

Stream Description

The South Fork Skykomish, in this section, courses generally west and northwest from the town of Skykomish (R.M. 65.0) to its confluence with the North Fork (R.M. 49.6). Heybrook Ridge, extending eastward to the Baring Mountains, separates the North and South Forks. Principal tributaries are Bridal Veil, Barclay, Index, and Lowe creeks.

The river valley is narrowly confined through this section, running between steep-sloped, densely forested mountain ridges, some to over 6,000-foot elevation. Principal development includes the town of Skykomish, the small communities of Baring and Grotto, and summer-vacation residences mainly along the lower stretch of riverfrontage. Principal activities are logging and recreation.

The upper 10.5 miles of this reach travels over mostly moderate gradient dropping some 150 feet between Skykomish and Eagle falls. The river contains a good pool-riffle balance and offers considerable high quality spawning gravel. The bottom is comprised mainly of gravel and rubble and a few scattered boulder stretches. Fall widths range from 12 to over 30 yards. Banks are mostly stable earth cuts or rubble-boulder beaches maintaining relatively dense deciduous and conifer cover.

The river falls rapidly over the next three miles. Encountered are Eagle Falls (R.M. 54.5), a 28-foot drop; Canyon Falls (R.M. 52.2), a 48-foot drop; and Sunset Falls (R.M. 51.5), an 88-foot cascade and falls combination. As would be expected, most of this stretch consists of cascades and rapids, separated by large deep pools and few riffles. The bottom is mostly bedrock and boulders with some rubble and gravel.

Below Sunset Falls, for nearly 2 miles to the North Fork, the gradient moderates once again producing mostly a pool-riffle stream with a few rapid areas. Here the bottom is mainly rubble and boulder and some fairly good gravel riffles. Fall widths range from 15 to over 30 yards. The steep, narrow banks and side slopes maintain mostly dense forest cover.

Tributaries along this reach descend from heavily forested rugged slopes and exhibit typical mountain stream character. Steep gradients and many cascades and falls occur except for short stretches near their mouths where some pool-riffle stream exists. A number of these streams originate from high mountain lakes or contain lakes within their system.

Salmon Utilization

This segment of river offers generally good spawning and rearing habitat, primarily for chinook and coho salmon. Some pink salmon also use the area. Adults are captured at Sunset Falls and hauled upstream 4 miles and released above Eagle Falls. Bridal Veil Creek provides about 0.25 mile access for coho salmon; Barclay Creek 0.25 mile for chinook and coho; Index Creek, with a flatter gradient, offers about 1.5 mile for chinook, coho, and pink salmon. Lowe Creek is accessible in the lower 0.75 mile section for coho and pink. All other small tributaries are only accessible for 100 to 200 yards.

Limiting Factors

Principal factors affecting salmon production in this section are steep gradients, falls and cascades, and logging and road construction in some upper watershed areas. Three major barriers are Sunset, Canyon, and Eagle falls. Only a small portion of the 72 miles of tributary streams are accessible and suitable for salmon production.

Beneficial Developments

The major development in this section benefiting salmon production is the Sunset Falls fishway trap-and-haul facility, which opens approximately 54 river miles to salmon use. Adult salmon are released above the falls at the mouth of Barclay Creek. Since initial plants were made, in the late 1950's, coho runs have steadily built to levels approaching 15,000 fish annually. Chinook and pink runs above Sunset Falls have originated from lower river native stocks spreading upstream.

Habitat Needs

There is need to develop a sound watershed management plan for this area to prevent encroachment that could alter natural habitat conditions. This is especially true for future logging and road building plans, as well as summer residence developments.

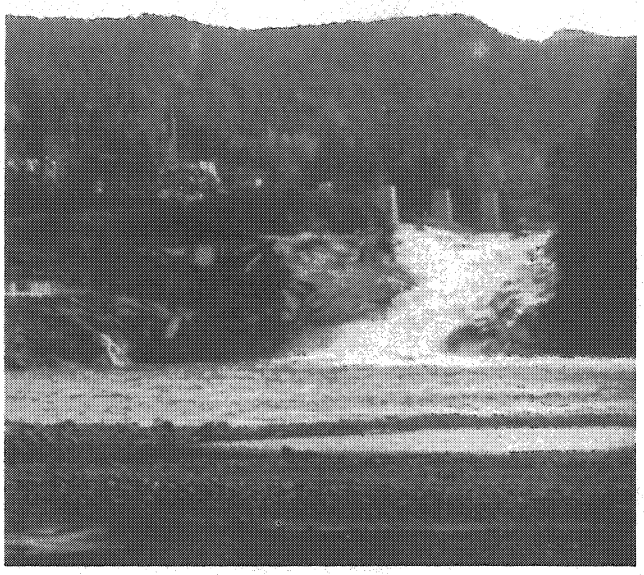
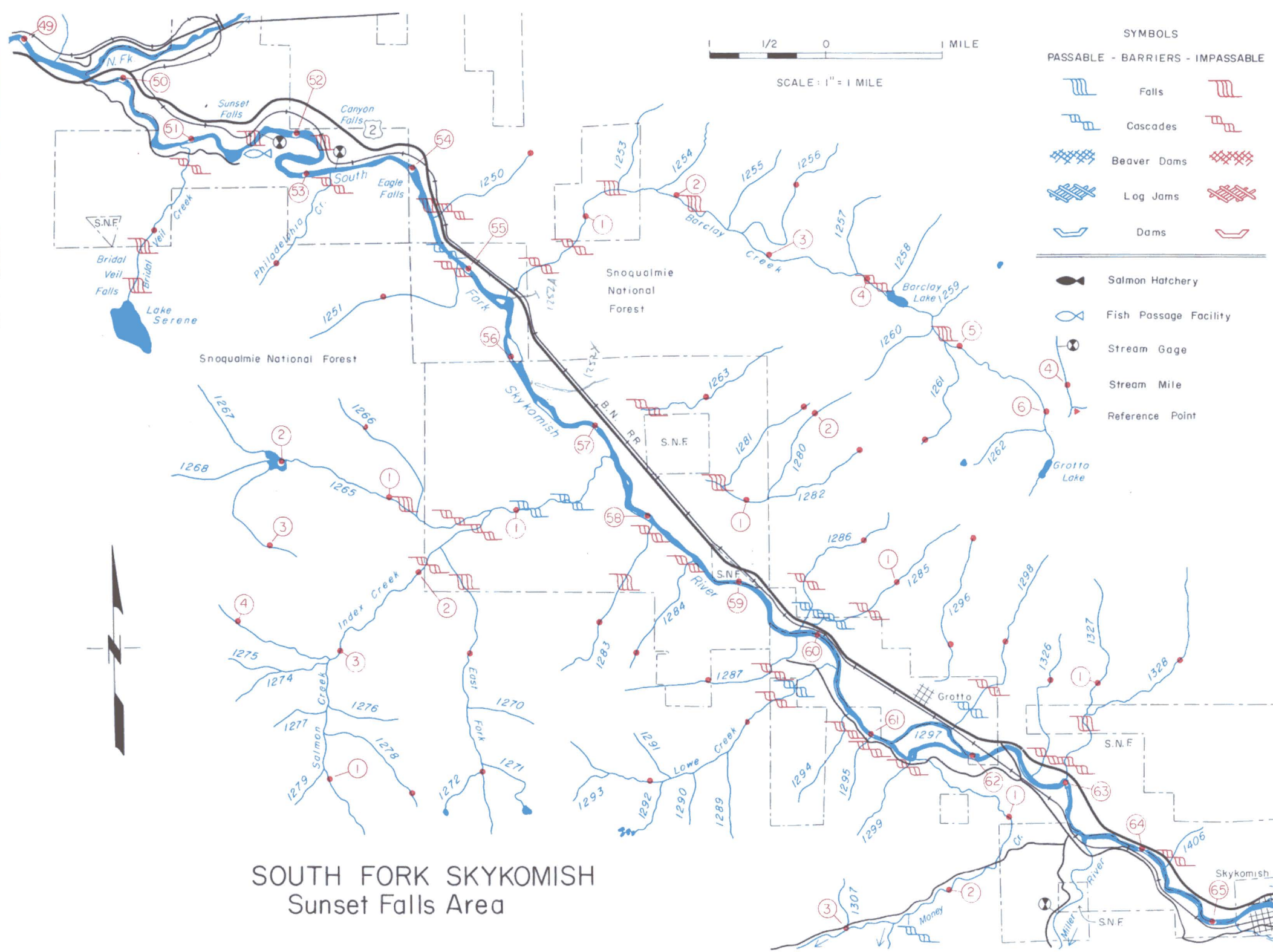


PHOTO 07-30. Sunset Falls is a total barrier.


SCALE: 1" = 1 MILE
1/2 0 1 MILE
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
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Beaver Dams
Log Jams
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Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
N. Fk
Sunset Falls
Canyon Falls
South Fork
Eagle Falls
Philadelphia Cr.
Veil Creek
Bridal Veil Falls
Lake Serene
S.N.F.
Snoqualmie National Forest
Skykomish
B.N. RR
Index Creek
Salmon Creek
East Fork
Lowe Creek
Barclay Creek
Barclay Lake
Grotto
Grotto Lake
Money Cr.
Miller River
Skykomish
SOUTH FORK SKYKOMISH
Sunset Falls Area

SOUTH FORK SKYKOMISH — SUNSET FALLS AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
	Skykomish R. cont. S. Fork Skykomish R.	@ mi. 49.61	—	362.0	
1248	Bridal Veil Creek	LB-50.9	1.6	—	Coho, (Pink)
1249	Philadelphia Creek	LB-53.2	1.2	—	Unknown
1250	Unnamed	RB-54.51	1.0	—	Unknown
1251	Unnamed	LB-54.9	1.7	—	Unknown
1252	Barclay Creek	RB-55.4	6.8	8.33	(Chin.), (Coho)
1256	Unnamed	RB-2.7	1.55	—	None
	Barclay Lake	Outlet-4.2	—	—	None
1261	Unnamed	LB-4.9	1.0	—	None
	Grotto Lake	Outlet-6.45	—	—	
1263	Unnamed	RB-57.1	1.8	—	Unknown
1264	Index Creek	LB-57.3	4.2	12.3	(Chin.), (Coho), (Pink)
1265	Unnamed	LB-1.2	3.25	—	Unknown
1226	Unnamed	LB-0.7	1.3	—	None
	Unnamed Lake	Outlet-1.95	—	—	
1269	E. Fk. Index Creek	RB-1.7	2.5	—	None
1273	Salmon Creek	RB-3.1	1.5	—	None
1278	Unnamed	RB-0.6	1.1	—	None
1280	Unnamed	RB-57.6	2.4	—	Unknown
1281	Unnamed	RB-0.8	1.05	—	None
1282	Unnamed	LB-1.2	1.0	—	None
1283	Unnamed	LB-58.05	1.6	—	Unknown
1284	Unnamed	LB-58.5	1.1	—	Unknown
1285	Unnamed	RB-59.8	1.8	—	Unknown
1286	Unnamed	RB-0.1	1.4	—	Unknown
1287	Unnamed	LB-59.81	1.7	—	(Coho)
1288	Lowe Creek	LB-60.3	2.8	—	(Coho), (Pink)
1296	Unnamed	RB-61.15	2.0	—	Unknown
1297	Unnamed side channel	RB-61.2	0.8	—	Chin.,Coho,(Pink)
1298	Unnamed	RB-0.55	1.8	—	(Coho)
1300	Money Creek	LB-61.45	7.7	—	Chin.,Coho,(Pink)
	(See Snohomish 2302)				
1326	Unnamed	RB-62.7	1.4	—	(Coho)
1327	Unnamed	RB-63.0	1.9	—	Unknown

SOUTH FORK SKYKOMISH — SUNSET FALLS AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1328	Unnamed	LB-0.7	1.8	—	None
1329	Miller River	LB-63.5	15.9	46.0	Chin.,Coho,(Pink)
	(See Snohomish 2403)				
	(Cont. Snohomish 2302)				

SOUTH FORK SKYKOMISH
Skykomish Area

This section includes the 8 miles of mainstem South Fork Skykomish River from the mouth of Money Creek upstream to the mouth of the Foss River. The Stevens Pass U.S. Highway 2 and Burlington Northern Railroad parallel this stretch of river. Within this reach is the junction for several important tributaries, including Money Creek, Miller River, Beckler River, and the confluence of the Tye River and Foss River. Miller River is discussed in Snohomish 2401 and the Beckler River is continued in Snohomish 2501. Only three unnamed tributaries are discussed here, namely Money Creek, Maloney Creek, and Anthracite Creek, which total 36.6 stream miles.

Stream Description

The South Fork Skykomish in this section flows through a confined valley floor with high mountain ranges of moderate to moderately steep slopes on both the north and south. Baring Mountain and Beckler Peak comprise the northern mountain slope while Lennox Mountain, Cascade Mountain, and Maloney Ridge form the southern range. The valley floor averages approximately 0.5 mile in width through this section. The mainstem river here courses through well-defined channels with heavy rubble and large rocks and gravel along the shoreline banks. One large channel split in the vicinity of Grotto forms a rock island approximately 0.5 mile in length and covered with deciduous growth. River gradients descend gradually at less than 20 feet per mile. The river here contains considerable gravel substrate and excellent pool-riffle balance. Natural cover and shade are profuse along the shoreline. Clay banks along the northern shore above R.M. 67.0 slough off and erode during high water periods.

Land use is forestry and recreation with forest service campgrounds along the river. The town of Skykomish is the only community with some rural residences. The mountain ranges in this section lie principally within the Snoqualmie National Forest although private forest lands have been heavily logged and clear-cut particularly around Beckler Peak. The headwaters of the tributary streams all lie within the Snoqualmie National Forest.

Money Creek is the largest of the tributaries, totaling 28.3 miles in length. It originates from the Crystal Lake area in Goat Basin near the 3,400-foot elevation. The lower 2 miles are of moderate gradient while many rapids and cascades are formed above the forks of Kimble Creek. The lower 3 miles of stream have excellent gravel composition as well as long riffles and glides interspersed with pools. Considerable sand and fine material covers the lower 0.25 mile of Money Creek and a large island of gravel and sand is formed in the main river at R.M. 61.45 at the mouth of Money Creek. The stream contains heavy natural cover throughout its length.

Maloney Creek originates from Maloney Lakes, a series of three small lakes, on Maloney Mountain at the 4,400-foot elevation. This creek is only 3 miles in length and enters the Skykomish River at the town of Skykomish. The stream contains good gravel in the lower 0.25 mile and is a pristine tumbling mountain stream above. Anthracite Creek is formed in the Maloney Ridge area at about the 3,200-foot elevation and flows northerly to its confluence with the South Fork at R.M. 65.2. Cascade sections above the Stevens Pass Highway provide a total block. The creek is also pristine and steep above this point. The lower 0.25 mile flows through Cass Pond, which was created for trout rearing and juvenile fishing.

Salmon Utilization

The mainstem South Fork provides transportation, spawning, and rearing for chinook, coho, and some pink. The entire 8-mile stretch within this section is heavily utilized by these species. Only the lower 4 miles of Money Creek are accessible and chinook, coho, and some pink utilize this area. A steep cascade section forms a block approximately 0.5 mile upstream on Maloney Creek. Coho and a few pink salmon spawn in this stretch. Only coho are known to ascend into Anthracite Creek, and utilize the lower 0.25 mile below the falls.

Limiting Factors

High river flows from precipitation and snow melt have deposited silt and fine sands in some sections of the mainstem. Logging activities in the upper Beckler Mountains have also contributed to this condition. Small sections of earth slide and clay bank sloughing occurs above the confluence of the Beckler River. The steep gradients in the tributary streams curtail the available salmon habitat.

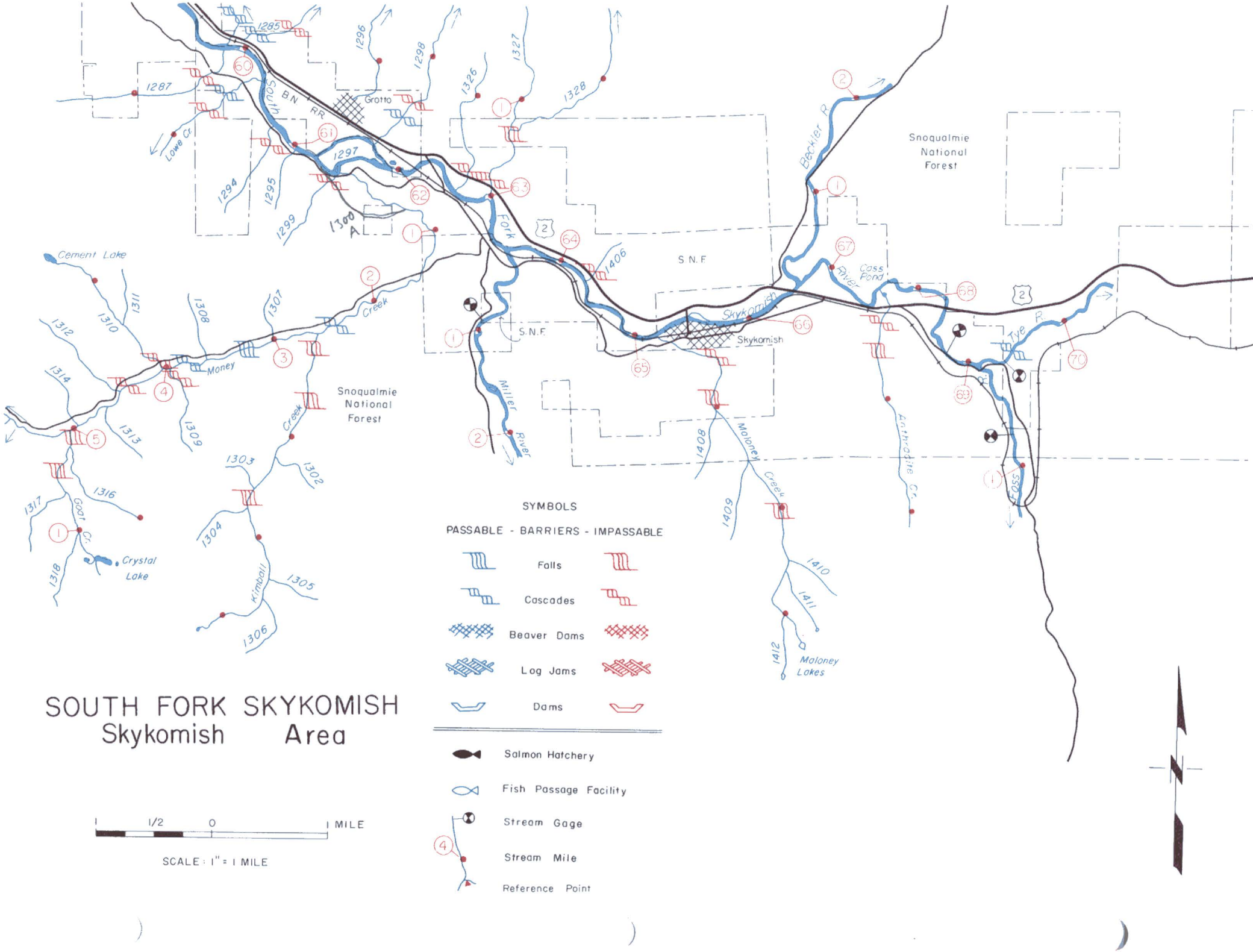
Beneficial Developments

Salmon utilizing this river section have benefitted from the truck and haul operation at Sunset Falls.

Habitat Needs

The major requirement to maintain salmon production in this section is to preserve existing stream bank cover and the natural stream habitat. Reforestation of the clear-cut logged areas on the upper watersheds should be implemented to eliminate the flash flood runoff.

PHOTO 07-31. A good chinook spawning riffle.



SOUTH FORK SKYKOMISH
Skykomish Area

SOUTH FORK SKYKOMISH — SKYKOMISH AREA
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish R.	@ mi. 20.51	—	—	
	Skykomish R. cont. as S.Fk. Skykomish R.	@ mi. 49.61	—	—	
1300	Money Creek	LB-61.45	7.7	—	Chin.,Coho,(Pink)
1301	Kimball Creek	RB-2.6	3.2	—	(Chin.), (Coho)
	Unnamed Lake	Outlet-3.2	—	—	
1310	Unnamed	LB-4.0	1.4	—	None
	Cement Lake	Outlet-1.4	—	—	
1315	Goat Creek	RB-5.0	1.4	—	None
1316	Unnamed	RB-0.15	1.0	—	None
	Crystal Lake	Outlet-1.25	—	—	
	Unnamed Lake	Outlet-1.4	—	—	
1322	Unnamed	LB-6.1	1.1	—	None
1323	Unnamed	LB-6.2	1.2	—	None
	Lake Elizabeth	Outlet-7.1	—	—	
1326	Unnamed	RB-62.7	1.4	—	(Coho)
1327	Unnamed	RB-63.0	1.9	—	Unknown
1328	Unnamed	LB-0.7	1.8	—	None
1329	Miller River	LB-63.5	15.9	46.0	Chin.,Coho,(Pink)
	(See Snohomish 2403)				
1407	Maloney Creek	LB-65.2	3.3	—	Coho, (Pink)
	Maloney Lake	Outlet-3.3	—	—	
1413	Beckler River	RB-66.6	13.2	101.0	Chin.,Coho,(Pink)
	(See Snohomish 2503)				
1561	Anthracite Creek	LB-67.6	2.1	—	(Coho), (Pink)
1562	Foss River	LB-69.1	12.3	55.4	Chin.,Coho,(Pink)
	(See Snohomish 2603)				
	S. Fk. Skykomish R. cont. as Tye R.	@ mi. 69.11	—	—	
	(Cont. Snohomish 2703)				

MILLER RIVER DRAINAGE

This section covers the Miller River from its confluence with the South Fork Skykomish, upstream nearly 16 miles to its Cascade Mountain headwaters. Nearly 30 tributaries enter the Miller, adding 70 linear stream miles. The area is located just southwest of Skykomish in northeast King County. Access is via Highway 2, and Forest Service roads. Except for the lower mile the entire drainage is in Snoqualmie National Forest.

Stream Description

From the high mountains above Lake Dorothy the East Fork Miller travels north-northwest nearly 16 miles to the South Fork Skykomish (R.M. 63.5). Principal tributaries include Camp Robber Creek and West Fork Miller (R.M. 3.6).

The East Fork's upper 10 to 11 miles is over rugged mountain terrain with the narrow, steep-sloped valley holding dense conifer forest. The valley floor broadens slightly just above the West Fork, intermittently widening and narrowing through the remainder of the drainage. The bottomland supports mixed deciduous and conifer timber and the steep side slopes mostly dense conifer forest. Development is limited, with a few summer-vacation residences and some formal camping areas. Principal activities include logging, some mining, and heavy recreation use.

Over its upper 10 miles the East Fork Miller exhibits steep mountain character, presenting numerous falls, cascades, rapids, and few pools or riffles. Except for the area encompassing Dorothy Lake, 4 miles below headwaters, the stream is confined to a narrow channel. Its bottom is mainly of boulder and rubble, some bedrock and few gravel riffles. Near R.M. 6.0, above the Lake Dorothy Road, the East Fork descends over a series of relatively large falls, at least one of which exceeds 20 feet. The gradient below remains moderately steep for above 2.5 miles to the West Fork. Here the stream ranges 3-8 yards in width, presenting mainly fast riffles, with a few scattered boulder stretches, some gravel riffles, and patch gravel strips. Banks are earth or rock cuts with a few rubble side beaches. Cover is moderate to dense deciduous trees and underbrush and some mixed conifer.

Below the West Fork, the Miller exhibits mostly moderate gradient with a few steeper areas. The stream remains relatively confined with occasional channel splitting. Fall widths range 5-14 yards, averaging 9 yards. It is predominately a pool-riffle stream with only a few fast riffle or rapid stretches. The bottom is mainly clean rubble-gravel material with just a few boulder sections. Banks alternate between relatively low earth or rock cuts and gently sloping gravel-rubble beaches. Cover is mostly dense, mainly deciduous trees and underbrush with some mixed conifer.

Nearly all tributaries exhibit steep mountain character over virtually their entire lengths, except the West Fork. They reveal narrowly confined channels, numerous falls and cascades and boulder-rubble bottoms. A few have gentle gradient pool-riffle conditions just prior to entering the river. Forest canopy is dense over most of these streams.

The West Fork presents mostly steep gradient with cascades and rapids over its upper 2 miles, and again over its lower 1 to 2 miles. There may be partial barriers in the lower stretch. In between, there is approximately 3 miles of moderate to gentle gradient stream, exhibiting a good pool-riffle balance. The bottom mainly of clean gravel with some rubble. The banks are largely stable earth or rock cuts with a few gravel-rubble beaches. Cover ranges from moderate to dense, mostly of deciduous trees and underbrush.

Salmon Utilization

The Miller is utilized by chinook and coho salmon. Chinook spawn primarily in the mainstem and, to some degree, in each fork. Coho use mainly the river's shallow side channels, plus accessible tributaries. The juveniles rear throughout these waters with coho having year-round habitation.

Limiting Factors

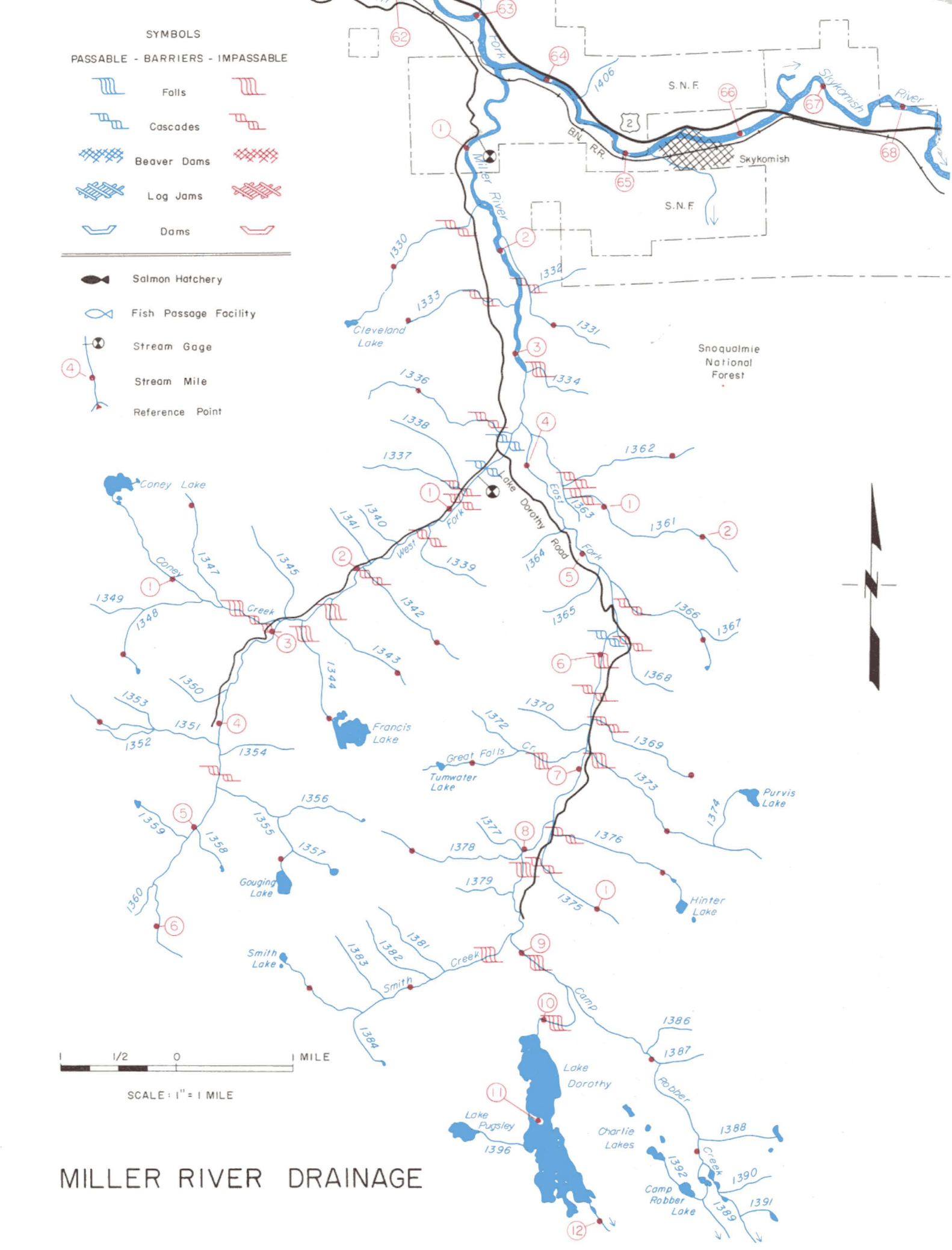
The steepening gradients in the watershed form a natural limitation for salmon production. A series of cascades on the lower West Fork may prohibit a portion of the fish from ascending to excellent spawning and rearing habitat above. A potential limitation is loss of stream-side cover, from logging or increased development.

Beneficial Developments

Salmon utilizing the Miller have benefitted from a truck-and-haul operation, transporting adults over a series of falls on the lower South Fork Skykomish.

Habitat Needs

Principal habitat requirements include preserving stream-side cover, and maintaining stream and streambed conditions in their natural state. Proposed mining developments in the drainage should be coordinated to assure protection of the water quality and stream habitat.



MILLER RIVER DRAINAGE

MILLER RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
	Skykomish R. cont. as S. Fk. Skykomish R.	@ mi. 49.61	—	—	
1329	Miller River	LB-63.5	15.9	46.0	Chin.,Coho,(Pink)
1330	Unnamed	LB-1.5	1.6	—	(Coho)
1331	Unnamed	RB-1.8	1.5	—	(Coho)
1333	Unnamed	LB-2.5	1.0	—	(Coho)
1335	W. Fk. Miller R.	LB-3.6	6.3	—	Chin.,Coho,(Pink)
1336	Unnamed	LB-0.15	1.5	—	(Coho)
1342	Unnamed	RB-2.0	1.2	—	Unknown
1343	Unnamed	RB-2.35	1.1	—	Unknown
1344	Unnamed	RB-2.7	1.0	—	Unknown
1346	Coney Creek	LB-2.9	1.9	—	Unknown
1347	Unnamed	LB-0.55	1.1	—	None
1348	Unnamed	RB-0.7	1.2	—	None
	Coney Lake	Outlet-1.9	—	—	
1351	Unnamed	LB-4.2	1.4	—	Unknown
1355	Unnamed	RB-4.6	1.1	—	None
	Gouging Lake	Outlet-1.1	—	—	
	Miller R. cont. as E. Fk.	@ mi. 3.61	—	26.6	
1361	Unnamed	RB-3.75	2.4	—	(Chin.), Coho, (Pink)
1362	Unnamed	RB-0.5	1.2	—	Unknown
1366	Unnamed	RB-5.3	1.3	—	Unknown
	Unnamed Lake	Outlet-1.3	—	—	
1369	Unnamed	RB-6.55	1.0	—	None
1371	Great Falls Creek	LB-6.8	1.45	—	None
	Tumwater Lake	Outlet-1.3	—	—	
1373	Unnamed	RB-6.81	1.8	—	None
1375	Unnamed	RB-7.55	1.2	—	None
1376	Unnamed	RB-0.1	1.3	—	None
1378	Unnamed	LB-8.06	1.3	—	None
1380	Smith Creek	LB-8.8	2.35	—	None
	Smith Lake	Outlet-2.35	—	—	
1385	Camp Robber Creek	RB-9.4	4.6	—	None
1389	Unnamed	RB-2.1	1.0	—	None

MILLER RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	Unnamed Lake	Outlet-1.0	—	—	
	Unnamed Lake	Outlet-2.2	—	—	
	Unnamed Lake	Outlet-3.0	—	—	
	Gus Lake	Outlet-3.4	—	—	
	Unnamed Lake	Outlet-4.6	—	—	
	Lake Dorothy	Outlet-10.2	—	6.19	
1402	Unnamed	LB-13.25	1.0	—	None
	Fools Gold Lake	Outlet-0.9	—	—	
	Unnamed Lake	Outlet-1.0	—	—	
	Gold Lake	Outlet-14-4	—	—	
	Unnamed Lake	Outlet-15.5	—	—	
	Unnamed Lake	Outlet-15.56	—	—	
	Unnamed Lake	Outlet-15.9	—	—	

BECKLER RIVER DRAINAGE

This section encompasses the entire Beckler River, more than 13 mainstem river miles, plus 28 tributaries adding 167 linear stream miles. The area is located north of Skykomish in northeastern King and southeastern Snohomish counties. Access is via Highway 2, and Forest Service roads. Except for a section along the lower half-mile, the entire drainage is in Snoqualmie National Forest.

Stream Description

From the Jack Pass vicinity, the Beckler flows southeast about 5 miles to the Rapid River, then south-southwest nearly 8 miles to its confluence with the South Fork Skykomish (R.M. 66.6). The principal tributary is Rapid River (R.M. 7.7). Other smaller streams include Evergreen, 4th of July, Johnson, and Eage creeks.

Over its upper 7 miles the Beckler drops through a narrow valley with steep, densely forested side slopes, some rising sharply to over 4,000 feet. Over the lower 6 miles the valley widens slightly, containing moderate to dense mixed deciduous and conifer cover. The valley broadens considerably in the lower half-mile as it opens out onto the South Fork Skykomish valley. Side slopes along the lower river remain mostly steep with thick conifer cover. Some clear-cut logging has occurred over a few sections, generally away from the main river. Development is limited primarily to the lower mile. Skykomish is the area's only community, with a few scattered summer-vacation residences located in the surrounding area. Principal activities are logging and recreation.

The Beckler has mostly steep gradient over its upper 1 to 2 miles, to near Evergreen Creek (R.M. 11.8). Its narrowly confined channel has numerous cascades and rapids and only a few small pools and short riffles. The bottom is predominantly boulder and rubble with some patch gravel riffles. For some 6 miles below Evergreen Creek the gradient is moderately steep. The channel remains confined with fall stream widths ranging 4-12 yards above the Rapid River and 10-30 yards below. It has mainly fast riffles, a few cascades or rapids, with a few stretches of good pool-riffle conditions. The bottom is essentially rubble with some boulder sections, a few gravel riffles and patch gravel strips. The banks are earth or rock cuts, with dense deciduous and conifer cover.

From approximately R.M. 6.0 to its South Fork Skykomish confluence, the Beckler contains mostly moderate gradient with only a few steeper areas. It has mostly fast riffles but a number of areas show good pool-riffle balance. The stream is largely confined with some channel splitting which serve as high water passages. Widths range from 12 to over 40 yards, averaging 22 yards during early fall. The bottom is rubble, boulder-strewn sections and some broad, lengthy gravel-rubble riffles. Banks along the lower river are low earth or rock cuts, with stretches of gently sloping rubble-boulder beach.

Except for the Rapid River, nearly all tributaries exhibit steep mountain character over their entire lengths. They have numerous cascades and rapids within narrow, confined channels, with boulder and rubble bottoms. Some contain moderate gradients over their lowermost reaches. Most have dense forest canopy except where clear-cut logging has occurred.

The Rapid River presents mostly steep mountain character downstream to the lower 3 or 4 miles. Through this lower stretch it reveals a moderately steep gradient as the stream cuts through fairly narrow channel with numerous cascades, rapids and a few pool-riffle areas. Bottom composition is mainly boulder and rubble with some short gravel riffles and patch gravel strips. Much of the watershed has been logged, and is in varying degrees of reforestation. Cover ranges from sparse to moderate, mainly of deciduous growth, some mixed conifer.

Salmon Utilization

The Beckler River receives both chinook and coho salmon. Chinook spawn mainly in the Beckler, and in accessible reaches of the Rapid River. Coho utilize the mainstem's shallower side channels, as well as accessible reaches of smaller tributaries. Juvenile salmon rear throughout these waters, with coho having year-round habitation.

Limiting Factors

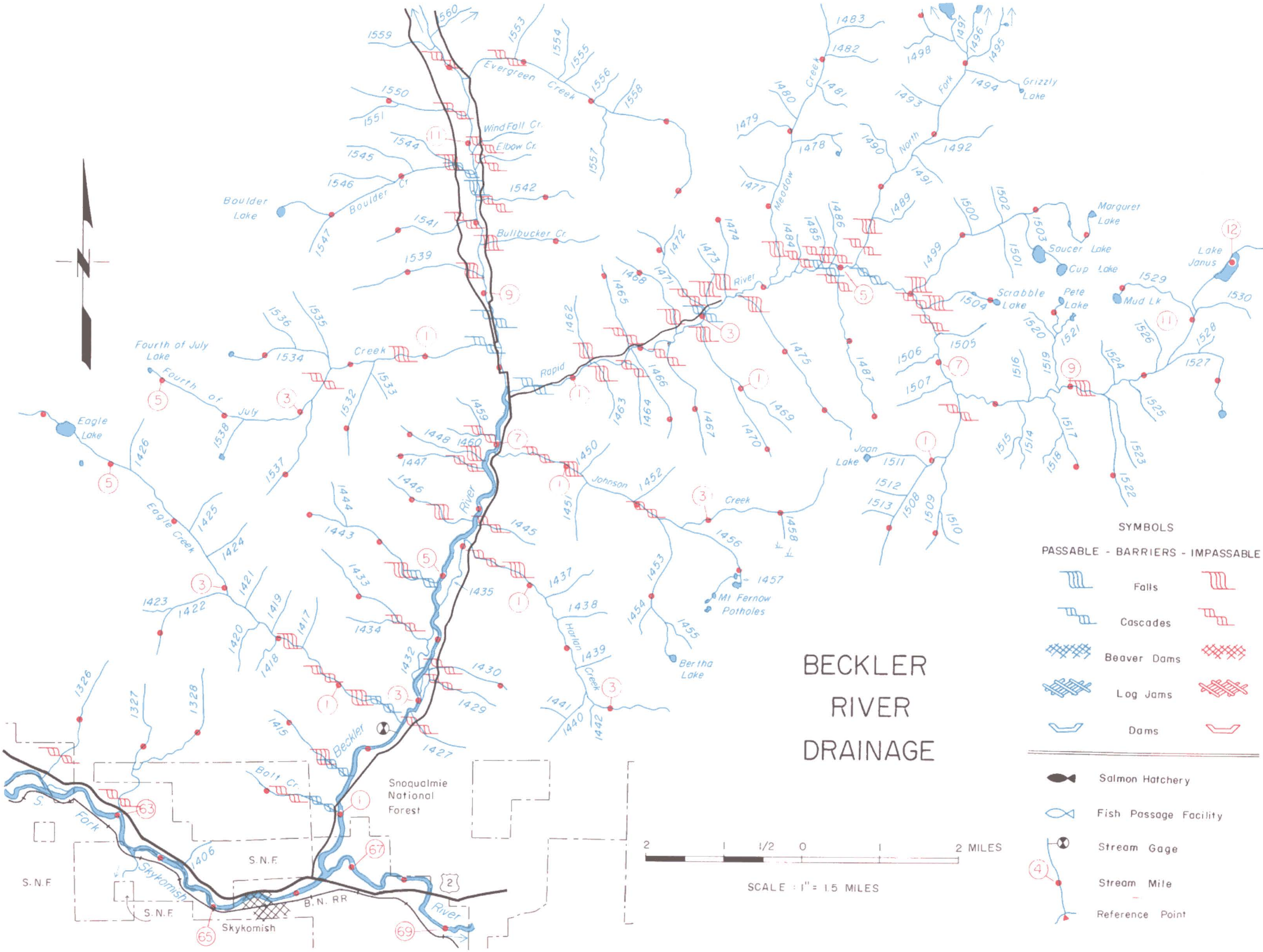
The only factor limiting salmon production is the natural steepening gradient in the higher mountain reaches. A potential limiting factor involves possible loss of stream-side cover, from logging or stream-side development.

Beneficial Developments

Adult salmon reaching the Beckler have benefitted from a truck-and-haul operation, transporting them over a barrier on the lower South Fork Skykomish.

Habitat Needs

Principal requirements to maintain the production capabilities in the drainage include preservation of existing stream-side cover, and maintenance of stream and streambed conditions in as near a natural state as possible.


BECKLER
RIVER
DRAINAGE
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
2 1 1/2 0 1 2 MILES
SCALE : 1" = 1.5 MILES
Snoqualmie
National
Forest
S.N.F.
Skykomish
B.N. RR
S. Fork Skykomish River
Beckler
Rapid River
Johnson Creek
Evergreen Creek
Wind Fall Cr.
Elbow Cr.
Boulder Cr.
Boulder Lake
Bullbucker Cr.
Fourth of July Lake
Fourth of July Creek
Eagle Lake
Eagle Creek
Bolt Cr.
Horton Creek
Bertha Lake
Mt Fernow Potholes
Meadow Creek
North Fork
Grizzly Lake
Margaret Lake
Saucer Lake
Cup Lake
Lake Janus
Mud Lk
Scrabble Lake
Pete Lake
Joan Lake

BECKLER RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
	Skykomish R. cont. as S. Fk. Skykomish River	@ mi. 49.61	—	—	
1413	Beckler River	RB-66.6	13.2	101.0	Chin.,Coho,(Pink)
1414	Bolt Creek	RB-1.0	1.4	—	(Coho)
1415	Unnamed	RB-1.55	1.2	—	Unknown
1416	Eagle Creek	RB-2.6	6.3	—	(Chin.), (Coho)
1422	Unnamed	RB-2.95	1.3	—	None
	Eagle Lake	Outlet-5.6	—	—	
1428	Unnamed Side Channel	LB-2.95	0.55	—	(Chin.), (Coho), (Pink)
1430	Unnamed	LB-0.54	1.1	—	Unknown
1432	Unnamed Side Channel	RB-3.3	0.85	—	(Chin.), (Coho) (Pink)
1433	Unnamed	RB-0.7	1.75	—	Unknown
1435	Unnamed Side Channel	LB-4.55	1.05	—	(Chin.), (Coho) (Pink)
1436	Harlan Creek	LB-1.0	3.9	—	(Coho)
1443	Unnamed	RB-4.85	2.0	—	(Coho)
1446	Unnamed	RB-5.9	1.4	—	Unknown
1447	Unnamed	RB-6.7	1.05	—	Unknown
1448	Unnamed	RB-6.75	1.1	—	Unknown
1449	Johnson Creek	LB-6.9	4.9	—	(Chin.), (Coho)
1453	Unnamed	LB-2.4	1.9	—	None
	Bertha Lake	Outlet-1.9	—	—	
1456	Unnamed	LB-2.65	1.6	—	None
	Mt. Fernow Pothole No. 1	Outlet-1.1	—	—	
	Mt. Fernow Pothole No. 2	Outlet-1.5 Outlet-1.5	— —	— —	
	Mt. Fernow Pothole No. 3	Outlet-1.6	—	—	
1461	Rapid River	LB-7.7	12.7	42.0	(Chin.), (Coho), (Pink)
1465	Unnamed	RB-1.8	1.1	—	Unknown
1466	Unnamed	LB-1.81	1.3	—	Unknown
1467	Unnamed	LB-2.4	1.6	—	Unknown
1468	Unnamed	RB-2.6	1.3	—	Unknown
1469	Unnamed	LB-2.9	1.9	—	Unknown

BECKLER RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1470	Unnamed	LB-0.8	1.1	—	Unknown
1471	Unnamed	RB-3.15	1.25	—	Unknown
1474	Unnamed	RB-3.45	1.0	—	Unknown
1475	Unnamed	LB-3.5	2.5	—	(Coho)
1476	Meadow Creek	RB-4.1	3.7	—	(Coho)
1487	Unnamed	LB-4.95	2.0	—	Unknown
1488	N. Fork	RB-5.21	4.0	—	(Coho)
1495	Unnamed	LB-3.15	1.3	—	None
1499	Unnamed	RB-6.0	3.3	—	None
	Margaret Lk.	Outlet-3.3	—	—	
1504	Unnamed	RB-6.25	1.0	—	None
1508	Unnamed	LB-7.45	2.5	—	None
1509	Unnamed	RB-0.8	1.3	—	None
1517	Unnamed	LB-8.65	1.0	—	None
1519	Unnamed	RB-8.85	1.1	—	None
	Pete Lake	Outlet-1.1	—	—	
1522	Unnamed	LB-9.4	1.4	—	None
1527	Unnamed	LB-10.25	1.4	—	None
	Unnamed Lake	Outlet-1.4	—	—	
1529	Unnamed	RB-11.0	1.1	—	None
	Lake Janus	Outlet-11.65	—	—	
1531	Fourth of July Cr.	RB-8.3	5.2	7.32	(Coho)
1532	Unnamed	LB-1.7	1.3	—	None
1534	Unnamed	LB-2.3	1.45	—	None
	Unnamed Lake	Outlet-1.45	—	—	
1537	Unnamed	RB-2.8	1.4	—	None
	Fourth of July Lk.	Outlet-5.2	—	—	
1539	Unnamed	RB-9.2	1.8	—	Unknown
1540	Bullbucker Creek	LB-9.65	1.5	—	Unknown
1541	Unnamed	RB-10.05	1.35	—	Unknown
1542	Unnamed	LB-10.25	1.3	—	Unknown
1543	Boulder Creek	RB-10.6	2.7	—	(Coho)
	Boulder Lake	Outlet-2.7	—	—	
1550	Unnamed	RB-11.35	1.55	—	Unknown
1552	Evergreen Creek	LB-11.8	4.15	—	(Coho)
1560	Unnamed	LB-12.5	1.5	—	None

FOSS RIVER DRAINAGE

This segment encompasses the Foss River drainage, including 12 miles of mainstem plus 25 tributaries adding 65 linear stream miles. Location is a few miles southeast of Skykomish in eastern King County. Access is via Highway 2, and Forest Service roads. All but the lower mile is in Snoqualmie National Forest.

Stream Description

From the Lynch Glacier, Mount Daniel area, the East Fork Foss flows northwest about 8 miles to the West Fork (R.M. 4.3), then north 4 miles to the South Fork Skykomish (Tye) River (R.M. 69.1). The East Fork's upper 7 to 8 miles is over rugged mountain terrain where the stream cuts through a narrow, steep-sloped, densely forested valley. Side hills rise sharply to over 5,000 feet. Over the remaining 4 to 5 miles the valley alternately widens and narrows. The river bottom supports mixed deciduous and conifer cover while steep side slopes are densely forested except for some clear-cut areas. Development consists of a few summer-vacation residences and some formal campsites. Principal land use includes logging, some mining exploration, and considerable recreation use.

The East Fork's upper 4 miles have a very steep, precipitous gradient, with its narrow channel having numerous cascades and falls. Substrate consists of boulder-rubble and bedrock. The gradient diminishes slightly over the next two miles remaining mostly steep with many cascades and rapids, a few pool-riffle stretches, and a bottom mainly of rubble, boulder, and some patch gravel. Over the next 2 miles, to the West Fork, the gradient moderates considerably, with the confined channel producing mainly pool and fast riffle stretches and only a few rapids and cascades. One steep falls-cascades stretching upstream from the U.S.G.S. gage (R.M. 5.2 to 5.5) is a barrier to migrating fish. Stream widths within this stretch range 3 to 12 yards during the early fall. The bottom is comprised of gravel and rubble and a few scattered boulder sections. Banks along most of the East Fork are earth or rock cuts with a few narrow rubble-boulder side beaches. Cover is mostly dense conifer timber, with some mixed deciduous trees and underbrush.

Below the West Fork the Foss continues for more than a mile with moderate gradient conditions. Fall widths range from 6 to 18 yards, averaging 12 yards. The channel remains quite confined and exhibits a good pool-riffle balance with some broad, lengthy riffle stretches. The bottom is predominantly gravel and rubble with few boulders. Over the lower three miles the gradient increases once again, becoming moderately steep with fast riffle character, some rapids and a few cascades. Here, the widths range from 7 to over 20 yards. The bottom through this lower stretch is largely rubble and boulders, a few short gravel riffles, and some scattered patch gravel strips. Banks along the lower mainstem are mainly low natural earth or rock cuts with a number of rubble-boulder side beaches. Cover ranges from moderate to dense mixed deciduous and conifer timber.

Except for the West Fork, tributaries exhibit steep mountain stream character over virtually their entire length. They contain sharply falling, confined channels, with numerous falls and cascades and boulder-rubble bottoms. A few have moderate gradient in their lowermost reaches, revealing some good pool-riffle areas and gravel bottoms. Forest canopy is generally dense over most tributaries.

In the West Fork the gradient is moderate over the lower 1.5 miles. Here the stream ranges 3 to 7 yards in width and possesses relatively good pool-riffle character with only a few rapid stretches. The substrate is gravel and rubble with a few scattered boulder areas. Stream-side cover is moderate to dense, mixed deciduous and conifer timber. The upper West Fork is characteristically a steep mountain-type stream with a number of small falls, cascades, and rapid stretches. Cover remains dense over most of its upper drainage.

Salmon Utilization

The Foss River is utilized by chinook and coho salmon, where the chinook spawn in the mainstem and the coho utilize accessible portions of smaller tributaries and side river sections. Juvenile chinook rear through the spring months within the accessible waters, while juvenile coho have year-round habitation.

Limiting Factors

Other than natural limitations imposed by increasing gradients, there are no factors directly impacting production. A potential limitation is loss of stream-side cover, from any future development or logging.

Beneficial Developments

Salmon utilizing the Foss River have benefitted from a truck-and-haul operation, transporting adult salmon above a series of falls on the lower South Fork Skykomish River.

Habitat Needs

The principal habitat requirements include preserving the existing stream-side cover, and maintaining the stream and streambed in their natural condition.

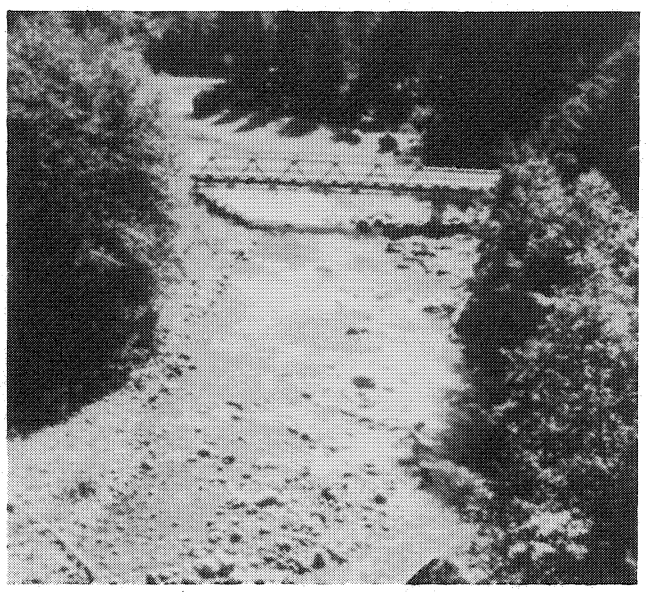
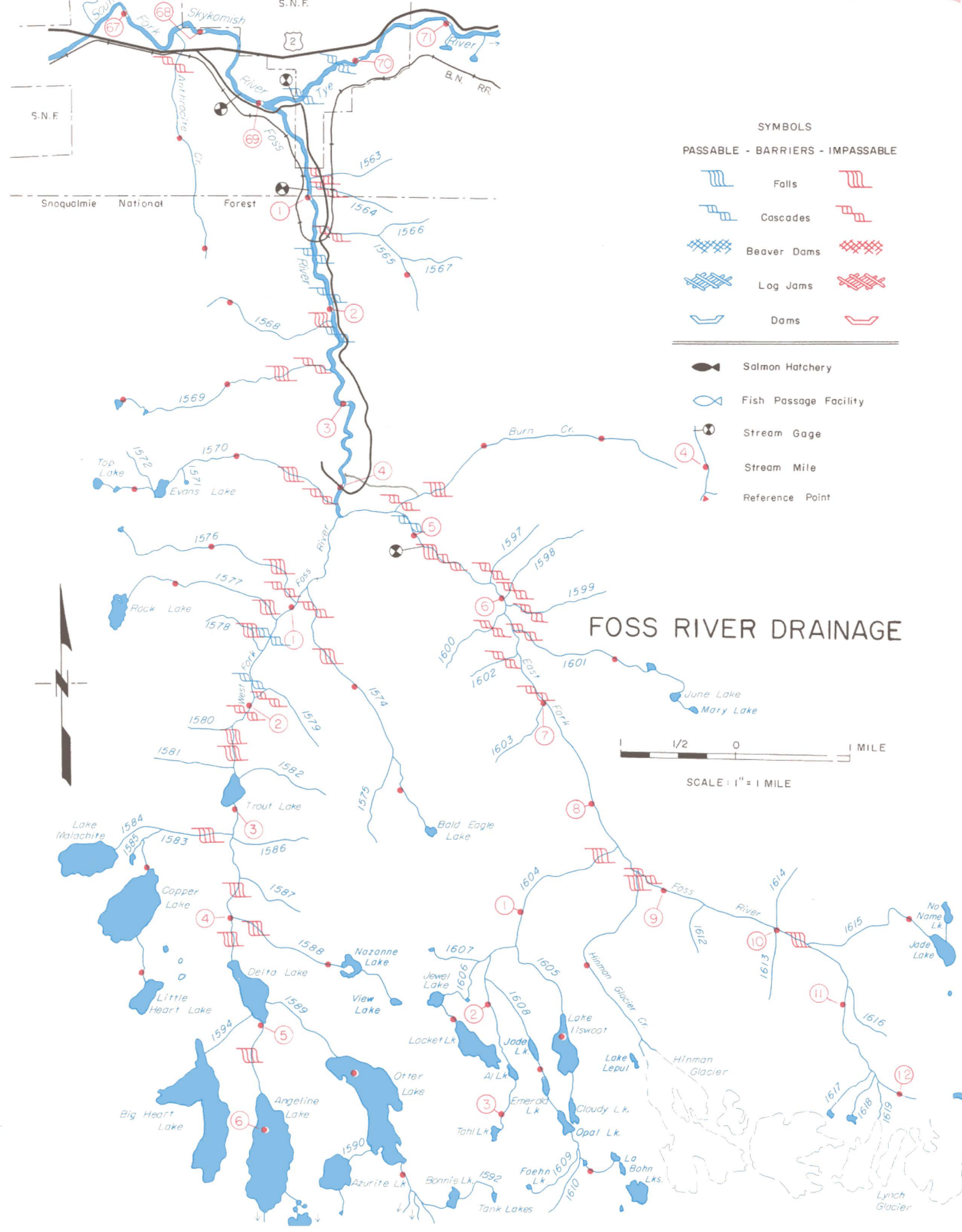


PHOTO 07-32. A section of the lower Foss River.


FOSS RIVER DRAINAGE
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
SCALE: 1" = 1 MILE
1 1/2 0 1 MILE
Snoqualmie National Forest
S.N.F.
B.N. RR
Skykomish River
Tye River
Foss River
Anthracite Cr.
Burn Cr.
Top Lake
Evans Lake
Rock Lake
Trout Lake
Lake Malachite
Copper Lake
Little Heart Lake
Delta Lake
Nazanne Lake
View Lake
Big Heart Lake
Angeline Lake
Otter Lake
Azurite Lk.
Bonnie Lk.
Tank Lakes
Bald Eagle Lake
June Lake
Mary Lake
Jewel Lake
Locket Lk.
Jade Lk.
Al Lk.
Emerald Lk.
Tahl Lk.
Lake Ilswoot
Lake Lepul
Cloudy Lk.
Opal Lk.
Foehn Lk.
La Bohn Lks.
Hinman Glacier Cr.
Hinman Glacier
Lynch Glacier
No Name Lk.
Jade Lake
West Fork
East Fork
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FOSS RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
	Skykomish R. cont. as S. Fk. Skykomish River	@ mi. 49.61	—	—	
1562	Foss River	LB-69.1	12.3	55.4	Chin.,Coho,(Pink)
1565	Unnamed	RB-1.25	1.3	—	Unknown
1568	Unnamed	LB-2.1	1.2	—	Unknown
1569	Unnamed	LB-2.6	2.0	—	Unknown
1570	Unnamed	LB-4.15	2.35	—	Unknown
	Evans Lake	Outlet-1.7	—	—	
	Unnamed Lake	Outlet-2.15	—	—	
	Top Lake	Outlet-2.35	—	—	
1573	W. Fk. Foss R.	LB-4.25	7.05	20.8	(Chin.), (Coho)
1574	Unnamed	RB-0.75	2.4	—	(Coho)
	Bald Eagle Lk.	Outlet-2.4	—	—	
1576	Unnamed	LB-0.95	1.9	—	Unknown
1577	Unnamed	LB-1.2	1.5	—	Unknown
	Trout Lake	Outlet-2.7	—	—	
1583	Unnamed	LB-3.24	2.1	—	None
	Copper Lake	Outlet-1.05	—	—	
	Ltl. Heart Lk.	Outlet-2.1	—	—	
1588	Unnamed	RB-4.0	1.7	—	None
	Nazanne Lake	Outlet-1.1	—	—	
	View Lake	Outlet-1.7	—	—	
	Delta Lake	Outlet-4.4			
1589	Unnamed	RB-4.85	3.65	—	None
	Otter Lake	Outlet-0.8	—	—	
	Unnamed	Outlet-2.6	—	—	
	Unnamed	Outlet-2.75	—	—	
	S. Tank Lake	Outlet-3.65	—	—	
	Angeline Lake	Outlet-5.65	—	—	
	Ltl. Chetwoot Lk.	Outlet-6.95	—	—	
	Chetwoot Lake	Outlet-7.05	—	—	
	Foss R. cont. as East Fork	@ mi. 4.21	—	25.6	
1596	Burn Creek	RB-4.7	2.6	—	None
1601	Unnamed	RB-6.3	1.9	—	None
	Unnamed Lake	Outlet-1.3	—	—	

FOSS RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	June Lake	Outlet-1.7	—	—	
	Mary Lake	Outlet-1.9	—	—	
1604	Unnamed	LB-8.4	3.15	—	None
1605	Unnamed	RB-1.3	1.6	—	None
	Lake Ilswoot	Outlet-0.8	—	—	
	Cloudy Lake	Outlet-1.6	—	—	
1606	Unnamed	LB-1.55	1.05	—	
	Unnamed Lake	Outlet-0.45	—	—	
	Jewel Lake	Outlet-0.75	—	—	
	Locket Lake	Outlet-1.05	—	—	
1608	Unnamed	RB-1.75	2.25	—	None
	Jade Lake	Outlet-0.7	—	—	
	Emerald Lake	Outlet-1.05	—	—	
	Opal Lake	Outlet-1.4	—	—	
	Unnamed Lake	Outlet-1.9	—	—	
	LaBohn Lake	Outlet-2.25	—	—	
	Al Lake	Outlet-2.55	—	—	
	Tahl Lake	Outlet-3.15	—	—	
1611	Hinman Glacier Cr.	LB-8.7	1.8	—	None
1615	Unnamed	RB-10.3	1.7	—	None
	Jade Lake	Outlet-1.35	—	—	
	No Name Lake	Outlet-1.7	—	—	

TYE RIVER DRAINAGE

The South Fork Skykomish River, above the Foss (R.M. 69.1), continues as the Tye River. This section encompasses the entire Tye River drainage including 11 river miles, plus 115 miles added by 19 tributaries. The area is located a few miles east of Skykomish in northeastern King County. Access is via Highway 2. Sections of the Tye below Alpine Falls (R.M. 73.6), plus virtually the entire drainage above, are within Snoqualmie National Forest.

Stream Description

From headwaters near Stevens Pass, the Tye flows south nearly two miles to Tunnel Creek (R.M. 78.3), then courses west eight miles to confluence with the Foss River (R.M. 69.1), these forming the South Fork Skykomish River. Principal tributaries are Tunnel, Surprise, Deception, and Martin creeks.

The Tye's upper three miles falls through a narrow, steep -sloped, densely forested valley. Below Surprise Creek (R.M. 77.1) the valley alternately widens and narrows over the next seven miles. Bottomland holds mainly dense stands of mixed deciduous and conifer growth, while the mountain side slopes maintain thick conifer forest. Some logging has occurred, primarily on upper slopes well away from the Tye. Development has been limited, with a few scattered residences, and the small community of Scenic. Principal activities include logging, some mining, and considerable recreation use.

Over its upper 8-9 miles the Tye presents mostly steep gradient, the confined channel producing numerous cascades and small falls, some rapids and fast riffle stretches. Fall widths along the lower half of this stretch range 5-15 yards. Above Deception Creek (R.M. 75.3) the stream exhibits a nearly continuous series of steep cascades and falls. Bottom material is predominantly large rock and boulders, some bedrock, only a few rubble-patch gravel sections. Banks are mostly sharp rock or earth cuts, maintaining dense deciduous-conifer cover.

Below Alpine Falls, for about one mile, the Tye has moderately steep gradient, with mostly fast riffle character. Fall widths range from 6 to over 18 yards. Some rapids and a few pool-riffle stretches are also found in this short stretch. The bottom is mainly rubble, some boulders, a few short gravel riffles.

From near the upper Bonneville powerline (R.M. 72.3), downstream two miles, the Tye offers moderate gradient, the channel winding across a relatively flat valley floor. There are numerous channel splits, with good to excellent pool-riffle conditions. Falls widths range from 8 to over 25 yards, averaging 12-15 yards. The bottom is clean gravel with some rubble stretches, few boulders. Many logs and associated forest debris are evident in the streambed. Banks consist of low natural earth or rock cuts, with numerous broad, gently sloping gravel-rubble beaches. Stream cover ranges from moderate to dense, mainly of deciduous trees and underbrush, with some conifers.

Over the lower mile, just above the Foss River, the Tye again has a moderately steep gradient with a number of cascades and rapids, a few fast riffles, and some relatively large deep pools. Widths range from 7 to over 20 yards. The bottom is mostly boulder and rubble, with a few relatively short rubble-gravel riffles, some patch gravel strips. Cover is mostly dense deciduous and conifer growth.

Virtually all tributaries exhibit steep mountain features throughout their stream lengths. Many fall directly off steep side slopes into the river, some revealing spectacular falls. Falls, cascades, and rapids predominate their character with bottoms comprised mainly of boulder and bedrock. Most tributaries have dense conifer cover over much of their drainage.

Salmon Utilization

The Tye River is used by chinook and coho salmon. Adult spawners ascend as far as Alpine Falls (R.M. 73.6), spawning mainly in the mainstem river. Some coho utilize the lowermost stretches of a few small tributaries. Juveniles rear throughout these accessible waters, with coho habitation year-round.

Limiting Factors

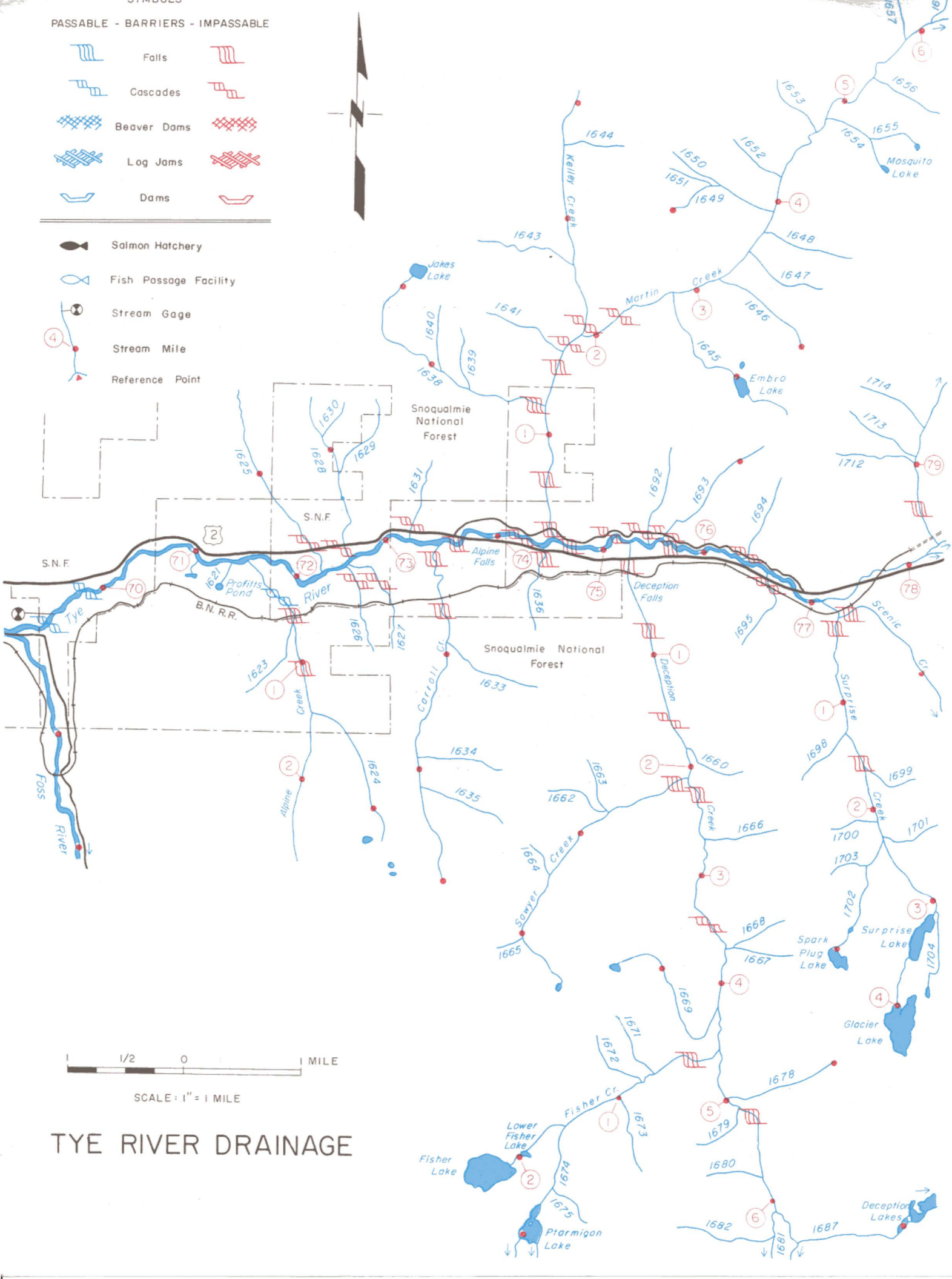
Alpine Falls is a total barrier; however, steepening gradient would offer limited access beyond. A potential limitation involves loss of stream cover from logging or streamside development.

Beneficial Developments

Salmon utilizing this area have already benefited from the truck-and-haul operation, transporting adults over a series of falls on the lower South Fork Skykomish. Other than this, there have been no projects, or programs to specifically benefit salmon production in this section.

Habitat Needs

The principal requirements to maintain present fish production capabilities in this area involve preserving existing stream-side cover, and maintaining stream and streambed conditions in as near a natural state as possible.



TYE RIVER DRAINAGE

TYE RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0012	Snohomish River				
	Snohomish R. cont. as Skykomish River	@ mi. 20.51	—	—	
	Skykomish R. cont. as S. Fk. Skykomish River	@ mi. 49.61	—	—	
	S. Fk. Skykomish cont. As Tye River	@ mi. 69.11			
1622	Alpine Creek	LB-71.6	2.7	—	(Coho)
1624	Unnamed	RB-1.4	1.3	—	None
1625	Unnamed	RB-72.31	1.7	—	(Coho)
1628	Unnamed	RB-72.52	1.5	—	Unknown
1632	Carroll Creek	LB-73.5	3.05	—	Unknown
1637	Martin Creek	RB-74.6	7.0	13.4	None
1638	Unnamed	RB-1.2	2.1	—	None
	Jakes Lake	Outlet-2.1	—	—	
1642	Kelly Creek	RB-1.9	2.1	—	None
1645	Unnamed	LB-2.8	1.5	—	None
	Embro Lake	Outlet-1.0	—	—	
1646	Unnamed	LB-3.2	1.0	—	None
1649	Unnamed	RB-3.9	1.0	—	None
1659	Deception Creek	LB-75.3	10.2	25.6	None
1661	Sawyer Creek	LB-2.1	2.5	—	None
	Unnamed Lake	Outlet-2.5	—	—	
1669	Unnamed	LB-4.2	1.4	—	None
1670	Fisher Creek	LB-4.6	2.15	—	None
1674	Unnamed	RB-1.5	1.65	—	None
	Lower Ptarmigan Lake	Outlet-0.7	—	—	
	Upper Ptarmigan Lake	Outlet-1.2	—	—	
	Lower Fisher Lk.	Outlet-1.95	—	—	
	Fisher Lake	Outlet-2.15	—	—	
1678	Unnamed	RB-5.0	1.0	—	None
1681	Unnamed	LB-6.1	2.5	—	None
1684	Unnamed	LB-0.8	1.95	—	None
	Marmot Lake	Outlet-0.95	—	—	
	Unnamed Lake	Outlet-2.5	—	—	
1687	Unnamed	RB-6.4	2.0	—	None
	L. Deception Lk.	Outlet-0.9	—	—	

TYE RIVER DRAINAGE
Snohomish River Basin — WRIA 07

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	Deception Lake	Outlet-1.05	—	—	
	Unnamed Lake	Outlet-1.7	—	—	
1688	Unnamed	RB-7.1	1.3	—	None
1690	Unnamed	RB-8.1	1.6	—	None
1691	Unnamed	RB-0.2	1.0	—	None
	Unnamed	Outlet-10.2	—	—	
1693	Unnamed	RB-75.6	1.2	—	None
1696	Surprise Creek	LB-77.1	4.0	—	None
1697	Scenic Creek	RB-0.24	3.1	—	None
	Hamada Lake	Outlet-2.0	—	—	
	Lower Murphy Lake	Outlet-2.3	—	—	
	Upper Murphy Lake	Outlet-2.5	—	—	
	Unnamed Lake	Outlet-3.1	—	—	
1702	Unnamed	LB-2.3	1.0	—	None
	Little Plug Lk.	Outlet-0.8	—	—	
	Spark Plug Lk.	Outlet-1.0	—	—	
	Surprise Lake	Outlet-3.15	—	—	
	Glacier Lake	Outlet-4.0	—	—	
1705	Unnamed	LB-78.2	1.2	—	None
1706	Tunnel Creek	LB-78.3	3.5	—	None
1707	Unnamed	LB-1.0	1.9	—	None
1708	Unnamed	LB-0.75	1.3	—	None
1716	Unnamed	LB-80.6	3.0	—	None
1717	Unnamed	RB-0.7	1.0	—	None