SKAGIT BASIN
Water Resource Inventory Area 03 & 04

The Skagit basin represents the largest of the Puget Sound drainages in total land mass and drainage area. Within its boundaries exist a multitude of rivers, streams, and lakes, and a relatively large and very strategic segment of marine water. The basin boundaries encompass the Skagit River and all of its tributary drainages, which is the largest river system of any located within the Puget Sound region. In addition, this basin contains another moderate sized drainage, the Samish River system, and at least five smaller independent drainages including Colony Creek, Joe Leary Slough, Indian Slough, Telegraph Slough, and Sullivan Slough. Some 2,989 identified streams provide approximately 4,540 linear miles of independent streams, mainstem Skagit River and its tributaries, plus the Samish River and tributaries.

Samish River

The Samish River drainage is the largest independent watershed within the Skagit basin. Due to its importance as a salmon production system, it is therefore discussed separately and contains the entire treatise developed for each basin.

PHOTO 03-1. Typical section of the lower Samish River.

The Samish River system, the largest independent drainage of the Skagit basin, consists of 29 miles of mainstem river, having its headwaters in the relatively broad and flat valley floor above Wickersham. From this area the stream courses mainly south, through intermittent sections of open farm land and moderate expanses of swamp-like area, with this condition existing for approximately 11 miles. From this point, approximately 2 miles below the community of Prairie, the Samish flows west and then southwest again, mainly through a broad valley floor having numerous sections of open farm land and occasional dense deciduous thickets. These conditions exist for approximately 12 miles to the small town of Allen. Beyond this point the river flows generally west and then north, across mostly cleared farm land area, for approximately 6 miles to its confluence with Samish Bay, just west of the town of Edison. The major portion of the entire mainstem Samish contains extensive pool-riffle characteristics necessary to support the abundant fish populations.

Friday Creek, the largest tributary to the Samish River, has its origin in Lake Samish, some three miles northwest of Alger, just east of Chuckanut Mountain. From Lake Samish the creek flows south about 9 miles, picking up numerous tributaries along its way and enters the Samish River in the vicinity of Belfast. Virtually every tributary to the mainstem Samish and to Friday Creek presents at least some accessible area to anadromous fish species. In addition, most of these water courses are inhabited by numerous resident fish stocks. There are 85 streams identified in the Samish River basin providing over 215 lineal miles of drainage.

Skagit River

The Skagit River system with its numerous tributary streams presents a great variety of ecological environments, virtually all of which are suitable for use by some anadromous and/or resident fish species. Consequently, this system contains somewhere throughout its length all but a few of the anadromous or resident fish species ever recorded in the Puget Sound region.

The salt-water areas encompassed by this basin's boundaries are extremely important regarding anadromous fish, marine fish, and shellfish populations. The tidelands of Skagit, Padilla, and Samish bays, plus the beach areas of the basin's islands and its mainland shorelines, all support extensive shellfish stocks. In addition, the large area of enclosed or semi-protected waters, into which drain the basin's freshwater run-off, provides excellent estuarine characteristics necessary for fresh-salt water conversion and food production required by the many anadromous fishes inhabiting the basin.

The Skagit River includes 162 miles of mainstem river with headwaters located in Canada. Moving seaward the Skagit crosses the Canadian border some 70 miles east of Blaine at RM 127 and flows south for approximately 33 miles to a point near Newhalem. This stretch of river contains three dams, all located in a relatively steep-walled narrow valley that splits the very rugged terrain of the high Cascade Mountain Range. Below Newhalem the river turns southwest, continuing in this direction for approximately 16 miles to the community of Marblemount. At this point a relatively large tributary, the Cascade River, enters from the east. Above Marblemount both the Skagit and Cascade rivers wind through narrow valleys, rimmed by highly mountainous and densely forested terrain. However, each of these streams through these river sections contains numerous pool-riffle type stream areas highly suitable for fish utilization.

Below Marblemount the Skagit River continues over a slightly broader valley floor in a west, southwest direction for approximately 10 miles to Rockport. Excellent pool-riffle type stream prevails through this stretch of river. Just below

PHOTO 03-2. Majority of anadromous fish migrate into the Skagit River through the North Fork channel from Skagit Bay.

Rockport the Sauk River, the largest of the Skagit tributaries, enters the mainstem. The Whitechuck and Suiattle rivers are the major tributaries to the Sauk and also have their origins in the high, rugged, mountainous terrain of the Cascade Range. Only the lower 4 miles of mainstem Sauk meanders over a relatively broad valley floor. The upper portion of the Sauk contains predominantly canyon and narrow valley river courses. Both the Whitechuck and Suiattle rivers fall swiftly from their high mountain headwaters, and each contains relatively little good pool-riffle area. The same is true for the Sauk's upper drainage system. However, the Sauk, beginning about 34 miles above Darrington and progressing downstream, contains increasing amounts of highly suitable spawning and rearing conditions for both anadromous and resident fish. Below Darrington the Sauk contains intermittent pool-riffle areas that occur over the moderately steep stream course.

Below Rockport the Skagit River flows approximately 12 miles to Concrete where another large tributary, the Baker River, enters from the north. Below Concrete the Skagit flows west approximately 33 miles to Sedro Woolley where it then turns generally south for some 23 miles to its confluence with Skagit Bay near the community of Conway. The floor of the Skagit Valley broadens considerably below Marblemount and intermittently contains open farm land and sections of moderately dense deciduous cover downstream to the Concrete area. Below Concrete the valley is broader with numerous farm land expanses and occasional industrial sites located along its length to Sedro Woolley.

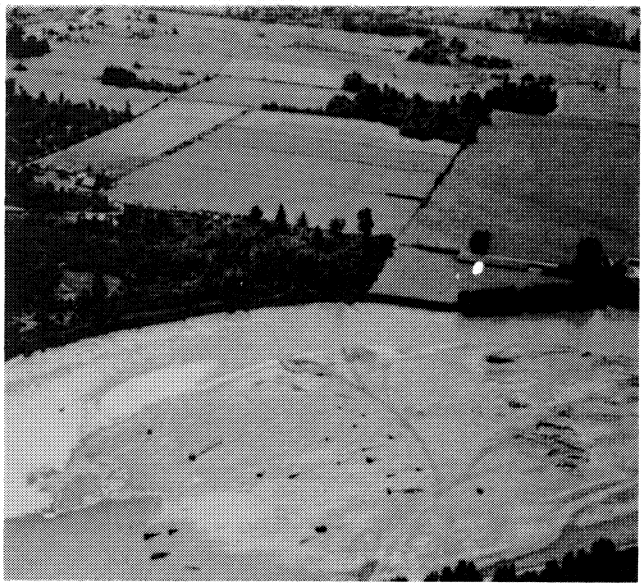


PHOTO 03-3. The Skagit River below Sedro Woolley is principally transportation waters and flows through extensive agriculture lands.

The entire length of mainstem Skagit River from Marblemount, some 55 miles to Sedro Woolley, contains excellent pool-riffle areas highly suitable for use by both anadromous and resident fishes.

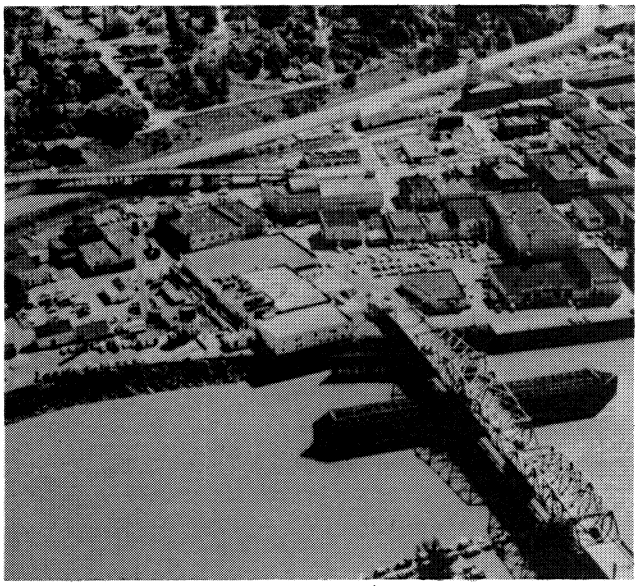


PHOTO 03-4. Mt. Vernon is the largest community in the Skagit basin.

Below Sedro Woolley, the river has strictly a flat-land drainage meandering character and is generally quite slow with extensive long, deep glides and pools. In this area most of the surrounding terrain has been cleared and presently exists as open farm land having increasing industrial or residential usage. At a point approximately 8 miles above its confluence with salt water, the Skagit River splits into numerous channels and slough-like areas. The total tideland area receiving Skagit River out-flow is approximately 10 miles in width. Between these channel splits much of the delta-like area serves as farm land.

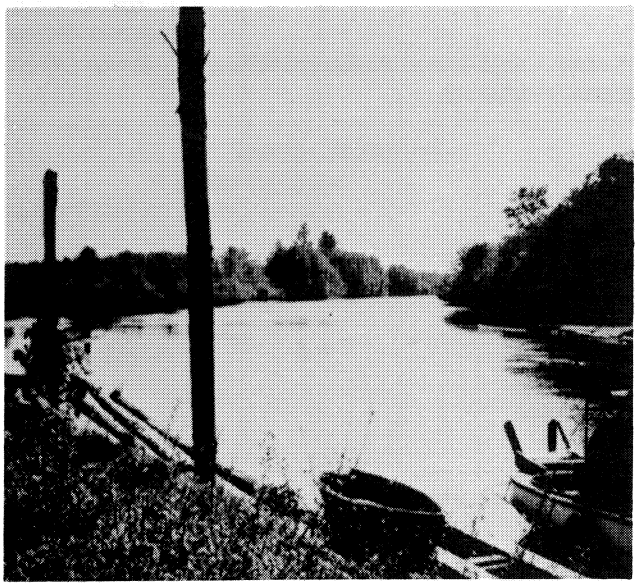


PHOTO 03-5. One of the numerous sloughs and channel splits in the lower Skagit (Tom Moore Slough near Milltown).

All of the smaller basin drainages, entering salt water independent of the Skagit and Samish rivers, are mainly flat-land streams and have little importance in anadromous or resident fish production. With the exception of Colony Creek, each of these drainages meanders across almost entirely open farm-land area from its headwaters to its confluence with salt water. Although the major portion of Colony Creek's upper drainage area is often intermittent, it does present some suitable spawning and rearing areas for both anadromous and resident species.

Fish Inventory and Distribution

Samish River

The Samish River system is inhabited by just three of the salmon species: chinook, coho, and chum; and by two of the anadromous game species, steelhead and sea-run cutthroat trout. Occasionally some pink salmon have been observed in this system; however, no permanent runs have been established. The mainstem Samish and certain portions of Friday Creek are accessible to chinook salmon for approximately 36 total miles. For coho and chum salmon, as well as for steelhead and cutthroat trout, approximately 31 miles of mainstem Samish River plus an additional 22 miles of accessible tributaries are available to the spawning adults.

Neither the Samish River system, nor any of the smaller independent basin drainages support spring chinook salmon.

Chinook Salmon — In the Samish River system the chinook utilizing the spawning areas are considered primarily the fall-chinook variety. These fish utilize approximately 15 miles of mainstem river for spawning, upstream to the vicinity of Prairie. In addition, some 6 miles of Samish tributaries are also used by spawning fall chinook with Friday Creek drainage providing the bulk of this area.

Counts from the Samish River indicate that this stream's fall-chinook spawning runs have ranged from 500 to 1400 fish over the 1966-1971 period, averaging approximately 900 per year.

PHOTO 03-6. Typical chum spawning area in the upper Samish River.

Coho Salmon — In the Samish River system, extensive coho spawning occurs throughout the mainstem river. Samish River tributaries having moderate to heavy coho populations include Ennis, Thunder, Dry, Swede, Peterson, Bob Smith, Thomas, and Friday creeks. Friday Creek tributaries also receiving moderate numbers of coho include Butter, Silver, and Bear creeks. Throughout the Samish River system it is estimated that approximately 42 linear miles of stream area are utilized by this species.

Chum Salmon — In the Samish River system chum salmon spawning is known to occur throughout most of the mainstem river and in Bob Smith and Thomas creeks, two of the Samish's lower tributary streams. Although little information is available regarding additional Samish River chum spawning, it is believed that virtually every accessible tributary receives some chum utilization.

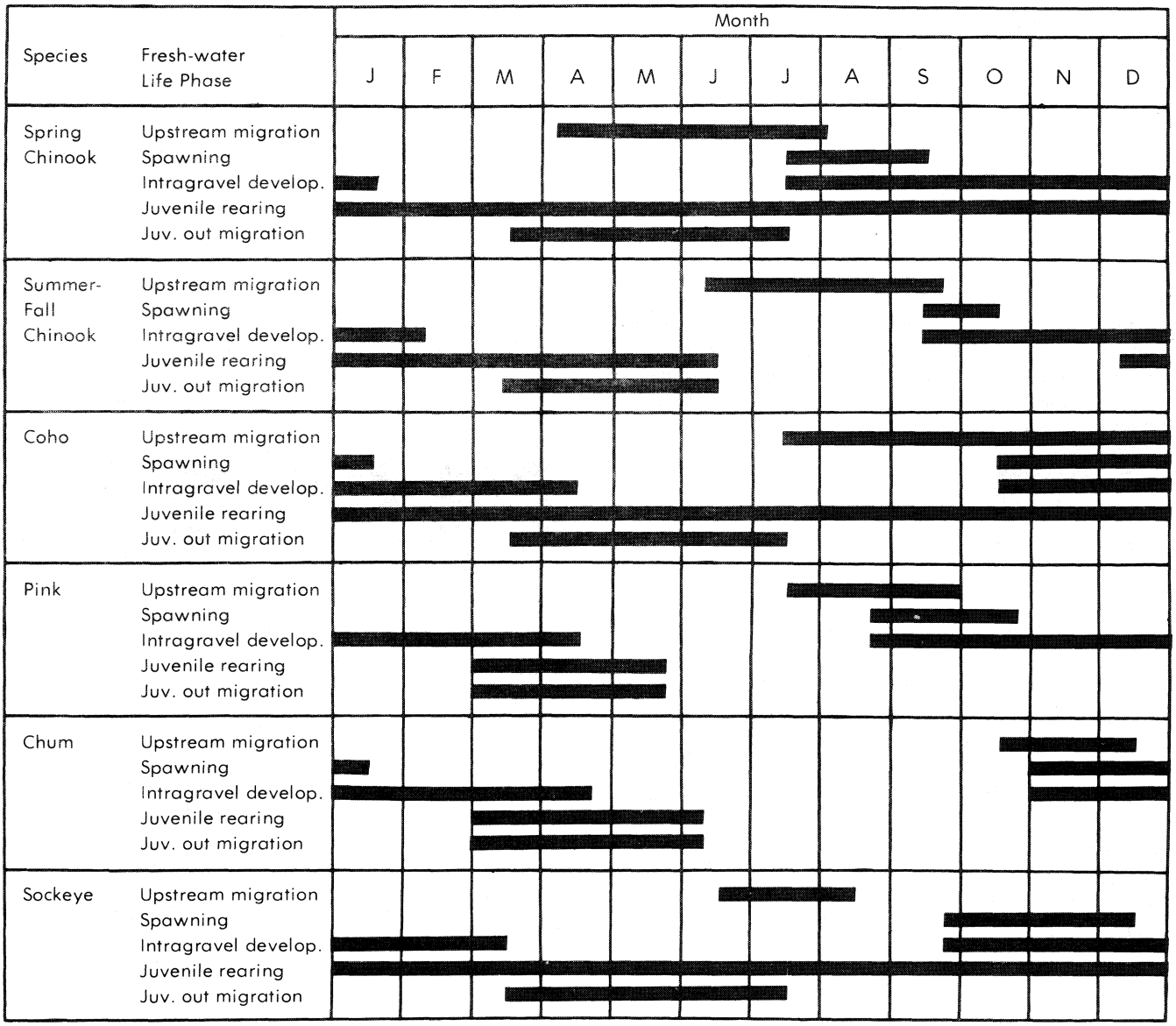
Early chum rearing takes place in each of the streams utilized by spawning fish, as well as in the important estuarine waters.

Regarding the timing of chum salmon utilization in the Skagit basin, some differences do exist between the Skagit run and Samish run. In the Samish River, adult chum enter late in September, with spawning commencing about mid-November. Chum spawning in the Samish River is usually completed by mid-January. In both the Skagit and Samish systems the chum fry begin seaward migration soon after emerging from the gravel; however, once again some differences do exist in the respective timings of movement. In the Samish drainage, juvenile out-migration begins about mid-February ending from mid to late April (Table 03-1).

Skagit River

The Skagit River receives runs of all five salmon species and each of the anadromous game fishes. Approximately 96 miles of the mainstem Skagit upstream to Gorge Dam, above Newhalem, is accessible to these species. An additional 375 miles of naturally accessible stream area is provided by the many Skagit River tributaries. This includes

Timing of salmon fresh-water life phases in Skagit-Samish Basins WRIA 03-04



some 30 miles of mainstem Cascade River and some 87 miles of Sauk River. The Baker River, through the operation of fish passage facilities, provides an additional 34 miles of suitable anadromous fish habitat above upper Baker Dam.

Chinook Salmon — The chinook salmon populating the Skagit River are generally separated into three segments or races; spring chinook, summer chinook, and fall chinook. As in any river system inhabited by chinooks, the spring segment is ususally considered as a separate group, with the summer-fall segments recorded as a single population. This is due mainly to the fact that the spring chimok's upstream migration pattern and choice of spawning areas are distinctly different from that of the summer-fall chinook. In the latter two races there is less separation in migration timing and in use of spawning area.

Adult spring chinook salmon utilize principally the smaller riffles and patch gravel areas of the upper Skagit River tributaries for spawning. These important areas include Goodell Creek, Bacon Creek, Diobsud Creek, the Cascade River, Illabot Creek, and the upper Sauk River drainages, including the upper mainstem Sauk, the lower Whitechuck River, and the Suiattle River and its tributaries, Sulphur, Downey, Lime, Buck, Straight, Tenas, and Big creeks. In addition, some spring chinook salmon are trapped from the lower Baker River below Baker Dam and are trucked some 14 miles upstream where they are released. They continue their natural migration from the release site to upriver spawning grounds in the mainstem Baker River and in sections of its larger tributaries. It is estimated that within the entire Skagit River system, a little over 125 linear miles of stream area are utilized by spawning spring chinook salmon.

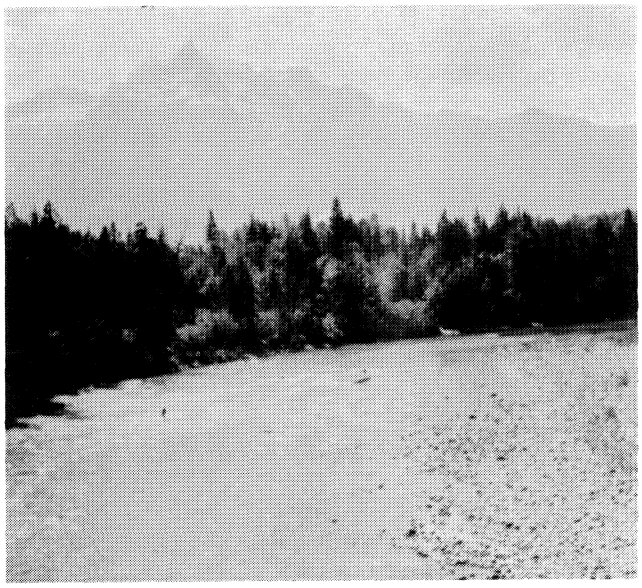


PHOTO 03-7. Extensive spawning riffles in the Sauk River are heavily utilized by spring and summer chinook.

The adult Skagit River spring chinook begin their upstream migration in early April with the run continuing well into July (Table 04-1). In some Skagit areas these fish begin spawning as early as late July, and in general, spawning is completed throughout this system by early October. After emerging from the gravel, the juvenile spring chinook usually rear in the system for more than a year, migrating seaward early in their second year of fresh water life. This migration usually occurs between mid-March and Mid-July, coinciding with the natural spring run-off pattern of the river. However, some chinook juveniles have been observed migrating out of the system nearly year-round.

It has been estimated, based principally on extensive spawning ground surveys, that the spring chinook spawning escapement in the Skagit system has ranged from 1,200 to 4,200 fish from 1966 to 1971, averaging about 2,300 annually for that period.

Summer-fall chinook salmon inhabiting the Skagit basin generally spawn on the more extensive riffle areas that are characteristic of the mainstem rivers and in the larger tributaries. In the Skagit River system these fish utilize approximately 71 linear miles of mainstem river between Newhalem and Sedro Woolley. In addition, summer-fall chinook spawning is moderate to extensive throughout some 16 miles of Cascade River and in some 32 miles of the mainstem Sauk River. The principal fall chinook spawning areas in the Sauk are located below Darrington. Also, many of the larger tributaries to the Sauk, to the Cascade, and to the mainstem Skagit receive summer-fall spawners. These tributaries include all of the streams inhabited by spring chinook as well as Jordan Creek on the Cascade River; Circle, Falls, Clear, and Dan creeks in the Sauk system; and Phinney, Grandy, Alder, Cumberland, and Day Creeks, all on the lower mainstem Skagit River. It is estimated that the summer-fall chinook segment utilizes approximately 165 linear miles of the Skagit River and its associated tributaries for spawning.

In general, the juvenile chinook rear through the total accessible length of mainstem Skagit and Samish Rivers, including all major and minor tributaries utilized by the spawning adults. Some limited rearing also occurs in the important estuarine waters of the basin.

The timing for the summer-fall chinook salmon utilization of the Skagit and Samish Rivers is quite similar (Table 04-1). In the Skagit River the summer-fall chinook begin entering about mid-July. This migration continues through the month of September with spawning usually beginning the first part of September and usually being completed by the middle or end of October. Following egg incubation and subsequent emergence from the gravel, juvenile fall chinook generally rear in the system approximately three months prior to their seaward migration. The timing of the "outmigration" is similar to that of the spring-chinook juveniles, in that it begins about mid-March; however, the major portion of the summer-fall movement extends over a longer period and is generally considered completed from mid to late June. Also, at least some summer-fall chinook juveniles can be found throughout this system during the later summer months, but the magnitude of this rearing population is presently unknown. Based principally on extensive spawning ground surveys, it is estimated that total combined summer-fall spawning escapement to the Skagit River system has ranged from 11,400 to 20,100 fish for the period 1966 to 1971, averaging about 16,000 annually.

The combined spring and summer-fall chinook natural spawning escapement to the entire Skagit basin has in recent years exceeded 22,400 fish. Based on catch to escapement ratios it is estimated that a seasonal escapement of this magnitude will reflect up to 63,000 chinook salmon taken by the commercial and sport fisheries.

Coho Salmon — Nearly all accessible streams and tributaries within the Skagit basin are utilized by spawning coho salmon. In the Skagit River system, additional coho spawning occurs in the mainstem Skagit, Cascade, Sauk, and Baker rivers. Some of the more heavily utilized Skagit River tributaries include Bacon, Diobsud, Goodell, Newhalem, Martin, Cascade, Illabot, Finney, Grandy, Davis Slough, Barnaby, Wiseman, Savage, Red Cabin, Muddy, Alder, Jones, Day, Nookachamps, and Carpenter creeks, all tributaries to the mainstem river. In addition, Beaver, Dan, Dillinger Slough, Hilt, and Rinker creeks, tributaries to the Sauk River system, also receive significant numbers of coho spawners. In the Baker River system spawning coho utilize virtually every accessible tributary to upper Baker Lake and to the Baker River above the reservoir. Within the Skagit River system it is estimated that approximately 225 linear miles of stream area are utilized by spawning coho. In addition, coho utilize some 60 miles of stream in the Samish River. Colony Creek is the only independent stream containing coho spawners and approximately 11 miles are utilized by these fish.

Juvenile coho rear throughout much of the mainstem Skagit and mainstem Samish rivers, as well as in each of the tributary streams utilized by spawning adults. Areas of particular importance to these young fish include the lower mainstems of both the Skagit and Samish rivers plus the estuary waters of Samish and Skagit bays.

As with the chinook salmon, the timing of coho migration and life history patterns in the Skagit River system is generally the same as that occurring in the Samish River, with the Skagit coho having a slightly greater range in virtually all such characteristics. One exception to this is found with the somewhat smaller early run of coho indigenous to many portions of the upper Skagit River system. In general, however, the major portion of the Skagit basin's coho spawning migration begins in mid-July and continues into December. In some areas spawning commences as early as mid-October, with many areas containing actively spawning fish until mid-January. As is characteristic with this species, the juvenile coho remain and rear within the system for a little more than a year before migrating seaward. These fish migrate early in their second year of fresh-water life, with the bulk of this migration occurring between mid-March and mid-July, coinciding with high river flows common during that time. As with chinook migrants, some juvenile coho have been recorded moving down the Skagit nearly year around.

Based primarily on spawning ground information, it is estimated that annual coho escapements to the Skagit River system have ranged from 19,699 to 46,900 fish for the period 1966 to 1971, averaging about 29,400 per year. Calculations based principally on catch to escapement ratios indicate that a total spawning escapement to the Skagit basin of this magnitude of coho salmon relates directly to an annual commercial and sport fisheries catch of approximately 117,600 fish.

Chum Salmon — Within the Skagit basin chum salmon spawning occurs principally in the Skagit River system and in the Samish River. In the Skagit River the principal spawning areas are located in the mainstem river. Many of these areas are locations of channel splitting, particularly where somewhat slough-like conditions still provide suitable flow, depth, and bottom type for spawning. The adult chum salmon utilize the Skagit for approximately 94 miles, all the way to Newhalem. Some of the more important Skagit River tributaries inhabited by chum salmon include Alder, Bacon, Barnaby Slough, Day, Goodell, Grandy, Illabot, Jones, Mundt, Savage, and Thornton creeks; the Sauk River and at least three of its tributaries; Dan, Hilt, and Rinker creeks; plus the lower Cascade River. In the Skagit River, adult chum salmon begin moving into the system from early to mid-September. Spawning commences early in November and in some areas carries on into mid or even late January. In the Skagit, the downstream juvenile migration begins early in February and continues until early June.

Based on spawning ground observations, it is estimated that chum salmon spawning escapements to the entire Skagit basin (both Skagit and Samish) have ranged from about 13,100 to 102,100 fish from 1966 to 1971, averaging about 51,100.

In addition to the Skagit and Samish river's chum salmon production, about 3,000 chum are known to utilize some of the smaller independent drainages within the basin.

Based on catch to escapement ratios, it has been calculated that a spawning escapement of 100,000 chum to the Skagit basin reflects a catch of some 100,000 fish by the commercial fishery.

Pink Salmon — Within the Skagit basin pink salmon spawning occurs almost exclusively within the Skagit River system. Neither the Samish River nor any of the smaller independent drainages has developed a permanent run of this species. Although attempts have been made to introduce pink salmon into the Samish system, little success has been achieved.

Within the Skagit River system adult pink salmon spawn mainly in the mainstem Skagit River. Numerous broad riffles combine with areas of moderate channel splitting to offer these fish extensive good quality spawning area beginning from a point well above the town of Marblemount, downstream for 50 miles to a point below the town of Lyman. Numerous Skagit River tributaries also receive moderate to heavy concentrations of adult pink salmon. Some of the more important of these cnclude alder, Bacon, Boulder, Day, Diobsud, Finney, Goodell, Grandy, Illabot, Jackman, Pressentin, and Thornton creeks on the Skagit River; the Cascade River, and two of its tributaries, Clark and Jordan creeks; and the Sauk River and two of its tributaries, Dan and Hilt creeks. In most cases, these tributary streams are inhabited by spawning pink salmon throughout their accessible length.

Because the juvenile pink salmon begin their seaward migration soon after emerging from the gravel, much of their early fresh-water life takes place in the mainstem Skagit and in some of the Skagit's larger tributary streams. These stream sections are exceedingly important to the young pink salmon, providing the initial rearing environment during their downstream journey to the sea. Also, considerable importance is given to the basin's estuarine waters for the early rearing of this species.

Adult pinks, returning on odd-numbered years, enter the river in early to mid-July with spawning beginning as early as late August. Spawning is usually completed by late October. Soon after the pink fry emerge from the gravel, their

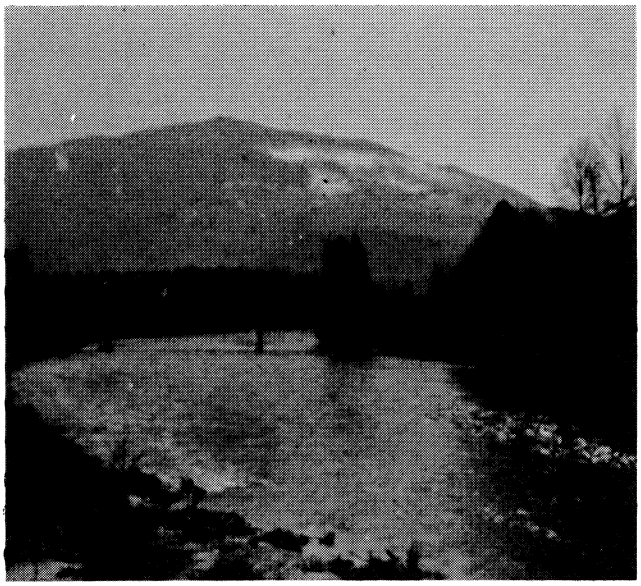


PHOTO 03-8. The main Skagit river in the vicinity of Rockport is extensively spawned by both fall chinook and pink salmon.

PHOTO 03-9. An aerial view of the confluence of the Baker River with the Skagit River and the Baker River barrier dams and fish trap at the town of Concrete.

seaward migration begins, with "out-migration" usually completed by the end of May.

Based on extensive tagging and recovery programs, and on routine stream survey information, it is estimated that the pink salmon escapement to the Skagit River system has ranged from 150,000 to 1,190,000 fish since 1959, averaging about 166,000 per odd-year escapement. Calculations based on catch to escapement ratios indicate a spawning escapement of 200,000 to the Skagit River relates directly to a commercial and sport fishery catch of 400,000 pink salmon.

Sockeye Salmon — Within the Skagit basin, sockeye salmon are indigenous to only the Skagit River system, and here are principally confined to the Baker River drainage. Prior to the installation of hydro-power dams on the Baker River, a moderate to large run maintained itself within this river system. Since major spawning areas for this species were lost when the dams were built, this run is now maintained through semi-artificial means, via the use of artificial spawning areas. These spawning "beaches" are located above the present dam sites, necessitating the trucking of fish to the spawning area and the installation and operation of downstream migrant-collection facilities to safely pass the juveniles over the dams on their seaward journey.

Adult sockeye salmon begin entering the Skagit River from early to mid-June, with the run terminating in August. Spawning commences the later part of September and continues until mid-December. Following egg incubation and subsequent fry emergence, the juvenile sockeye generally remain within the Baker River system for one year before migrating seaward. This downstream migration normally occurs from mid-March to mid-July.

Since 1926, when Baker River Dam counts were first made available, the sockeye salmon escapement to this river system has ranged from as low as 450 fish up to as high as 8,240 fish. The average for 40 years of record is approximately 3,000 sockeye into the Baker River system.

Based on catch to escapement ratios, it is estimated that an annual sockeye escapement of this magnitude reflects a commercial catch of up to 8,100 fish.

Salmon Production

Samish River

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.

Compared to the Skagit River, the potential for increasing natural salmon production from the Samish River is very limited. Natural production of salmon in the Samish River system is shown in Table 03-2.

TABLE 03-2. Salmon Escapement Level for the Samish River Basin WRIA 03.

	1966-1971 Escapements [1]	
Species	*Range*	*Average*
Chinook	2,700— 7,950	3,650
Coho	3,850—23,150	14,400
Chum	400— 8,500	3,000
	Natural Escapement Potential	
Chinook	1,200	
Coho	3,000	
Chum	20,000	

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

The increases in natural production for the Samish River system could be achieved mainly through specific stream and streambed improvement projects. Such projects have been considered for virtually every stream in the drainage system, including the mainstem Samish River.

It is anticipated that various propagation sites existing within the Skagit and Samish river drainage systems would be developed as needs in the Puget Sound region dictate. The second Washington Department of Fisheries hatchery is located on Friday Creek, tributary to the Samish River near Belfast. Friday Creek supplies water for this 9.5 standard rearing pond equivalent station. The hatching capacity is approximately 2,600,000 salmon fry, and the present rearing capacities are about 1,400,000 fingerling and 500,000 yearling salmon or about 29,000 lbs. This station also handles principally fall chinook and coho salmon, with most fish released directly into the Samish River system and some into other nearby upper Puget Sound drainages. By 1976 the capacity of this station will be increased to 93,000 lbs. New ponds and increased water supply will be added.

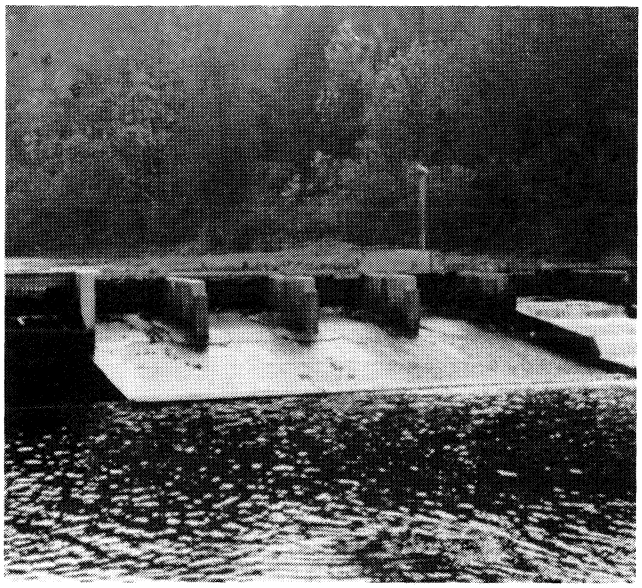


PHOTO 03-10. The Samish hatchery rack and trap located on the mainstem Samish River.

For the period 1966 to 1971, chinook returns to the Samish rack ranged from 1,806 to 4,039 adults, averaging 2,593 annually. Coho rack counts ranged from 2,173 to 22,204, averaging 11,900 spawners annually. Chum salmon have not been handled here in recent years.

Plants in 1971 included 3,407,500 juvenile chinook (24,600 lbs.) and 1,331,000 juvenile coho (49,300 lbs.).[2] Coho were planted into streams of the Skagit-Samish, Nooksack, and Stillaguamish watersheds from this station. Occasionally some juvenile salmon are transplanted from other basin facilities; however, total plantings of this type have been relatively small to date.

[2] *The average weight of juvenile salmon from hatchery releases is 20 coho/lb. and 125 chinook/lb.*

Skagit River

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 Skagit River drainage provides over 738,500 salmon annually to various sport and commercial fisheries in Washington. In an average odd year when pink salmon are present, approximately 300,000 chinook, coho, chum, pink, and sockeye salmon adults return to the Skagit River and tributaries to spawn naturally (Table 04-2).

TABLE 04-2. Salmon Escapement Level for the Skagit Basin WRIA 03 & 04.

	1966-1971 Escapements [3]	
Species	*Range*	*Average*
Chinook	11,700— 21,100	17,000
Coho	19,600— 38,800	24,300
Pink	100,000—300,000	166,000
Chum	13,100—102,100	51,100
Sockeye	500— 4,100	2,100

Natural Escapement Potential	
Chinook	22,000
Coho	27,000
Pink	400,000
Chum	85,000
Sockeye	3,500

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

The Washington Department of Fisheries maintains and operates the Skagit Salmon Hatchery near Marblemount. This 20 standard rearing pond equivalent station is served by two small tributaries to the Cascade River, Jordan and Clark creeks. The hatching capacity is approximately 6,-500,000 salmon fry. The present rearing capacity is about 3,000,000 fingerling and 1,200,000 yearling salmon — a total of 31,000 lbs.[4] Fall chinook and coho are the principal salmon species produced here, with virtually all fish planted in the Skagit River system. Present plans include increasing the capacity of this station to 90,000 lbs. by construction of new ponds.

For the period 1966 to 1971, chinook adult returns to the Marblemount Hatchery ranged from 133 to 1,995, averaging 596 spawners annually. Coho returns ranged from 3,344 to 35,526 adults, averaging 14,006 spawners annually.

[4] *The average weight of juvenile salmon when released from hatcheries is 20 coho/lb. — 125 chinook/lb. and 300 pinks/lb.*

For the period 1966 to 1971 average plants of 6,442,000 fall chinook and 2,412,000 coho were made annually in Skagit basin waters. In addition, somewhat minor plantings of other juvenile salmon species were made within the Skagit basin including 14,700 yearling spring chinook, 480,700 chum, and 38,500 pink salmon. Plants in 1971 were: chinook, 5,050,700 (42,500 lbs.); coho, 1,872,000 (94,500 lbs.).

Salmon propagation is further increased in the Skagit basin by the Washington Department of Fisheries salmon spawning beaches located on the upper Baker River. From 1966 to 1971 this facility produced an average of 1,714,000 sockeye juveniles per season.

Newhalem ponds rearing area is located adjacent to the Skagit River near Newhalem. It has been planted annually with an average of 121,530 coho. These fish have been given preliminary rearing at Skagit Salmon Hatchery and are included in the fish planted from Skagit Hatchery.

Preliminary information from commercial and sport catch statistics indicate that the present planting program contributes approximately 50,250 chinook, 125,150 coho, and 5,670 sockeye to these fisheries annually.

Harvest

Samish River

Salmon produced or reared in Samish basin waters contribute to U.S. and Canadian, Pacific Ocean sport and commercial fisheries and to fisheries existing through the Strait of Juan de Fuca and upper Puget Sound. The estimated contribution (all three species) to these fisheries has in recent years ranged from 23,900 to 124,900 salmon. The Samish River does not support a commercial river fishery because of its small size.

The Samish River is open to salmon angling from its mouth to the Highway "99" bridge, a distance of 9 miles, from July through mid-November. Only jack salmon [5] may be possessed on this stream. According to punch card records, the catch in the Samish River averaged 270 salmon annually during the 1964 through 1966 fishing seasons. This catch was composed of jack chinook and coho.

Skagit River

Salmon produced or reared in the Skagit basin waters contribute to U.S. and Canadian, Pacific Ocean sport and commercial fisheries, and to fisheries existing through the Strait of Juan de Fuca and upper Puget Sound. The estimated total contribution of salmon (all species) to these fisheries has in recent years ranged from 280,700 in 1968 to 858,600 in 1971.

The basin's marine waters support a moderate to heavy commercial fishery for salmon. Gill net vessels make up the bulk of the fishery in this area, utilizing the waters in northern Skagit Bay, on the eastern side of Rosario Strait, and the southern half of Samish Bay. Purse seiners also fish the area, utilizing the waters near William Point in the south Samish Bay area.

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.

The Swinomish Indians fish the waters principally in the Skagit Bay area, utilizing drag seines and traps. In 1963, an excellent pink salmon cycle return year, this fishery harvested nearly one quarter of a million salmon.

The salt water salmon sport fishery is quite intense in the area as reflected by the average of 37,600 angler trips logged annually between 1966 and 1971. Especially popular fishing locations include Hope Island, Deception Pass, Fidalgo Head, and some of the inter-island water courses of the eastern San Juan group.

Fresh water angling for salmon in the Skagit basin is permitted in the Skagit and Samish rivers. The Skagit River is open to salmon angling the entire year downstream from the mouth of Gilligan Creek, a distance of 26 miles. During the fall months an additional 26 miles, up to the mouth of the Baker River, are open to the capture of coho salmon only. Jack salmon [6] angling is permitted from July through mid-November from Gilligan Creek upstream to the mouth of the Cascade River, a distance of 46 miles. Punch card returns indicate that an average of 6,616 salmon were taken annually from the Skagit River from 1966 through 1971 with a record catch of 13,450 in 1971. The catch is composed of both adult and jack chinook and coho, plus pink salmon on odd-numbered years.

Limiting Factors

Samish River

Limiting factors refer to conditions that lead to a complete loss or a reduction of an environment's fish producing potential, excluding harvest or exploitation. They include only those conditions presently considered alterable.

Stream flows — Seasonal flooding and extreme low flows occur in the main Samish River and each of its tributary streams. An inadequate flow of 12 cfs has been allocated to anadromous and resident fish use, while the major part of the river's flow is diverted for irrigation.

Physical barriers — The Fisheries Department maintains a fish rack barrier across the Samish River near the mouth of Friday Creek to intercept the adult spawning migrations for egg taking purposes. Otherwise this rack is open to fish passage. Steep gradients and cascade sections above the valley floor form partial barriers in the small tributary streams of the upper watershed.

Water quality — A source of pollution occurs from agricultural operations in the valley, particularly the increasing use of chemical sprays on lands bordering the Samish River. The main river and lower tributaries also experience quite high temperatures during the summer period; however, lethal temperatures are seldom reached.

[5] *Not less than 10 inches nor more than 24 inches in length.*

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

Limited spawning and rearing — Channel dredging and diking has created stream bank erosion and siltation problems. Streambed substrate has been degraded in these sections, limiting spawning. Rearing areas for juvenile coho are severely curtailed by extreme summer low flows.

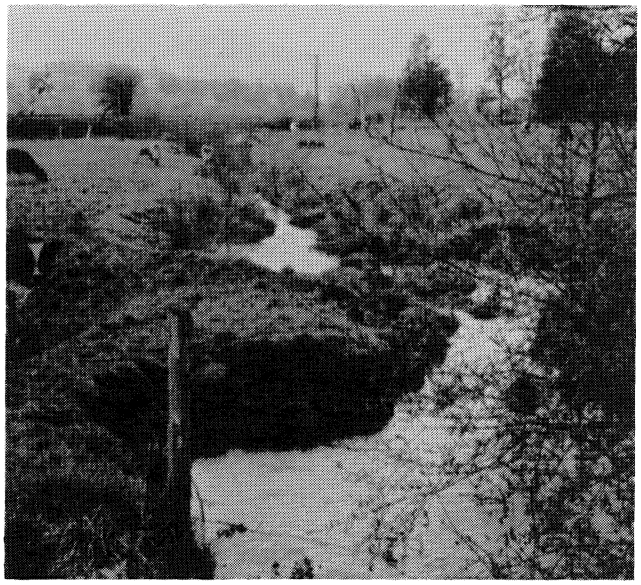


PHOTO 03-11. The removal of stream-side cover and destruction of stream banks by livestock are major limiting factors on small streams (upper Samish River).

Watershed developments — Land drainage projects to create agricultural lands occur throughout the Samish valley. Flood control levees and diking have altered much of the river in the Samish valley.

Skagit River

Limiting factors refer to conditions that lead to a complete loss or a reduction of an environment's fish producing potential, excluding harvest or exploitation. They include only those conditions presently considered alterable.

Within the Skagit basin the major limiting factors include seasonal flooding, low summer flow, extreme river fluctuation, natural barriers in the streams and rivers, and excessive silt depositing on the Skagit flats marine estuarial environment.

Stream flow — Intensive runoff, particularly where extensive logging has occurred over the upper steep-sloped watershed, has degraded and altered many of the smaller basin drainages. This is especially true on the Sauk River and its tributaries. Seasonal flooding occurs in the mainstem Skagit and several of its mainstem tributaries such as Finney, Jackman, Grandy, and Nookachamps creeks. These watersheds have also been extensively logged.

Low summer flows occur mostly in mainstem tributaries that drain lowlands and agricultural areas. Finney, Jones, Nookachamps, Mannser, Hanson, Diobsud, Corkindale, and Olsen creeks experience such low flows.

Peaking operations at the three dams on the mainstem Skagit River create diurnal flow fluctuations downstream that can drastically change the river level in a short period of time.

Physical barriers — Within the Skagit basin approximately 12 miles of potentially usable stream area are partially or totally blocked to anadromous fish by natural barriers. Partial barriers exist on Finney Creek, Bacon Creek, and the Cascade River as well as a number of the upper tributaries to the Suiattle River. Total barriers blocking significant anadromous fish use areas exist on the North Fork Cascade, the North and South Fork Sauk, and on some of the larger Suiattle tributaries.

PHOTO 03-12. Many tributaries in the mountainous area of the upper Skagit basin are blocked by falls and cascades (falls on North Fork Sauk River).

Hydroelectric projects within the upper Skagit system consist of three dams on the mainstem Skagit above Newhalem and two dams on the Baker River, as well as others proposed for the Skagit, Cascade, and Sauk rivers. The Skagit dams do not have fish passage facilities and block upstream migration. There is an adult trap and haul facility on the Baker River below the lower dam at Concrete that is used to transport fish to the upper reservoir. In addition, downstream migrant facilities are installed at both Baker dams to handle juveniles on their "out-migration".

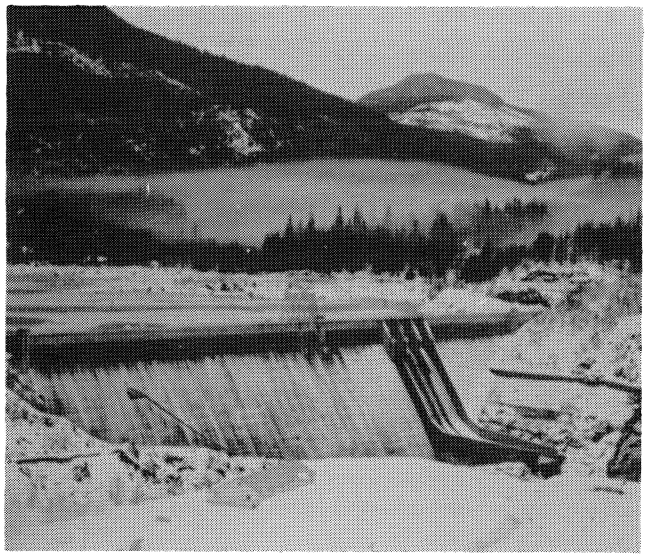


PHOTO 03-13. Hydroelectric projects create fish passage problems and inundate many miles of formerly productive area (upper Baker Dam).

Water quality — Water quality throughout the basin is generally good except for the natural "glacial flour" conditions present in such streams as the Suiattle and Whitechuck rivers. Pollution problems result from expansion of residential and industrial land use in the lower Skagit Valley and from increasing use of chemical sprays on agricultural lands bordering water courses.

Limited spawning and rearing — Some minor siltation and gravel compaction occurs in the mainstem Skagit at the mouth of the Sauk River. The lower mainstem Skagit as it enters the delta area also experiences siltation on a larger scale. The extreme diurnal fluctuations in river level created from power peaking below Newhalem have placed limited values on spawning and rearing areas and caused serious stranding mortalities for downstream migrant chinook. Water removals for municipal, industrial and agricultural purposes affect only a few smaller streams, but juvenile rearing conditions are seriously reduced where heavy consumptive withdrawals occur during summer low flow periods.

PHOTO 03-14. Steep gradients and unsuitable streambed materials are naturally occurring limiting factors in the upper Skagit basin (Damnation Creek).

Watershed development — Logging continues to be one of the most important activities throughout the drainage. Extensive clear-cutting in the foothills and side slopes of the upper mountainous watersheds influences runoff patterns and degrades the stream habitat for salmon production.

The hydroelectric power developments on both the Baker River and upper Skagit adversely affect anadromous fish production through alteration of natural river conditions including flow, water quality, gravel composition of the streambed, and siltation problems. In addition, the timing and migration patterns of adult and juvenile salmon are influenced from flow manipulations and power peaking.

Residential, industrial, and commercial expansion in the lower valley, along with summer home developments adjacent to the main rivers and streams, are increasing each year. Flood control channeling and diking, and water diversions for water supplies are associated with these developments.

PHOTO 03-15. Extensive clear cuts cause serious flow, siltation, and temperature problems in the streams.

SKAGIT BASIN WRIA 03 & 04
Index to Key Maps

[1] *The Skagit Basin is composed of two separate WRIA's (03 and 04). For continuity, the stream numbers from area 03 have been continued into area 04, maintaining consecutive numbering for all streams in the Skagit system.*

SKAGIT RIVER BASIN
WRIA-03&04

WATER RESOURCE INVENTORY AREA (3)

SCALE 1:125,000

0 5 10 STATUTE MILES

WRIA (1)

WRIA (2)

WRIA (5)

WRIA (6)

WRIA (48)

WRIA (47)

WRIA (45)

WATER RESOURCE INVENTORY AREA (4)

SCALE 1:125,000

0 5 10 STATUTE MILES

CANADA
UNITED STATES
BRITISH COLUMBIA
WASHINGTON

NORTH CASCADE PRIMITIVE AREA

MT BAKER NATIONAL FOREST

WHATCOM CO.
SKAGIT COUNTY

SKAGIT COUNTY
SNOHOMISH COUNTY

SAN JUAN CO.
SKAGIT CO.

SNOHOMISH CO.
SKAGIT CO.

CHELAN CO.

OKANOGAN CO.

ROSARIO STRAIT
GUEMES CHANNEL
BELLINGHAM BAY
PADILLA BAY
FIDALGO BAY
BURROWS BAY
SAMISH BAY
SKAGIT BAY

202
102
302
502
702
902
802
602
402
1102
1202
1302
2002
2402
2502
2202
2302
2602
2102
1402
1502
1602
1702
1802
1002

LOWER SAMISH RIVER

This drainage section contains the lower Samish River and the two independent drainages, Edison Slough and Joe Leary Slough. Edison Slough enters Samish Bay and Joe Leary Slough drains into Padilla Bay. The Samish River is the major fish production drainage in the section, consisting of 12 miles of mainstem and more than 35 total miles of tributaries.

Stream Description

From R.M. 12, about two miles east of Belfast, the Samish River flows west, turns south for a few miles, then arcs north, entering Samish Bay about one mile west of Edison. Five tributaries enter along this reach, the major ones being Friday Creek (see drainage section 201) and Thomas Creek.

The Samish channel and the major length of tributaries flow over flat to moderately sloped agricultural land. Except for immediate stream bank cover, adjacent land is cleared for grazing or annual crops. Some farm dwellings and a small community, Allen, are the principal developments along the stream course. Summer home construction is beginning along upper reaches of some tributaries.

The mainstem Samish offers two types of stream environment. The lower half, having flatter gradient, is predominantly a continuous, slow moving, moderately deep stream course, 30 to 40 feet wide. Tidal influence extends upstream to R.M. 4.0 Channel bottom is mostly sand and silt, with occasional patch gravel or rubble. Aquatic plant growth is abundant along the banks and over some bottom sections. Continuous dikes confine the river on both banks up to R.M. 5.0. Intermittent diking occurs between R.M. 5 and 12 to control flooding. Most banks are cleared and steep-sloped, having been stabilized by riprapping or artificial sloping.

The channel's upper section has a moderate gradient with a good pool-riffle balance. Stream width ranges from 20 to 50 feet. The bottom is mostly clean gravel and rubble. A few short sections of bank have been stabilized and have a relatively sharp slope to waters edge. For the most part, however, banks are naturally stable, consisting of gently sloping gravel beaches interrupted by occasional cut-banks. Relatively dense deciduous growth provides nearly ideal shade and protective cover in this reach, as well as along upper tributaries.

Edison Slough was the old North Fork Samish River; however, diking for flood control cut off this water course. The slough serves as a source of irrigation water to the surrounding crop lands. A tide gate controls salt water intrusion.

Joe Leary Slough contains a small tributary stream draining from Bayview Hill. Stream banks are generally without shade or cover.

Salmon Utilization

The Samish River channel is the transportation reach for all anadromous fish using the system. It contains the critical "adjustment" zone between fresh- and salt-water habitats within the area downstream from Allen. Also, this reach has many deep pool sections offering protected resting area for migrating adult salmon. This drainage section contributes greatly to the stream's total fish production. Chinook, coho, and chum salmon spawn extensively in the main channel from R.M. 5.0 to R.M. 12.0 and in the tributaries. Juvenile salmon rearing takes place in all accessible streams. No anadromous fish presently use the independent sloughs, although historically, coho utilized Joe Leary Slough.

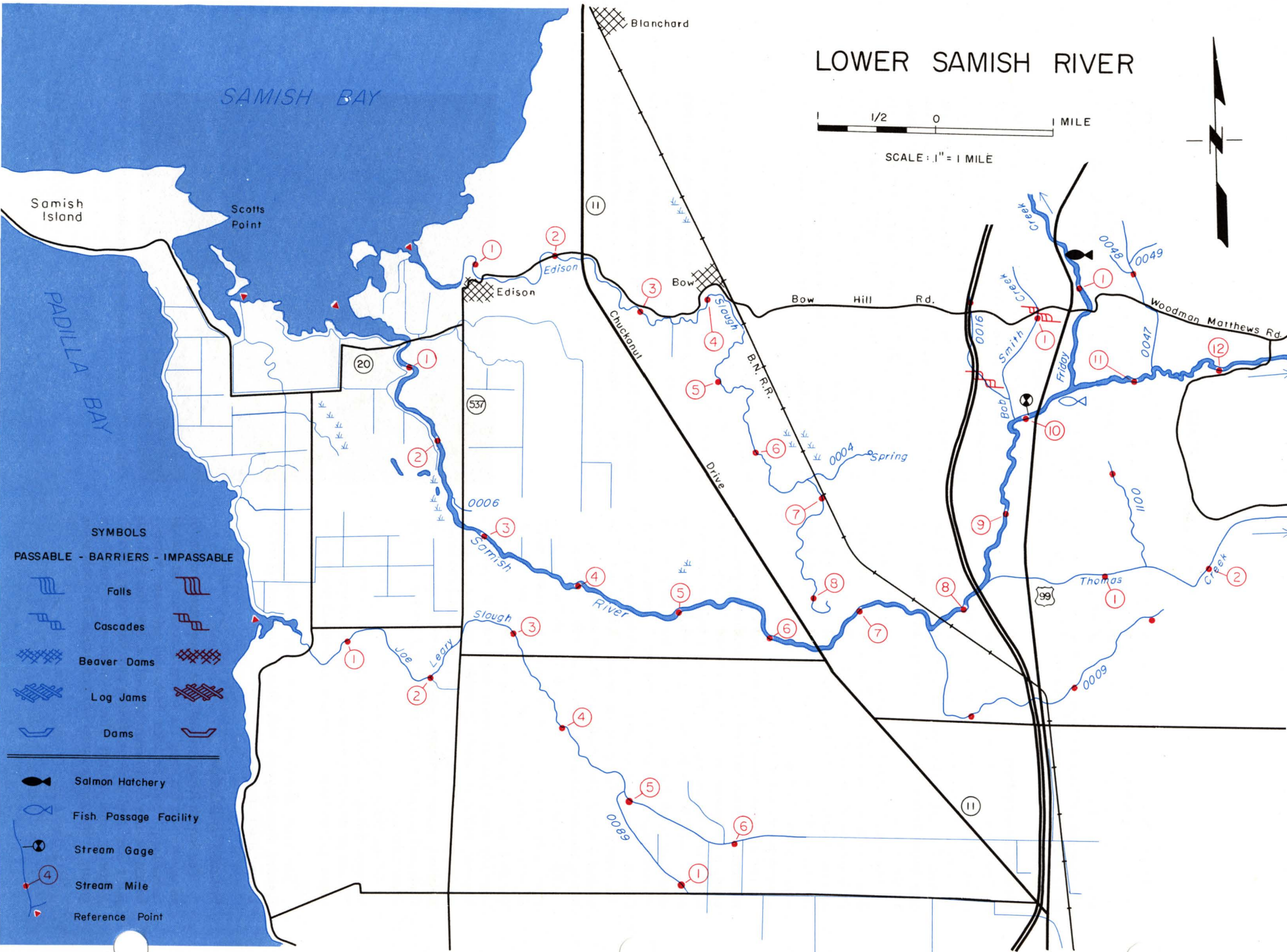
Limiting Factors

Principal fish production limitations in this drainage section include occasional severe low summer flows, removal of water for irrigation, stream bank clearance, channel alterations, and bank stabilization projects. Water quality is sometimes affected by a gravel mining operation near Thomas Creek, creating silting conditions and sedimentation in that stream, and in the mainstem Samish downstream. Water quality is also affected at times by runoff from agricultural sprays, feed lots, silage pits, silos and septic drainage adjacent to flowing streams. Bob Smith Creek, a formerly productive chum salmon stream, now contains badly degraded substrate where eggs no longer survive. The two independent sloughs have marginal water quality in summer months.

Habitat Needs

To maintain fish production potential in this section of drainage, all contributing environmental conditions must be preserved. Sufficient cover must be kept adjacent to the river and along upper tributaries. Selective re-establishment of cover along cleared sections is highly desirable. Streambed controls should be considered for the area just below major spawning sections. No gravel removal or channel alterations should be allowed above R.M. 5.0. Spawning gravel rehabilitation is needed in Thomas and Bob Smith creeks.

PHOTO 03-16. Samish River spawning area during low flow period.


LOWER SAMISH RIVER
SCALE: 1" = 1 MILE
1/2
0
1 MILE
SAMISH BAY
PADILLA BAY
Samish Island
Scotts Point
Blanchard
Edison
Bow
Bow Hill Rd.
Woodmon Matthews Rd.
Chuckanut Drive
B.N. R.R.
Slough
Edison Slough
Samish River
Joe Leary Slough
Spring
Smith Creek
Friday Creek
Bob Thomas Creek
0004
0006
0009
0011
0016
0047
0048
0049
0089
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point

LOWER SAMISH RIVER
Skagit Basin—WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0001	Edison Slough	Sec32,T36N,R3E	8.3	—	Coho, (Chum)
0002	Drainage Ditch	LB-0.1	~ 7.0	—	Unknown
0005	Samish River	Sec6,T35N,R3E	29.1	106.0	Chin., Coho, Chum
0009	Unnamed	LB-7.7	3.1	—	Coho, (Chum)
0010	Thomas Creek	LB-8.35	5.9	9.89	Coho, Chum
0011	Unnamed	RB-1.35	1.1	—	Coho, (Chum)
0012	Wollard Creek	LB-3.7	3.3	—	Coho, (Chum)
	Bottomless Lk.	Outlet-3.3	—	—	
0015	Bob Smith Cr. (local name)	RB-9.9	1.5	—	Coho, Chum
0016	Unnamed	RB-0.2	1.1	—	Coho, Chum
0017	Friday Creek	RB-10.5	14.65	—	Chin., Coho, Chum
	(See Skagit 203)				
0047	Unnamed	RB-11.25	1.6	—	Coho, (Chum)
	(Continued Skagit 303)				
0086	Drainage Ditch System	Sec31,T36N,R3E	~20.6	—	None
0087	Joe Leary Slough	Sec18,T35N,R3E	6.6	—	Unknown
0089	Unnamed	LB-4.9	1.1	—	Unknown
0091	Unnamed cont. as Drainage Ditch	@ mi. 1.1	~ 5.3	—	Unknown
0095	Joe Leary Sl. cont. as Drainage Ditch	@ mi. 6.6	~ 3.2	—	Unknown

FRIDAY CREEK DRAINAGE

Friday Creek is the largest tributary of the Samish River and contains over 14 miles of mainstem plus 15 tributaries providing 40 additional stream miles. This drainage flows southeast and south being paralleled by State Highway 1 in the lower portion and by Interstate 5 along Samish Lake. No major towns or communities are located in this section. The small community of Alger is located near the Highway 1 crossing at Silver Creek. The Skagit-Whatcom County line bisects Friday Creek near R.M. 8.0.

Stream Description

Friday Creek is formed from the overflow of Samish Lake. Seven small precipitous tributaries drain into this deep lake forming the headwater reservoir that controls the flows of the creek. Immediately below the lake outlet the stream passes through heavily wooded bottomland downstream to R.M. 8.0. Due to flooding conditions no residences or developments are located near the creek down to R.M. 6.0. Stream-side cover from R.M. 6.0 to 8.0 consists primarily of deciduous brush and overhanging grass. Some residences and small farms are scattered along the lower six miles of stream where low intensity agriculture is practiced mainly for grazing small numbers of beef and raising garden crops. The stream is bordered by deciduous trees and occasional conifers. The lower mile of Friday Creek is largely diked to prevent flooding. Excellent spawning gravel is found in the lower six miles with more riffle area than pools. It is also ideal rearing area. In the section from R.M. 6.0 to 8.0 the stream meanders with low gradient, gentle flows, and few riffles through agricultural and pastureland. The bottom composition is largely fine gravel and silt. The stream banks are stable in spite of occasional flooding.

Silver Creek is the largest tributary, running through low density agricultural lands. A rock quarry is located near the stream at about R.M. 2.0 with no apparent effluent reaching the creek from the washings. Salmon use is restricted to the area below Cain Lake by a fish screen.

Bear Creek drains from a forested hillside with little development except near the Samish Lake Road. Logging activities have infringed on the stream.

Salmon Utilization

Friday Creek is inhabited by chinook, coho, and chum salmon and provides good to excellent transportation, spawning, and rearing area, especially in the lower 6.0 miles. Chum salmon utilize the lower 1.5 miles of stream below the Samish Salmon Hatchery while chinook and coho spawn heavily up to R.M. 6.0. Scattered coho spawning occurs up to the lake outlet and in the mouths of the precipitous streams feeding Samish Lake. Coho spawn and rear in the lower 2.5 miles of Silver Creek below Cain Lake and below R.M. 1.0 of Bear Creek. Juvenile rearing takes place throughout the drainage in all accessible streams.

Limiting Factors

Factors limiting salmon production in this drainage include low summer flows, high water temperatures, flooding, bank stabilization projects, logging, and siltation buildup. Surface waters from the lake outflow provide the headwaters for the creek throughout the year. During the summer months water temperatures rise rapidly due to surface heating in Samish Lake and have caused mortalities at the hatchery. Flooding has scoured the precipitous streams and caused gravel bed shifting and silting in the upper watershed. Streambed buildup has caused erosion and flooding in the lower river, particularly between R.M. 6.0 and 8.0. Infestation of "setting" freshwater clam larvae has been a serious problem at the hatchery and could also affect natural rearing.

Beneficial Developments

The Samish Salmon Hatchery was constructed in 1899 at R.M. 1.3 of Friday Creek and has been remodeled and expanded many times since. The hatchery water supply intake is located at a diversion at R.M. 1.8 in Friday Creek where 4 cfs is withdrawn for hatchery use and returned to the stream. Fish passage facilities are built into this diversion dam. The races of salmon using Friday Creek are essentially of hatchery origin and salmon hatched and reared in this facility are planted into the Samish system as well as other Puget Sound basins.

Habitat Needs

Major requirements for maintaining the fish production potential of the Friday Creek drainages include preserving the stream bank shade and cover and restriction of bank erosion and stream alteration projects. Studies should be conducted to determine the feasibility of temperature control from Samish Lake by drawing water from the cooler depths rather than surface flows.

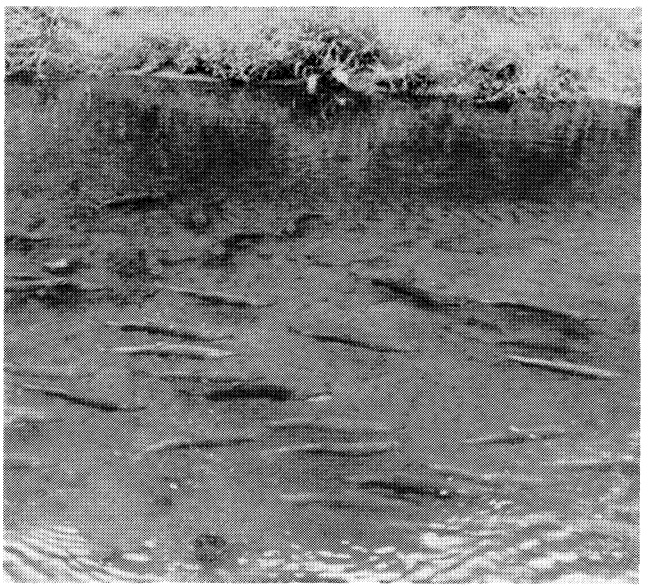
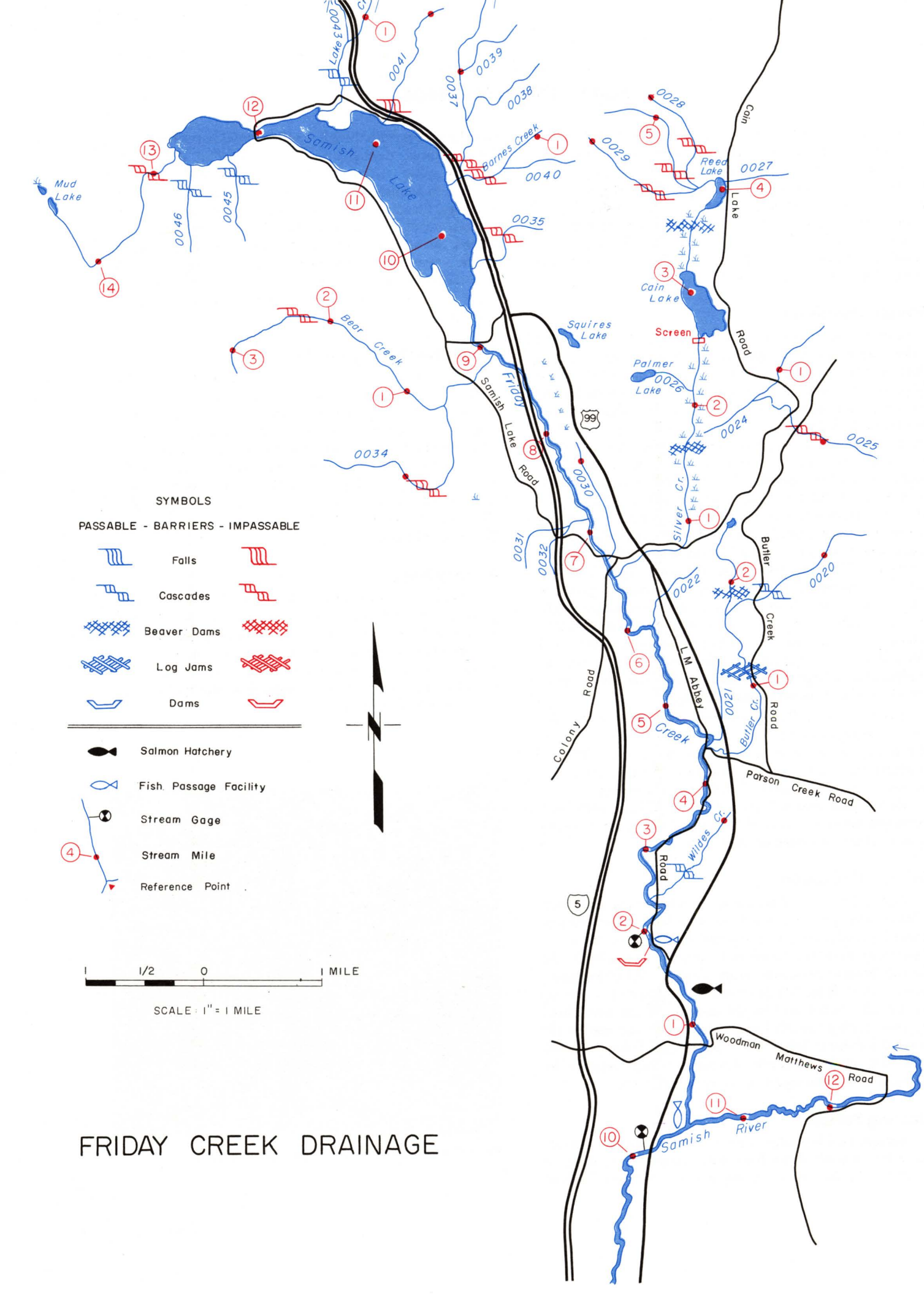


PHOTO 03-17. Schooled coho below hatchery rack.



FRIDAY CREEK DRAINAGE

FRIDAY CREEK DRAINAGE
Skagit Basin—WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0005	Samish River				
0017	Friday Creek	RB-10.5	14.65	—	Chin., Coho, Chum
0018	Wildes Creek	LB-2.4	1.1	—	Coho, (Chum)
0019	Butler Creek	LB-4.3	2.55	—	Coho, (Chum)
0020	Unnamed	LB-1.7	1.5	—	Coho
	Unnamed Lk.	Outlet-2.55	—	—	
0023	Silver Creek	LB-6.45	5.5	—	Coho, (Chum)
0024	Unnamed	LB-1.75	1.5	—	Coho
0025	Unnamed	LB-0.7	1.5	—	Coho
	Cain Lake	Outlet-2.6	—	—	
	Reed Lake	Outlet-3.8	—	—	
0028	Unnamed	LB-4.25	1.0	—	None
0029	Unnamed	RB-4.3	1.0	—	None
0030	Unnamed	LB-6.69	1.2	—	Coho
0033	Bear Creek	RB-8.85	3.3	—	Coho, (Chum)
0034	Unnamed	RB-0.6	1.7	—	Unknown
	Samish Lake	Outlet-9.3			
0036	Barnes Creek	LB-10.4	1.1	—	Unknown
0037	Unnamed	RB-0.16	2.0	—	None
0041	Unnamed	LB-11.0	1.1	—	None
0042	Lake Creek	LB-11.6	2.2	—	Coho
0043	Unnamed	RB-0.75	2.0	—	(Coho)
0044	Unnamed	LB-1.5	1.0	—	Unknown
	Mud Lake	Outlet-14.65	—	—	

UPPER SAMISH RIVER

This drainage section includes the major portion of mainstem Samish River plus 17 small to moderate sized feeder streams. From headwaters located at R.M. 31 in a shallow valley just north of Wickersham, the river flows 18 miles to R.M. 13 just below Swede Creek. Tributaries offer a total of more than 40 additional stream miles. While the river channel provides the majority of fish use habitat, a number of the tributaries add greatly to the section's fish production potential.

Stream Description

The Samish River originates near the community of Saxon in the South Fork Nooksack Valley and flows south approximately ten miles before turning west into Warner Valley at R.M. 18.0. Principal tributaries entering along this course include Ennis, Thunder, Dry, and Swede creeks.

The Samish channel, plus a good portion of most tributaries wind across a relatively broad, gently sloping valley floor. The upper steeper slopes of some tributaries are densely forested. Otherwise the streams encounter mostly cleared farmland with intermittent patches of deciduous growth. Aside from the two small communities located near headwaters, limited farm or rural type residences comprise the only development along the stream course.

In this drainage section the Samish River presents two stream environment types. Above Thunder Creek (R.M. 22.0) the gradient is nearly flat and the stream, except for occasional riffles, is very slow moving. Some marshes are encountered and stream bottom is predominantly sand and small gravel. Stream widths range from about 3 to 15 feet. Banks are naturally stable and for the most part have good overhanding cover.

Below Thunder Creek the gradient is moderate with good to excellent pool-riffle character. Widths range 12 to 30 feet, carrying flows from 30 to 200 cfs. Bottom composition is clean gravel and rubble with sand in pools. Limited bank stabilization via contour cutting or riprapping is evident; however, most banks are naturally stable, offering gently sloping gravel beaches and some cut-banks. Only intermittent bank cover exists along this stretch.

Salmon Utilization

The Samish River channel serves as the primary salmon transportation, spawning, and rearing area in this drainage section. In addition, especially in the lower reach, numerous deep pools exist providing necessary resting areas for migrating fish.

This channel section provides good to excellent spawning conditions and is utilized heavily by chinook and chum salmon, as well as by coho. Coho and chum spawn all the way to headwaters as well as in each accessible tributary. Good coho spawning occurs in Swede, Parson, Thunder, Mills, Jackson, and Ennis creeks. Chinook spawning tends to be concentrated below Thunder Creek. Juvenile rearing takes place throughout the drainage in all accessible streams.

Limiting Factors

Factors limiting salmon production in this section include low summer flows, pumping of water for irrigation, stream bank clearing and channel alterations. Water quality is sometimes affected by indiscreet agricultural spraying adjacent to streams.

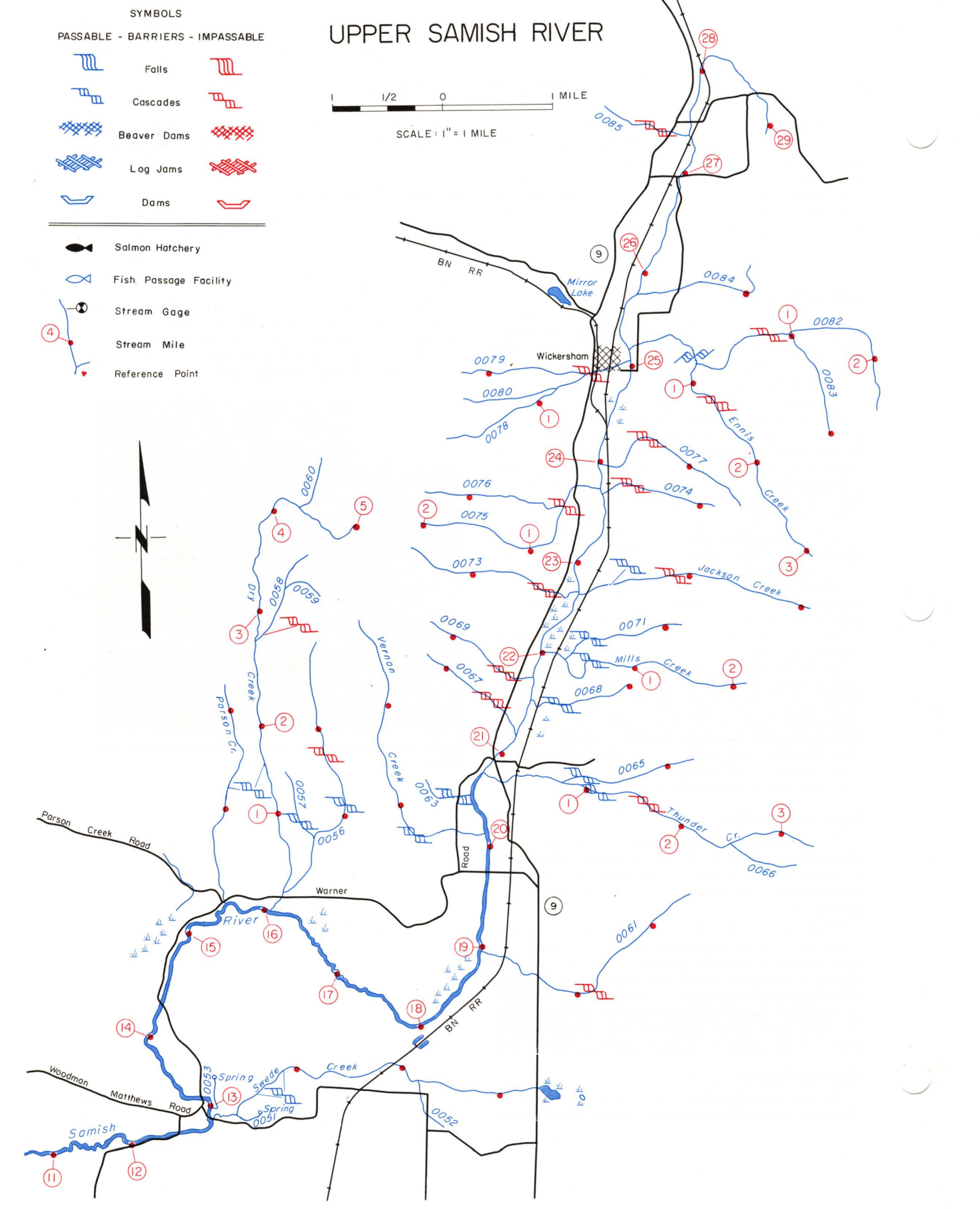
Beneficial Developments

A fish ladder has been installed at a small falls on Ennis Creek opening nearly 3 miles of stream for use by coho salmon.

Habitat Needs

Major requirements for maintaining the fish production potential of the upper Samish drainage include preserving the existing stream and bank cover, and curtailment of channel alteration projects. Replacement of stream cover along reaches already cleared is desirable.

PHOTO 03-18. Gentle gradients prevail in the upper Samish River channel.


SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
UPPER SAMISH RIVER
1 1/2 0 1 MILE
SCALE: 1" = 1 MILE
BN RR
Mirror Lake
Wickersham
Ennis Creek
Jackson Creek
Mills Creek
Thunder Cr.
Vernon Creek
Parson Cr.
Creek
Parson Creek Road
Warner
River
Road
Woodman
Matthews
Road
Samish
Spring
Swede
Creek
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0074
0075
0076
0077
0078
0079
0080
0082
0083
0084
0085

UPPER SAMISH RIVER
Skagit Basin—WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0005	Samish River				Chin., Coho, Chum
0050	Swede Creek	LB-12.8	3.4	—	Coho, (Chum)
	Unnamed Lake	Outlet-3.4	—	—	
0054	Parson Creek	RB-15.6	2.2	—	Coho, (Chum)
0055	Dry Creek	RB-16.05	5.0	—	Coho, (Chum)
0056	Unnamed	LB-0.25	2.8	—	Coho, (Chum)
0061	Unnamed	LB-18.95	2.4	—	Coho, (Chum)
0062	Vernon Creek	RB-20.1	2.8	—	Coho, (Chum)
0064	Thunder Creek	LB-20.75	3.3	—	Coho, (Chum)
0065	Unnamed	RB-0.8	1.25	—	Unknown
0067	Unnamed	RB-21.2	1.2	—	Coho
0068	Unnamed	LB-21.55	1.0	—	(Coho)
0069	Unnamed	RB-21.75	1.2	—	Coho
0070	Mills Creek	LB-22.0	2.1	—	Coho
0071	Unnamed	RB-0.25	1.2	—	Unknown
0072	Jackson Creek	LB-22.7	2.1	—	(Coho)
0073	Unnamed	RB-22.71	1.6	—	Coho
0074	Unnamed	LB-23.7	1.1	—	Unknown
0075	Unnamed	RB-23.75	2.0	—	Coho
0076	Unnamed	LB-0.4	1.4	—	None
0077	Unnamed	LB-24.0	1.6	—	(Coho)
0078	Unnamed	RB-25.05	1.9	—	Coho
0079	Unnamed	LB-0.4	1.2	—	None
0081	Ennis Creek	LB-25.15	3.1	—	Coho
0082	Unnamed	RB-0.8	2.5	—	Unknown
0083	Unnamed	LB-1.0	1.0	—	None
0084	Unnamed	LB-25.7	1.35	—	Coho

LOWER SKAGIT RIVER
LaConner Area

The lower Skagit River includes 19 miles of mainstem Skagit which forks below R.M. 8.0, forming the 8 miles of South Fork and 7.3 miles of North Fork, plus 8 named sloughs. This section also includes the 6 miles of Swinomish Channel plus 3 named sloughs connecting Skagit Bay with Padilla Bay. An extensive drainage ditch system also occurs throughout the entire lower Skagit-LaConner Valley. Mt. Vernon and Burlington are the major towns with smaller communities of LaConner, Conway and Fishtown. There are 62 miles of sloughs, 73 miles of tributaries to the main Skagit River, 41 miles of independent streams and over 100 miles of drainage ditches in this lower river valley.

Stream Description

The lower 19 miles of Skagit River drain from the Burlington area southwesterly to Skagit Bay. Below Mt. Vernon the river divides into 2 forks fanning out in the broad delta between Conway and LaConner called Fir Island. Many small sloughs and sand islands form ideal estuary habitat for rearing of salmon. Approximately 60% of the Skagit flow drains into the North Fork channel.

Fir Island consists of broad, flat, rich agriculture land approximately 10 miles in width. A gentle hillside east of Highway I-5 (Conway Hill) above Carpenter Creek and Mt. Vernon forms the eastern boundary. Extensive residential and commercial developments are located within Mt. Vernon and Burlington. LaConner contains both wet and dry log storage, the Port of Skagit County, fish processing plants, and a boat harbor. Conway and Fishtown contain only a few residences. The rich valley lands are used for dairy, beef, and food crops. Two recreational boat houses are located at mile 1.0 in the North Frok above Fishtown.

The main river channel below R.M. 19.0 is confined within extensive dikes which prevent flooding of the adjacent lands. The main river from R.M. 19.0 to 8.0 varies in width from 300 to 600 feet wide. Below R.M. 8.0 the river forks and splits and becomes progressively smaller in size. The bottom is composed of sand and silt deposits. The average river discharge at Mt. Vernon is 16,670 cfs over 29 years of record. Extensive riprapping and diking preclude any stream bank cover in the upper 10 miles of this section except for large deciduous trees. In the lower North Fork and South Fork channels some deciduous trees, scattered brush, stumps, logs, and debris provide good cover.

Dredging is common within the Swinomish Channel and along the Goat Island jetty. The Swinomish Channel is diked and its many drainage ditches have tide gates.

Carpenter Creek and Fisher Creek, originating on the slopes of Conway Hill, are the only tributaries within this lower Skagit River that are utilized by salmon.

Salmon Utilization

The lower mainstem Skagit River within this section provides transportation and rearing for all 5 species of salmon. Coho spawn and rear within the Carpenter Creek and Fisher Creek drainages. Most of the salmon migrate through the North Fork channel due to the greater flow attraction. Rearing is extensive within the sloughs and along the estuaries and islands of mud flats and sand.

Limiting Factors

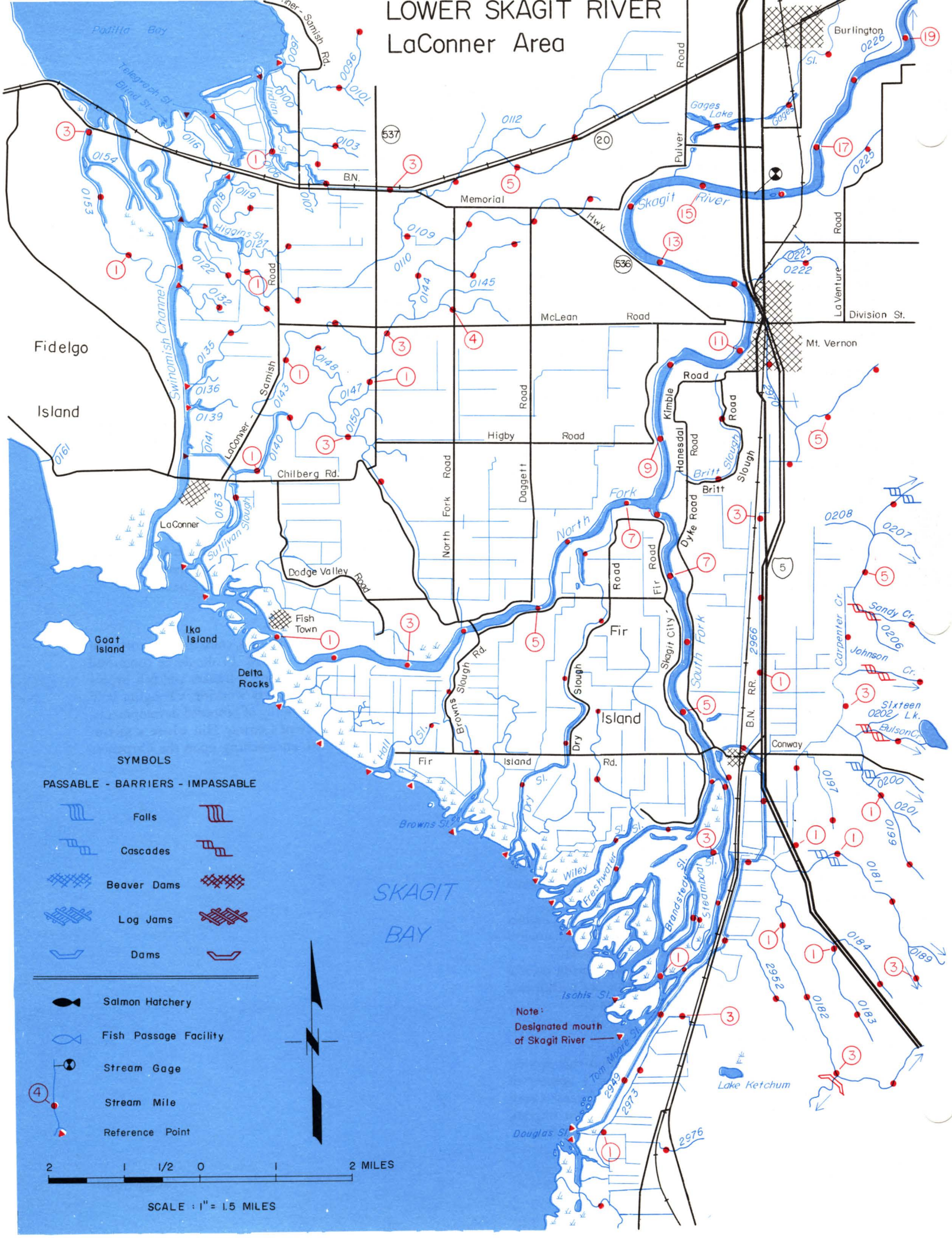
Principal limiting factors within the lower Skagit River include water quality and siltation. Burlington's sewage treatment plant outfall, located at R.M. 19.5, affects areas downstream. There is also an outfall from a food processing plant located at R.M. 11. Agricultural water quality problems also occur from pea silage, crop spraying, and leachings into the drainage ditches and sloughs. Sand mining on the lower river bars creates potholes which trap juvenile salmon on receding waters. High water conditions and tidal influences in the lower reaches also trap juvenile fish within drainage ditches and sloughs. Frequent maintenance dredging operations within Swinomish Channel destroys estuarial habitat and food chains. Major problems associated with these dredgings include the selection of disposal sites for this material and timing limitations to protect the juvenile migrants.

Beneficial Developments

No major beneficial developments for fish occur within this lower reach. Tide gates protect most drainage ditches and sloughs, particularly in the Swinomish Channel.

Habitat Needs

To maintain existing production, constant monitoring of the Anacortes water intake at R.M. 13 should be conducted to ascertain the screens, sub-surface intake, and fish bypass are clear of debris and effectively working. Changing land use patterns dictate close scrutiny of proposed developments, particularly in the vicinity of Conway Hill where a metropolitan center is planned, encroaching upon the Carpenter Creek drainage.


LOWER SKAGIT RIVER
LaConner Area
Padilla Bay
Telegraph Slough
Blind Slough
Swinomish Channel
Fidelgo Island
Goat Island
Ika Island
Delta Rocks
LaConner
Sullivan Slough
Fish Town
Dodge Valley Road
Chilberg Rd.
LaConner - Samish Road
Higby Road
McLean Road
Memorial Hwy.
B.N.
Higgins St.
Gages Lake
Gages Slough
Pulver Road
Burlington
Mt. Vernon
Division St.
La Venture Road
Skagit River
North Fork
Daggett Road
Kimble Road
Hanesdal Road
Britt Slough
Dyke Road
Fir Road
Skagit City - Fir Island Rd.
South Fork
Conway
Browns Slough
Hall St.
Dry Slough
Wiley Slough
Freshwater Slough
Steamboat Slough
Brandstegg Slough
Ischis Slough
Tom Moore Slough
Douglas Slough
SKAGIT BAY
Lake Ketchum
Sandy Cr.
Carpenter Cr.
Johnson Cr.
Sixteen Lk.
Bulson Cr.
Note: Designated mouth of Skagit River
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

LOWER SKAGIT RIVER—LACONNER AREA
Skagit Basin—WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0096	Unnamed	Sec6,T34N,R3E	2.0	—	Unknown
0102	Indian Slough [1]	Sec6,T34N,R3E	6.86	—	Unknown
0103	Unnamed	RB-0.55	1.4	—	Unknown
0104	Unnamed	LB-0.2	1.8	—	Unknown
0105	Drainage Ditch	RB-0.51	~ 1.0	—	Unknown
0109	Unnamed	LB-3.5	4.15	—	Unknown
0113	Drainage Ditch	RB-6.35	~ 3.0	—	Unknown
0115	Drainage Ditch Return	Sec1,T34N,R2E	~ 2.5	—	None
0116	Unnamed	Sec12,T34N,R2E	0.95	—	None
0117	Drainage Ditch	RB-0.01	~ 1.0	—	None
0118	Unnamed	Sec7,T34N,R2E	1.6	—	Unknown
0121	Higgins Slough	Sec13,T34N,R2E	2.0	—	Unknown
0122	Unnamed	LB-0.1	2.1	—	Unknown
0127	Unnamed	RB-0.7	1.0	—	Unknown
0128	Drainage Ditch	LB-0.75	~ 1.1	—	Unknown
0129	Unnamed Trib. cont. as Drainage Ditches	@ mi. 1.0	~ 1.0	—	Unknown
0130	Drainage Ditch connecting with Indian Sl.	@ mi. 2.0	~ 1.0	—	Unknown
0132	Unnamed	Sec24,T34N,R2E	1.15	—	Unknown
0135	Unnamed	Sec25,T34N,R2E	1.6	—	Unknown
0140	Unnamed	Sec36,T34N,R2E	4.7	—	Unknown
0142	Drainage Ditch	LB-1.1	~ 2.3	—	Unknown
0143	Unnamed	RB-1.75	4.9	—	Unknown
0144	Unnamed	RB-3.4	3.1	—	Unknown
0146	Drainage Ditch	LB-2.2	~ 1.1	—	Unknown
0147	Unnamed	RB-2.75	1.25	—	Unknown
0148	Unnamed	RB-0.3	1.1	—	Unknown
0149	Drainage Ditch	LB-0.85	~ 1.4	—	Unknown
	FIDALGO ISLAND [2]				
0153	Unnamed	Sec13,T34N,R2E	3.0	—	Unknown
0154	Eastern Fork of Slough	LB-2.5	~ 1.3	—	Unknown
0155	Unnamed	Sec32,T35N,R2E	2.8	—	Unknown
	Whistle Lake	Outlet-1.5	—	—	
0156	Unnamed	Sec29,T35N,R2E	1.9	—	Unknown
	Heart Lake	Outlet-1.9	—	—	
0157	Unnamed	Sec35,T35N,R1E	1.0	—	None

[1] *Channelized from mile point 2.11 to 3.35.*

[2] *Swinomish Channel separates Fidalgo Island and mainland.*

LOWER SKAGIT RIVER—LACONNER AREA
Skagit Basin—WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0159	Unnamed	Sec19,T33N,R2E	2.4	—	Unknown
	Lake Campbell	Outlet-0.9	—	—	
0160	Unnamed	RB-1.8	1.0	—	None
	Lake Erie	Outlet-2.4	—	—	
0162	Sullivan Slough	Sec1,T33N,R2E	1.35	—	Unknown
0166	Drainage Ditch	Sec18,T33N,R3E	~ 6.0	—	None
0167	Drainage Ditch	Sec17,T33N,R3E	~ 6.0	—	None
0168	Hall Slough	Sec21,T33N,R3E	1.2	—	Unknown
0169	Drainage Ditch	Sec21,T33N,R3E	~ 5.0	—	None
0170	Drainage Ditch	Sec26,T33N,R3E	~ 5.0	—	None
0171	Wiley Slough	Sec26,T33N,R3E	3.0	—	Unknown
0172	Drainage Ditch	LB-1.5	~ 2.5	—	Unknown
0174	Drainage Ditch	LB-1.7	~ 1.0	—	Unknown
0175	Wiley Slough cont. as Drainage Ditches	@ mi. 3.0	~ 8.0	—	Unknown
0176	Skagit River [3]	Sec1,T32N,R3E	162.3	—	Chin., Coho, Pink, Chum, Sockeye
0177	Tom Moore Slough	LB-0.61	2.75	—	Chin., Coho, Pink Chum, Sockeye
0178	Unnamed Side Channel	RB-1.6	1.0	—	Chin., Coho, Pink Chum, Sockeye
0179	Carpenter Creek	LB-2.6	9.0	—	Coho, (Chum)
0180	Unnamed Slough	RB-0.1	1.2	—	Unknown
0181	Unnamed	LB-0.65	5.9	—	Coho, (Chum)
0182	Unnamed	LB-0.05	7.1	—	Coho, (Chum)
0183	Unnamed	RB-0.55	2.4	—	Coho, (Chum)
0184	Unnamed	RB-0.9	1.2	—	Unknown
0186	Unnamed	RB-5.41	1.5	—	Unknown
0187	Unnamed	LB-0.15	1.2	—	Unknown
0189	Unnamed	RB-2.6	3.45	—	Unknown
0191	Unnamed	LB-0.75	1.1	—	Unknown
0196	Unnamed	RB-4.5	1.4	—	Unknown
0197	Unnamed	LB-2.2	1.05	—	Unknown
0198	Bulson Creek	LB-2.75	2.6	—	(Coho)
0199	Unnamed	LB-0.35	2.5	—	Unknown
0200	Unnamed	RB-0.7	2.2	—	Unknown
0204	Johnson Creek	LB-3.55	2.2	—	Unknown
0205	Sandy Creek	LB-4.7	1.4	—	Unknown

[3] *Skagit R. not cataloged past the Canadian border. Source of the Skagit R. is Allison Pass.*

LOWER SKAGIT RIVER—LACONNER AREA
Skagit Basin—WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0207	Unnamed	LB-5.5	1.45	—	Unknown
	Unnamed marsh	Outlet-0.75	—	—	
	Ten Lake	Outlet-1.45	—	—	
	Unnamed Lk.	Outlet-9.0	—	—	
0213	Freshwater Slough	RB-4.2	3.0	—	Chin., Coho, Pink, Chum, Sockeye
0214	Drainage Ditch	RB-4.3	~ 2.4	—	Unknown
0215	N. Fork Skagit R.	RB-8.1	7.3	—	Chin., Coho, Pink Chum, Sockeye
0216	Drainage Ditch	RB-0.2	~ 7.0	—	Unknown
0217	Browns Slough	LB-4.0	2.8	—	Unknown
0220	Dry Slough	LB-6.8	5.9	—	Unknown
	Unnamed Pond	Outlet-4.75	—	—	
0221	Britt Slough	LB-8.25	2.6	—	Unknown
0222	Unnamed	LB-11.9	1.5	—	Unknown
0224	Gages Slough	RB-14.6	7.0	—	Unknown
0225	Unnamed	LB-16.45	1.4	—	Unknown
	(Continued Skagit 503)				
2949	Unnamed	Sec11,T32N,R3E	6.25	—	Unknown
2952	Unnamed	LB-3.0	1.55	—	Unknown
2959	Drainage Ditch	RB-4.35	1.5	—	Unknown
2961	Drainage Ditch	LB-4.8	1.0	—	Unknown
2966	Unnamed	LB-5.9	6.05	—	Unknown
2967	Drainage Ditch	LB-0.65	~ 8.0	—	Unknown
2970	Unnamed	RB-4.6	1.3	—	Unknown
2971	Drainage Ditch	LB-6.05	~ 8.0	—	Unknown
2972	Douglas Slough	Sec 11, T32N,R3E	1.5	—	Unknown
2973	Unnamed	RB-0.1	3.5	—	Unknown
2976	Unnamed	LB-0.95	1.65	—	Unknown
2985	Drainage Ditch	RB-0.45	~ 1.3	—	Unknown

SKAGIT RIVER
Sedro Woolley Area

The mainstem Skagit River in this section flows generally westerly from R.M. 34.0 below Lyman to R.M. 19.0 below Sedro Woolley near the mouth of Nookachamps Creek. Twelve tributaries plus three side channels provide more than 82 miles of stream length. This area lies within Skagit County with river access from State Highway 9 where it crosses the mainstem below Sedro Woolley, along the South Skagit Highway on the south bank, and State Highway 530 on the north bank.

Stream Description

The large mainstem Skagit River within this area meanders through a wide valley of rich bottomland. From R.M. 34 downstream to R.M. 25 the river forms braided channels, with moderate gradient and riffle areas and long deep sections prevailing. Below R.M. 25 the river is generally confined to one channel and is diked between R.M. 21 and 19. Some diking along farmlands occurs from R.M. 29.0 to 31.0. Heavy erosion at R.M. 26.5 has formed Dead Man Slough. The river bottom is generally sandy below R.M. 22 with progressively more abundant spawning gravel above this point.

Land use within the area is generally agricultural and forestry. Hardwood sections occur in the river bottoms with conifer on the side valley hillsides. The valley floor averages approximately 4 miles in width. The stream has a gentle gradient and contains growth of deciduous trees and brush along its banks except where agricultural land abuts these waters. There is a small river front development at R.M. 24 on the south bank. Summer residences are scattered along the river and streams throughout the area. The side valley terrain is comprised of moderate to steep-sloped hillsides along the bordering mountains. These are generally heavily forested above the valley floor.

The right bank tributaries including Hanson, Cole, Wiseman, and Childs creeks descend from the 3,000 to 3,500-foot elevation on the mountain range north of the mountain range north of the Skagit River. Left bank tributaries include Gilligan, Anderson, Sorenson, Parker, Morgan creeks and two unnamed tributaries which descend from approximately the 3,000-foot elevation on Cultus Mountain on the southside of the Skagit River. The right bank tributaries all exhibit similar stream characteristics, tumbling off the steep hillside with falls and cascades of moderately steep gradient. Gradients become gentle through the farmlands. These streams all transport extensive gravel bed material which is deposited in the stream sections below. They all contain good stream-side cover except in intermittent spots through the farmlands. The streams on the south bank also have steep gradients with cascades and falls except in the short, lower sections.

Salmon Utilization

The main Skagit River provides transportation waters for all species as well as spawning and rearing for chinook, coho, and chum. Pink salmon also utilize the mainstem rivers and side sloughs above R.M. 29. Hanson Creek has limited coho spawning and rearing above R.M. 4.0. Wiseman Creek contains coho spawning primarily in the 4 miles above the railroad bridge. Childs Creek has gravel buildup barriers and there is only limited coho spawning with about 2.5 miles of access. All of the left bank tributaries have limited coho spawning and rearing.

Limiting Factors

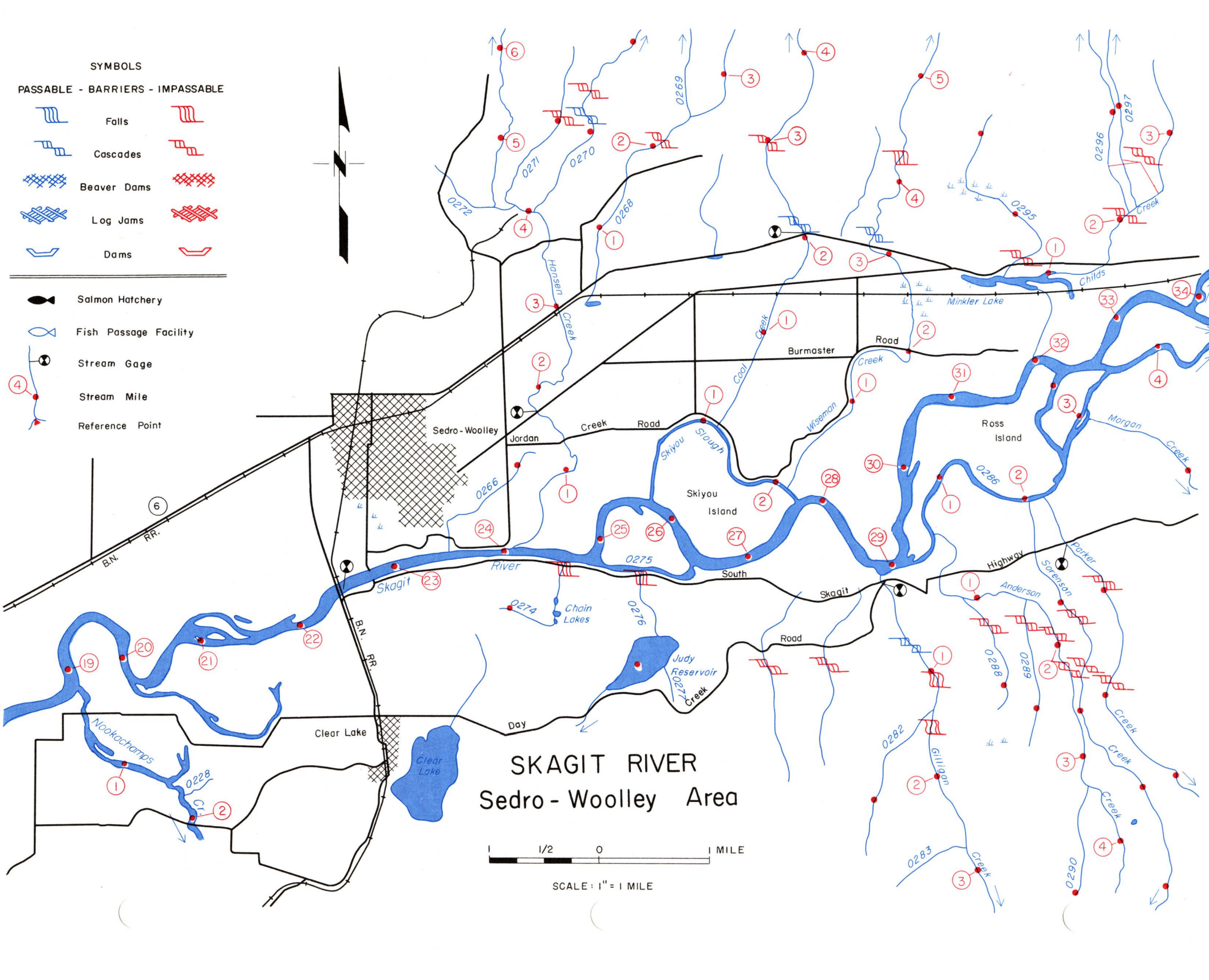
Within the mainstem Skagit, erosion at R.M. 26.5 is degrading the quality of spawning area below. Approximately 80% of the flow at Dead Man Slough is now in the south channel where prior to 1970 it was primarily in the north channel. The town of Sedro Woolley sewage outfall is located at R.M. 22.5. Summer flows in Gilligan Creek are drastically reduced below the diversion to Judy Reservoir. The constant bedload shifting in the tributary streams requires frequent maintenance gravel removals which limit the available spawning areas. Summer low flows in all of the tributaries reduce the available rearing area for coho.

Beneficial Developments

No specific projects, programs, or facilities have been developed for fisheries purpose within this section. Set-back diking has prevented the loss of some stream bank areas particularly along the agricultural farmlands.

Habitat Needs

It is essential that the stream bank cover, comprised mainly of deciduous trees, be retained along this stretch of river. Stream rehabilitation due to bedload movement and excessive accumulation of gravel and debris. Stabilization of streambeds is needed in Hanson, Coal, Wiseman, and Childs creeks where frequent channel repair and gravel removal has been required. Puget Sound Power and Light's proposed nuclear power plant site is to be located near the headwaters of Wiseman Creek. This stream should be protected from any project impact as it is a good coho producer.


SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
SKAGIT RIVER
Sedro - Woolley Area
1 1/2 0 1 MILE
SCALE : 1" = 1 MILE
Sedro-Woolley
Jordan Creek Road
Burmaster Road
Minkler Lake
Childs Creek
Hansen Creek
Cool Creek
Wiseman Creek
Skiyou Slough
Skiyou Island
Ross Island
Morgan Creek
Highway
Parker
Sorenson
Anderson
Skagit River
South Skagit Road
Chain Lakes
Judy Reservoir
Day Creek
Clear Lake
Nookachamps Cr.
Gilligan Creek
B.N. RR.
0266
0268
0270
0271
0272
0274
0275
0276
0277
0282
0283
0286
0288
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0290
0295
0296
0297
6920

SKAGIT RIVER — BURLINGTON AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
0227	Nookachamps Creek	LB-18.8	14.31	—	Coho, Chum
	(See Skagit 603)				
0266	Unnamed	RB-23.5	1.3	—	Unknown
0267	Hansen Creek	RB-24.1	8.3	—	Coho,(Pink),Chum
0268	Unnamed	LB-2.95	3.4	—	Coho, (Chum)
0269	Unnamed	RB-2.4	1.3	—	None
0270	Unnamed	LB-3.95	2.5	—	(Coho)
0271	Unnamed	LB-4.15	1.7	—	(Coho)
0273	Unnamed	RB-7.2	1.2	—	Unknown
0274	Unnamed	LB-24.5	1.1	—	None
0275	Unnamed Side Channel	LB-24.8	0.9	—	Chin., Coho, Pink Chum, Sockeye
0276	Unnamed	LB-0.4	1.8	—	None
	Judy Reservoir	Outlet-0.65	—	—	
0278	Skiyou Slough	RB-25.7	2.2	—	Chin., Coho, Pink Chum, Sockeye
0279	Coal Creek	RB-1.1	5.3	—	Coho,(Pink),Chum
0280	Wiseman Creek	RB-2.1	6.6	—	Coho,(Pink),Chum
0281	Gilligan Creek	LB-28.8	5.5	—	(Chin.),Coho, Pink, Chum
0282	Unnamed	LB-1.3	1.4	—	None
0284	Unnamed	LB-3.3	1.0	—	None
0286	Unnamed Side Channel	LB-29.05	5.1	—	Chin., Coho, Pink, Chum, Sockeye
0287	Anderson Creek	LB-0.5	4.4	—	Coho,(Pink),Chum
0288	Unnamed	LB-0.9	1.2	—	Unknown
0289	Unnamed	LB-1.5	1.3	—	Unknown
0290	Unnamed	LB-3.3	1.0	—	None
0291	Sorenson Creek	LB-2.05	4.3	—	Coho, Chum
0292	Parker Creek	LB-2.2	3.7	—	Coho, (Chum)
0293	Morgan Creek	LB-3.0	3.8	—	Coho, (Chum)
0294	Childs Creek	RB-32.0	3.7	—	Coho,(Pink),Chum
	Minkler Lake	Outlet-0.7	—	—	
0295	Unnamed	RB-0.8	2.2	—	(Coho)
0296	Unnamed	RB-2.1	2.0	—	None
0297	Unnamed	RB-2.2	1.9	—	None

SKAGIT RIVER — BURLINGTON AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0298	Day Creek Slough	LB-34.65	1.5	—	Chin., Coho, Pink Chum, Sockeye
	(See Skagit 803)				
	(Continued Skagit 703)				

NOOKACHAMPS CREEK DRAINAGE

The Nookachamps drainage is the first important salmon producing tributary of the Skagit River located upstream of Skagit Bay. It flows generally west-northwest and joins the Skagit River at R.M. 18.8 between Burlington and Sedro Woolley. Nookachamps Creek contains 14.3 stream miles within the West Fork plus 13 unnamed tributaries totaling 22.8 stream miles. The East Fork Nookachamps Creek contains 9.4 stream miles plus 4 named tributaries and 7 unnamed tributaries providing an additional 49.5 stream miles.

Stream Description

The Nookachamps Creek drainage forks at R.M. 2.9 where flood waters overflow forming Barney Lake. The West Fork continues upstream as the mainstem through Big Lake, then continues as Lake Creek with headwaters at the Lake McMurray outlet. The East Fork Nookachamps occupies the same general valley and is formed by the tributary streams descending from Cultus Mountain at the 3,500-foot elevation south of Sedro Woolley. The 4 main tributaries are Day Creek, Turner Creek, Mundt Creek, and Walker Creek and are precipitous in their upper reaches. The side valley terrain on Cultus Mountain is heavily timbered and descends rapidly in the upper 3 miles into the Walker Valley where the gradient flattens. The Nookachamps Valley floor from Big Lake to the base of the mountain is approximately 2 miles in width.

The small community of Clear Lake is located between Nookachamps Creek and Sedro Woolley. The area surrounding Big Lake is residential while the lands below Big Lake contain a few residences with small dairy farms. Between Big Lake and Lake McMurray the area experiences similar land use. The East Fork Nookachamps Creek is composed of small farms below R.M. 5 and forest lands above. Barney Lake is used for recreational purposes, principally by duck hunting clubs.

The main Nookachamps Creek and the West Fork up to R.M. 4.5 is a slow moving section with little gradient. From R.M. 4.5 to 7.5 on the West Fork, scattered riffle sections occur to the vicinity of Big Lake. A large swamp occupies the inlet end of Big Lake with good coho spawning and rearing habitat from R.M. 11 to 14.25. The stream bank cover is good throughout the entire system with deciduous tree cover in the lower 4.5 miles. Both the West Fork and East Fork contain brushy banks, many deciduous trees and some open grazing lands along the creek. The East Fork from R.M. 0.0 to 3.0 is rather slow moving and ditch-like in appearance. At R.M. 2.0 the stream floods over into large marsh lands. Turner Creek contains a water diversion at R.M. 1.3 which diverts the water to Judy Reservoir. Water is likewise diverted from Mundt Creek to Judy Reservoir.

Salmon Utilization

The lower Nookachamps system below R.M. 4.5 in the West Fork and below R.M. 1 in the East Fork is slow moving transportation water with some good rearing area. Intermittent spawning occurs above R.M. 4.5 to the vicinity of Big Lake with good spawning between Big Lake and Lake McMurray. The East Fork from R.M. 0 to 3.0 is rearing and transportation water with spawning above R.M. 3.0 and in all accessible areas of the tributaries. A rotary screen located below Lake McMurray keeps trout from leaving the system. Coho, however, are known to get by this rotary screen.

Limiting Factors

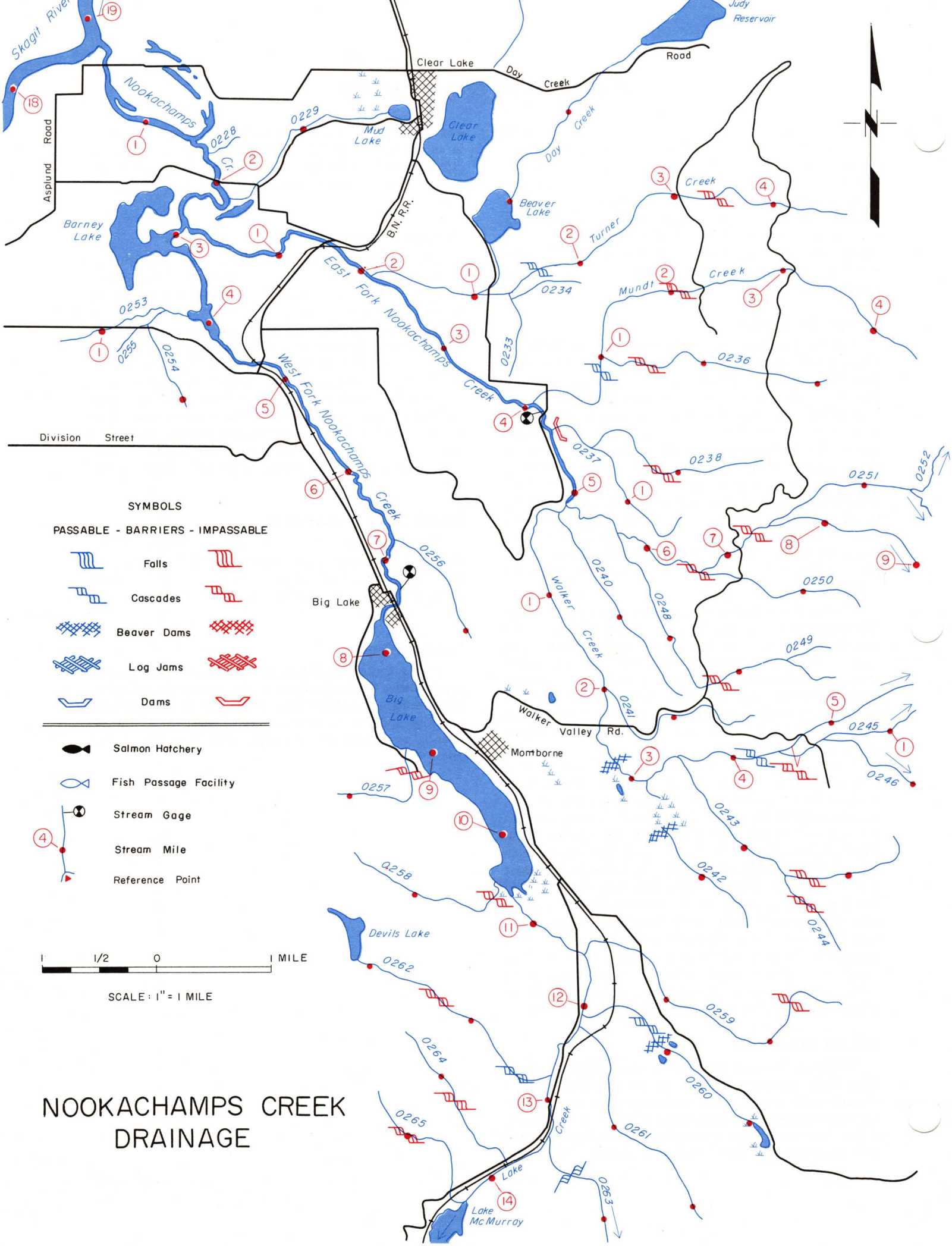
The major limiting factors within the Nookachamps drainage include extreme stream flows and water quality problems. The precipitous mountain tributary streams create heavy runoff and flooding in the lower Nookachamps Valley. Considerable diking and bank stabilization has occurred in the Nookachamps Valley to protect the adjacent farmlands. The fluctuating lake level on Big Lake has created some fish passage problems. Septic drainage problems are of real concern around the Big Lake perimeter. Silage and manure drainages from the farmland create heavy algae growths and low DO's in the summer months. Diversions from Turner and Mundt creeks into Judy Reservoir leave these tributaries with minimal flows and salmon rearing area.

Beneficial Developments

Occasional plants of juvenile coho have been made into this watershed. A tributary located at R.M. 5.6 on the East Fork drains into the Boy Scout of America "Lake Challenge" Reservoir which was planted with coho fry of 1972 and 1973 brood years.

Habitat Needs

A flow control on the outlet of Big Lake with fish passage facilities would eliminate the fish passage problems that are currently experienced here. The curtailment of both consumptive and non-consumptive water withdrawals are also essential to maintain this drainage basin for salmon production.



NOOKACHAMPS CREEK DRAINAGE

NOOKACHAMPS CREEK DRAINAGE
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	
0227	Nookachamps Creek	LB-18.8	14.31	—	Coho, Chum
0229	Unnamed	RB-2.15	1.8	—	(Coho), (Chum)
	Mud Lake	Outlet-1.8	—	—	
0230	E. Frk. Nookachamps	RB-2.9	9.4	—	Coho, Chum
0231	Turner Creek	RB-2.1	4.6	—	Coho, (Chum)
0232	Day Creek	RB-1.0	2.9	—	(Coho)
	Beaver Lk.	Outlet-0.6	—	—	
0235	Mundt Creek	RB-4.1	4.5	—	Coho, Chum
0236	Unnamed	LB-1.0	2.1	—	Unknown
0237	Unnamed	RB-4.4	1.7	—	Unknown
0238	Unnamed	RB-0.4	1.8	—	None
0239	Walker Cr.	LB-5.1	7.1	10.5	Coho, (Chum)
0240	Unnamed	RB-0.1	1.9	—	Coho, (Chum)
0241	Unnamed	RB-2.0	1.8	—	Coho, (Chum)
0242	Unnamed	LB-3.1	1.6	—	(Coho)
0243	Unnamed	LB-3.5	2.6	—	(Coho)
0245	Unnamed	LB-4.4	2.2	—	None
0246	Unnamed	LB-0.4	1.5	—	None
0248	Unnamed	LB-5.75	2.9	—	(Coho), (Chum)
0250	Unnamed	LB-6.65	1.6	—	None
0251	Unnamed	RB-7.5	4.1	—	None
0252	Unnamed	RB-1.3	1.3	—	None
	Barney Lake	Outlet-3.0	—	—	
	Nookachamps Cr. cont. as W. F. Nookachamps Cr.	@ mi. 3.31	—	—	
0253	Unnamed	LB-4.0	1.45	—	(Coho)
0254	Unnamed	RB-0.35	1.05	—	Unknown
0256	Unnamed	RB-6.85	1.1	—	Unknown
0257	Big Lake	Outlet-7.7	—	—	
0258	W. F. Nookachamps Cr. cont. as Lake Cr.	@ mi. 10.71	—	—	
0259	Unnamed	RB-11.6	2.9	—	(Coho)
0260	Unnamed	RB-12.1	2.0	—	(Coho)
0261	Unnamed	RB-12.2	2.1	—	(Coho)
0262	Unnamed	LB-12.75	2.1	—	(Coho)
0263	Unnamed	RB-13.4	2.2	—	(Coho)
0264	Unnamed	LB-13.85	1.5	—	Unknown
0265	Unnamed	LB-14.3	1.4	—	Unknown
	Lake McMurray	Outlet-14.31	—	—	

SKAGIT RIVER
Hamilton Area

The 10 miles of mainstem Skagit River in the Hamilton Area contains 11 tributaries and 2 important sloughs. Day Creek Slough and Day Creek are discussed in Skagit Map 820. The remaining 10 tributaries provide an additional 71.4 stream miles. Access to this stretch of river is via the StatenHighway 20 along the north shoreline and by the south Skagit Highway paralleling the southern shoreline.

Stream Description

The mainstem Skagit from R.M. 34.0 to 35.0 flows through several channels. Periodically the main flows shift here from channel to channel. From R.M. 35.0 to R.M. 44.0 the Skagit River contains broad riffles with long pool areas. Several islands are located in the main channel. The valley floor varies from 1 to 2 miles in width and is bordered by deciduous trees. Side hills are moderate to steep with heavy conifer forest. Stream gradient throughout the area is moderately flat. The mainstem Skagit within this stretch contains good gravel composition. Stream banks are generally stable with considerable gravel-rubble beach areas containing deciduous growth of brush and trees.

The principal right bank tributaries are Jones, Mannser, Etach (Red Cabin), Muddy, Careys, and Alder creeks. The left bank tributaries are Day, Loretta, Cumberland, and O'Toole creeks. The larger right bank tributaries originate at the 25-foot elevation on Mt. Josephine which separates the Nooksack Basin from the Skagit Basin. The left bank tributaries flow from the 3500-foot elevation of the north slope of Iron Mountain.

All of the right bank tributaries originating off of Mt. Josephine are similar in nature with agricultural land in the lower 1 mile section and forest lands above. The left bank tributaries on the south side of the Skagit are precipitous streams of steep gradient with many cascades and falls; are essentially undeveloped and heavily forested with mixed deciduous and conifer growth.

Salmon Utilization

The main Skagit River in this section is utilized by all species for transportation and by chinook and pink salmon for spawning throughout this section. Chum salmon utilize the sloughs and side channels. The major tributary streams such as Jones Creek contain good coho and chum spawning area while Mannser Creek has limited coho spawning with excellent rearing area and a few chum in the lower reach. Etach Creek, which is essentially a slough, has excellent coho rearing but no spawning. Red Cabin Creek contains good coho spawning and rearing. Likewise Muddy Creek contains good coho spawning and rearing. Alder Creek has excellent coho spawning and rearing, chinook spawning and a few chum and pink in the lower stretches.

Of the left bank tributaries Loretta Creek has limited coho spawning and rearing. Cumberland Creek has poor coho spawning and rearing with some chum spawning in the slough near the mouth. O'Toole Creek has a short section of poor coho spawning.

Limiting Factors

Major limiting factors influencing salmon production within this watershed are essentially due to water flows and logging activities within the area. A water reservoir is located in the headwaters of Jones Creek for the Hamilton water supply which dries up the lower end of the creek during summer months. Most of the tributary streams within this section contain extreme low flows during the summer months. Mannser Creek is flooded over in the lower 0.5 mile by the backup waters from the Skagit River.

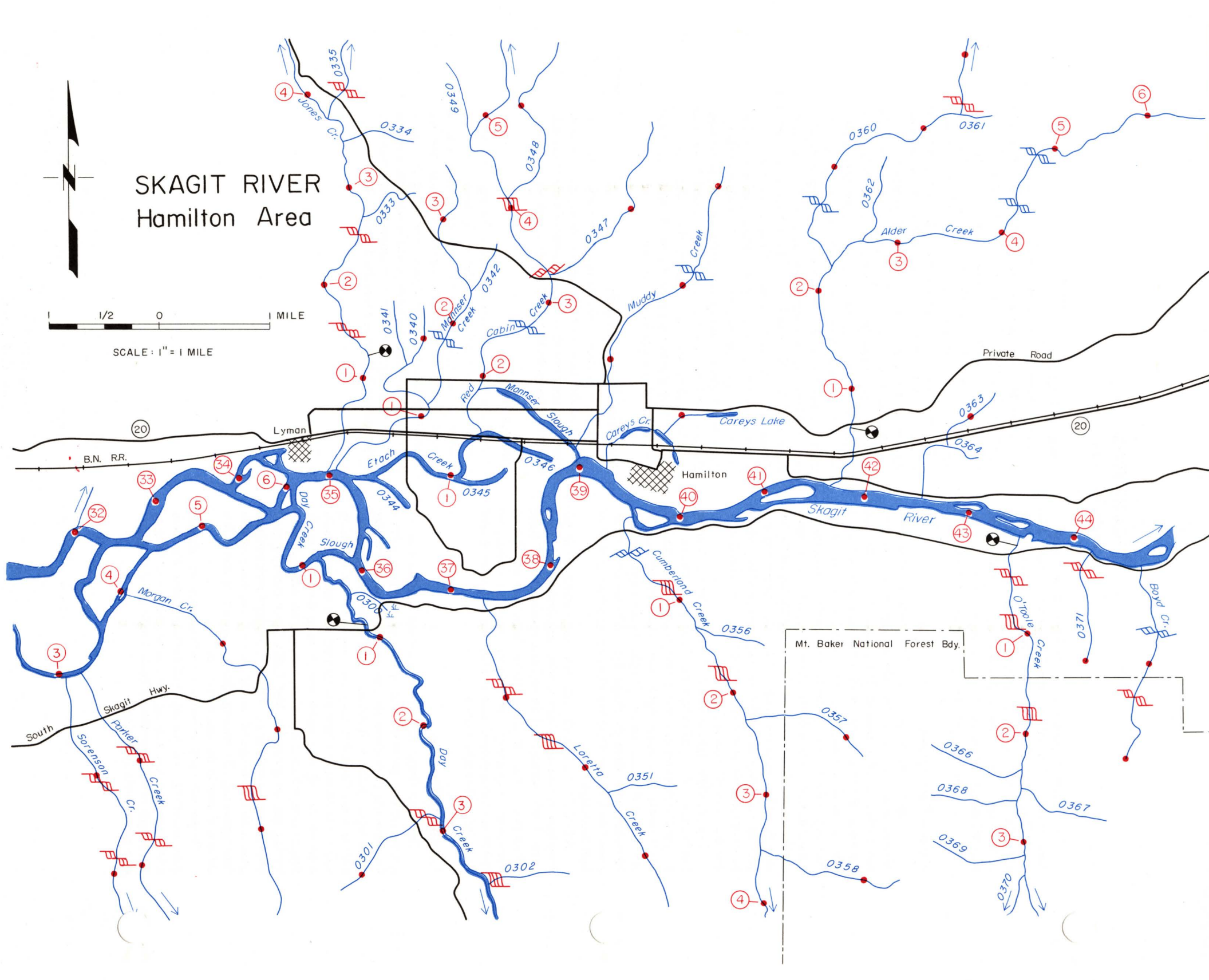
Clear-cut logging and logging road construction have caused the major problems within the tributary streams of this section of the Skagit River. Logging road culverts have created problems on Red Cabin Creek. Log storage areas in the lower reaches of Muddy Creek are creating some siltation problems. Road construction and culverts on Scott Paper land of Alder Creek have also created some stream alterations. All of the left bank tributaries are short run in nature with limited spawning and rearing areas available. Dumping of garbage and refuse off the mainstem Skagit River banks create water quality problems within the area. The proposed construction of the Puget Sound Power and Light thermal-nuclear plant "Ranney-Well" water intake at R.M. 39.0 on the mainstem of the Skagit will cause some environmental changes within this area.

Beneficial Developments

No major facilities, projects or programs have been developed in this area to benefit fisheries production. Set-back dikes have been placed in lower sections of some of the tributaries to prevent flooding over adjacent agricultural lands.

Habitat Needs

Maintenance of natural production habitat within the tributary streams requires prohibiting dry land log storage adjacent to the creeks. Reforestation of logged over lands is essential. Protection should be provided to maintain the stream bank cover and deciduous trees along the Skagit River and its tributaries. Development of flood plain zoning laws are necessary to restrict recreational summer home developments within the 100-year flood plain.


SKAGIT RIVER
Hamilton Area
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SCALE : 1" = 1 MILE
Lyman
Hamilton
B.N. R.R.
Jones Cr.
Manser Creek
Cabin Creek
Muddy Creek
Red Manser Slough
Careys Cr.
Careys Lake
Private Road
Alder Creek
Etach Creek
Day Creek Slough
Skagit River
Morgan Cr.
South Skagit Hwy.
Sorenson Cr.
Porter Creek
Day Creek
Loretta Creek
Cumberland Creek
O'Toole Creek
Boyd Cr.
Mt. Baker National Forest Bdy.
0300
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SKAGIT RIVER — HAMILTON AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	
0298	Day Creek Slough	LB-34.65	1.5	—	Chin., Coho, Pink, Chum, Sockeye
	(See Skagit 803)				
0332	Jones Creek	RB-35.0	6.7	—	(Chin.), Coho, (Pink), Chum
0335	Unnamed	LB-3.7	1.4	—	None
0336	Unnamed	RB-4.7	1.3	—	None
0337	Unnamed	RB-4.9	1.1	—	None
0338	Unnamed	RB-5.2	1.8	—	None
0339	Mannser Creek	RB-35.1	3.6	—	Coho, Chum
0340	Unnamed	RB-1.15	1.3	—	Coho, (Chum)
0343	Etach Creek	RB-35.2	6.1	—	(Chin.), Coho, (Pink), Chum
	Etach Cr. cont. as Red Cabin Creek	@ mi. 1.51	—	—	
0347	Unnamed	LB-3.25	1.8	—	(Coho)
0348	Unnamed	LB-4.1	1.7	—	None
0350	Loretta Creek	LB-37.3	3.5	—	Coho, (Chum)
0352	Muddy Creek	RB-39.0	3.2	—	Coho, Chum
0354	Careys Creek	RB-39.3	1.2	—	(Coho)
	Careys Lake	Outlet-1.2	—	—	
0355	Cumberland Creek	LB-39.0	5.4	—	(Chin.), Coho, (Chum)
0357	Unnamed	RB-2.3	1.2	—	None
0358	Unnamed	RB-3.5	1.3	—	None
0359	Alder Creek	RB-41.7	6.5	—	Chin., Coho, (Pink), (Chum)
0360	Unnamed	RB-2.3	3.6	—	(Coho)
0363	Unnamed	RB-42.5	1.3	—	Unknown
0365	O'Toole Creek	LB-43.5	4.0	—	Coho, (Chum)
0371	Unnamed	LB-44.2	1.0	—	Unknown
0372	Boyd Creek	LB-44.7	2.0	—	(Coho)
	(Continued Skagit 903)				

DAY CREEK DRAINAGE

Day Creek Slough and Day Creek are located across the Skagit River from the community of Lyman. Day Creek Slough is a channel split of the main Skagit River between R.M. 34.5 and 36.0 and is 1.5 miles in length. Day Creek empties into Day Creek Slough at R.M. 1.2 and contains 11.7 stream miles plus 20 tributaries providing an additional 42.1 stream miles of drainage. Access to this drainage is via the South Skagit Highway where it crosses Day Creek at R.M. 0.9.

Stream Description

Day Creek originates within the Mt. Baker National Forest lands above Day Lake at the 3,200-foot elevation on Cole Mountain and flows north-northwest through a confined narrow ravine. From Day Lake to approximately R.M. 7.0 the stream falls rapidly through boulders and bedrock with cascades and rapids interspersed with small pools. The gradient gradually moderates below as the steep-sloped valley widens and the gradient becomes gentle in the lower portion below R.M. 3.0.

The numerous tributaries are precipitous in nature and drop off sharply over falls and cascades where they are accessible for only a short distance near their mouths. Although this watershed has been extensively logged, it should improve as the regrowth continues. Below R.M. 3.0 there is a moderate gradient through the valley where it broadens with steep side hill slopes. This section contains good pool-riffle-rapid ratios with large patch gravel sections between the outcropping boulders. A U.S.G.S. gauge located below the South Skagit Highway recorded the average discharge over the past 8 years at 56.2 cfs. During 1971 the maximum flow here was 480 cfs and the minimum flow 4.0 cfs, which occurred in August.

Land use within the watershed is extensively forestry with agriculture occurring only below the R.M. 1.0 along the west bank.

Salmon Utilization

The upper portion of Day Creek Slough is a good chum spawning area. The lower 3 miles of Day Creek are utilized principally by chinook, pink, and coho. The most concentrated spawning normally occurs below R.M. 1.0. Coho salmon also utilize the lower portion of the tributary streams up to R.M. 7.0.

Limiting Factors

The major limiting factors influencing salmon production within this drainage include streamflow fluctuations and logging activities. Due to the steep-sloped hillsides and steep gradient there is rapid runoff and flooding within this watershed. Because of the large amount of bedrock material and boulders in the upper watershed there is very little suitable gravel available. The extreme summer low flows seriously curtail coho rearing as well as restrict the upstream migrations of chinook and pink during the month of September. The extensive logging activities have seriously altered the salmon habitat and stream environment of this watershed.

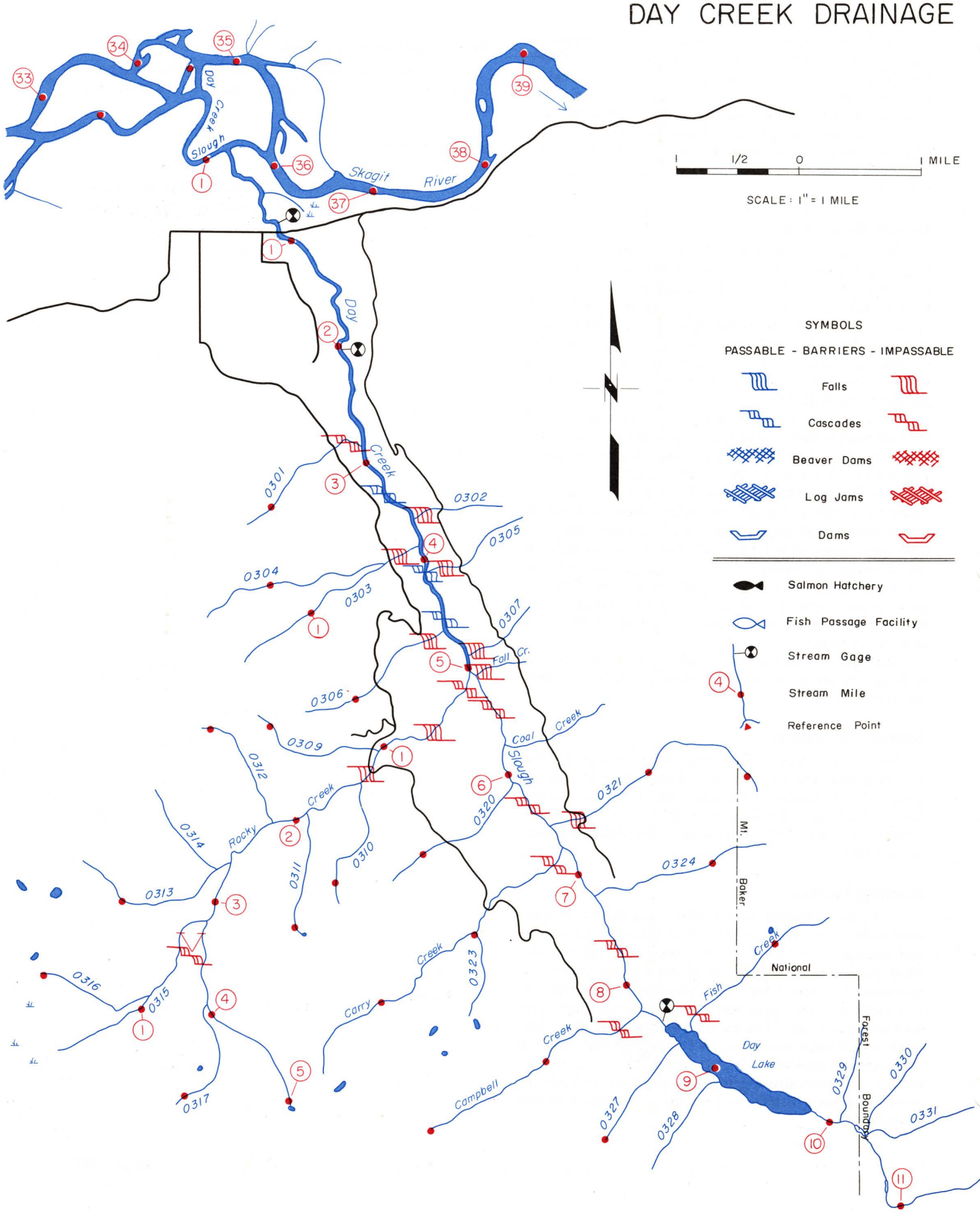
Beneficial Developments

No beneficial facilities, projects or programs have been undertaken to increase salmon production within this system.

Habitat Needs

In order to maintain the natural production habitat for salmon within this watershed, it is essential that future logging activities be coordinated to protect the stream environment.

DAY CREEK DRAINAGE



DAY CREEK DRAINAGE
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				
0298	Day Creek Slough	LB-34.65	1.5	—	Chin., Coho, Pink Chum, Sockeye
0299	Day Creek	LB-1.2	11.7	—	Chin., Coho, Pink, Chum
0301	Unnamed	LB-2.9	1.2	—	Unknown
0303	Unnamed	LB-3.9	1.7	—	(Coho)
0304	Unnamed	LB-0.3	1.6	—	None
0306	Unnamed	LB-4.6	1.4	—	Unknown
0308	Rocky Creek	LB-5.0	5.0	—	(Chin.), (Coho)
0309	Unnamed	LB-1.1	1.15	—	None
0310	Unnamed	RB-1.4	1.2	—	None
0311	Unnamed	RB-1.9	1.1	—	None
0312	Unnamed	LB-2.2	1.05	—	None
0313	Unnamed	LB-2.7	1.5	—	None
0315	Unnamed	LB-3.2	1.8	—	None
0316	Unnamed	LB-0.9	1.0	—	None
0317	Unnamed	LB-3.9	1.1	—	None
	Unnamed Lk.	(Outlet-5.0	—	—	
0320	Unnamed	LB-6.05	1.3	—	None
0321	Unnamed	RB-6.55	2.1	—	None
0322	Carry Creek	LB-6.75	2.9	—	None
0324	Unnamed	RB-7.2	1.5	—	None
0325	Campbell Creek	LB-8.25	2.0	—	None
	Day Lake	Outlet-8.45	—	—	
0326	Unnamed	LB-8.6	1.0	—	None
0327	Fish Creek	RB-8.65	1.5	—	None

(Continued Skagit 703)

SKAGIT RIVER
Concrete Area

The mainstem Skagit in this section contains 12 miles of meandering river flowing from the town of Concrete to 1.5 miles below the community of Birdsview. Seven tributary streams provide an additional 44.7 linear miles of drainage. Finney Creek, having its confluence with the Skagit River in this section, is discussed separately with Skagit Map 1020. Access to this stretch of river is via State Highway 20 on the north shoreline and by the South Skagit Highway along the southern shoreline.

Stream Description

The main Skagit River from R.M. 56.0 to 44.0 flows westerly below the town of Concrete through a narrow valley which gradually broadens from R.M. 50 to 45 to about 2 miles in width. Goat Mountain forms the north valley slope with an abrupt rise in elevation to 500 feet at the base of the valley. The south valley slope contains a similar terrain. Skagit River in this section contains a moderate gradient with broad riffles separated by long glides. The channel widths vary from 400 feet to 1,000 feet and have good gravel substrate with extensive gravel bars containing larger gravel and rubble. Stable stream banks and broad gravel beaches covered with brush and vegetation form the well defined channel. A good buffer zone of deciduous trees extends along most of this section.

Land use within the area is essentially forested lands containing conifer and deciduous trees. Agricultural and forest lands are interspersed along the river with agricultural lands set back from the river's banks. A recreational development occurs between R.M. 48 and 50.

Of the 7 tributaries located along this stretch, Grandy Creek is the only important tributary on the right bank. It originates from the outlet of Grandy Lake and from secondary precipitous tributaries descending from Goat Mountain. Important left bank tributaries include Boyd, Mill, Pressentine, and Finney creeks that originate from the Gee Point Mountain range within the Mt. Baker National Forest.

Grandy Creek is 7.6 miles in length and originates from springs about one mile above the inlet to Grandy Lake. Extensive beaver dams are located both at the inlet and the outlet of Grandy Lake. A large slide just above Grandy Lake blocked the stream channel and although the stream was cleaned out it is still in poor condition. Grandy Creek flows through a moderately wide valley below Grandy Lake. Generally it contains a moderate gradient except near R.M. 3 where the stream drops sharply. The stream valley has a moderate to steep slope bordered by trees. Low density agricultural lands exist below R.M. 1 and forestry lands above. The Grandy Creek tributaries are all precipitous-type streams flowing over rather steep terrain that has been mostly clear-cut.

Mill Creek flows over steep terrain above R.M. 1.0, but becomes moderate in gradient as it approaches the river. This lower area is utilized for agricultural and grazing land. The Pressentine Creek watershed is undeveloped except for one recreational area. The creek drops sharply off the hill with many cascades and falls but has a moderate gradient in the lower half-mile. Land use is essentially forestry.

Salmon Utilization

All 5 species of Pacific salmon utilize the Skagit River in this area for transportation and rearing. Chinook, pink, and chum salmon spawn heavily in the main river while coho utilize essentially the tributary streams. Grandy Creek contains good coho spawning and rearing with a few chinook utilizing the lower portion below R.M. 2. Mill Creek contains good spawning and rearing below the falls and Pressentine Creek has limited coho spawning and rearing below the falls.

Limiting Factors

The major limiting factors include stream flow fluctuations and stream deterioration due to logging and road building. River flow fluctuations due to power generation peaking is causing extensive mortalities of juvenile salmon. Tributaries to Grandy Creek are all affected by heavy siltation from logging activities. Road construction on the Baker Lake Road had altered Grandy Creek between R.M. 2 and 15 where severe erosion has created loss of salmon utilization. Encroachment from recreational home developments along the main river will require bank-protective projects.

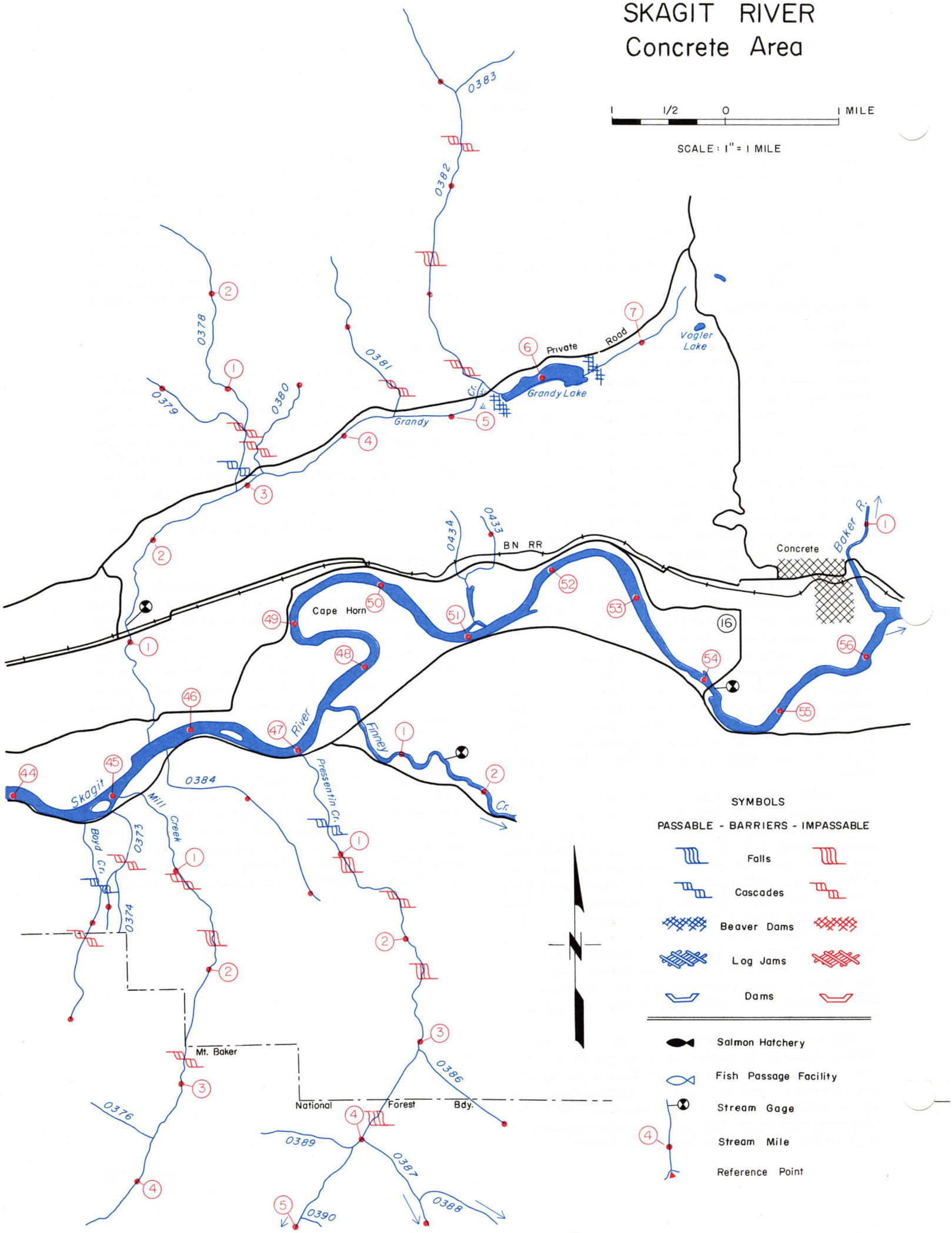
Beneficial Developments

The old federal salmon hatchery on Grandy Creek at Birdsview was the only facility ever developed within this area to benefit salmon production; however, it was abandoned as uneconomical in 1947. An indirect beneficial development has occurred through the shutdown of the large cement plant at the town of Concrete. The heavy cement dust had curtailed the production of aquatic and terrestial plants and insects and the condition is now greatly improved.

Habitat Needs

In order to maintain a natural production habitat it is necessary to develop flood plain zoning laws to prohibit development of summer homes along the waterways. Future logging activities should be coordinated with fish needs and stream improvement protection. It would also be desirable to rehabilitate the stretch of Grandy Creek seriously eroded and altered in the Baker Lake Road construction project.

SKAGIT RIVER
Concrete Area



SKAGIT RIVER — CONCRETE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
0372	Boyd Creek	LB-44.7	2.0	—	Coho, (Chum)
0373	Unnamed	LB-44.9	1.2	—	Unknown
0375	Mill Creek	LB-45.0	4.6	—	Coho, Chum
0377	Grandy Creek	LB-45.6	7.6	—	Chin., Coho, Pink, Chum
0378	Unnamed	RB-2.9	2.8	—	Coho, (Chum)
0379	Unnamed	RB-0.6	1.2	—	None
0380	Unnamed	RB-3.15	1.0	—	Unknown
0381	Unnamed	RB-4.5	1.7	—	Unknown
0382	Unnamed	RB-5.45	3.7	—	(Coho)
	Grandy Lake	Outlet-5.6	—	4.90	
0384	Unnamed (Savage Cr.)	LB-45.75	2.1	—	Coho, Chum
0385	Pressentin Cr.	LB-47.0	6.9	—	(Chin.), Coho, Pink, Chum
0386	Unnamed	RB-3.1	1.0	—	None
0387	Unnamed	RB-4.0	1.8	—	None
0391	Unnamed	RB-5.7	1.1	—	None
0392	Finney Cr.	LB-47.5	23.8	—	Chin., Coho, Pink, Chum
	(See Skagit 1003)				
0433	Unnamed	RB-51.1	1.2	—	Unknown
	Unnamed Pond	Outlet-0.05	—	—	
0435	Baker River (See Skagit 1103) (Continued Skagit 1303)	RB-56.5	32.4	298.0	Chin., Coho, Sockeye

FINNEY CREEK DRAINAGE

Finney Creek is a significant south bank tributary of the Skagit River and contains 23.8 linear stream miles with 30 tributary streams providing an additional 52.6 linear miles of drainage. It joins the mainstem Skagit upstream of the community of Birdsview with access via the South Skagit Highway. The entire Finney Creek watershed lies within Skagit County.

Stream Description

The Finney Creek drainage originates in the Gee Point Mountain range at the 3,600-foot elevation and drains northeast for 12.8 miles where the stream abruptly turns at the base of Leonard Ridge and flows northwest for 11 miles to its confluence with the Skagit River at R.M. 47.5. This stream flows through a steeply sloped valley to approximately R.M. 7.0 where the valley begins to widen. The entire watershed is used for forestry and has been extensively logged, in some places to the stream's edge. Above R.M. 6.0 the stream flows through steep canyons while below R.M. 7.0 the gradient is moderate to gentle and contains good pool-riffle ratios. The substrate within this section is considered good. The stream up to R.M. 12.0 is generally bordered by second growth timber except in the clear-cut areas.

Of the 30 tributaries to this system only 7 below R.M. 12.0 contain short accessible stream sections for salmon production. Quartz and Hatchery creeks are the major tributaries and are heavily wooded. Both contain good substrate and pool-riffle areas. The Finney Creek logging road parallels and follows the creek bottom from R.M. 11.0 to the falls at R.M. 18.0. Very low density agriculture use occurs from small farms below R.M. 1.0 along the west bank of the lower stream.

Salmon Utilization

A falls below R.M. 12.0 is a total block to anadromous fish passage. Chinook, coho, pink, and chum salmon all utilize the lower 6.0 miles of stream below the canyon. Hatchery plants of fall chinook fingerlings have been introduced into this system and apparently have become established. Quartz Creek contains 0.5 miles of good coho spawning area below the falls, while Hatchery Creek has 0.25 miles of good coho spawning up to the steep cascades.

Limiting Factors

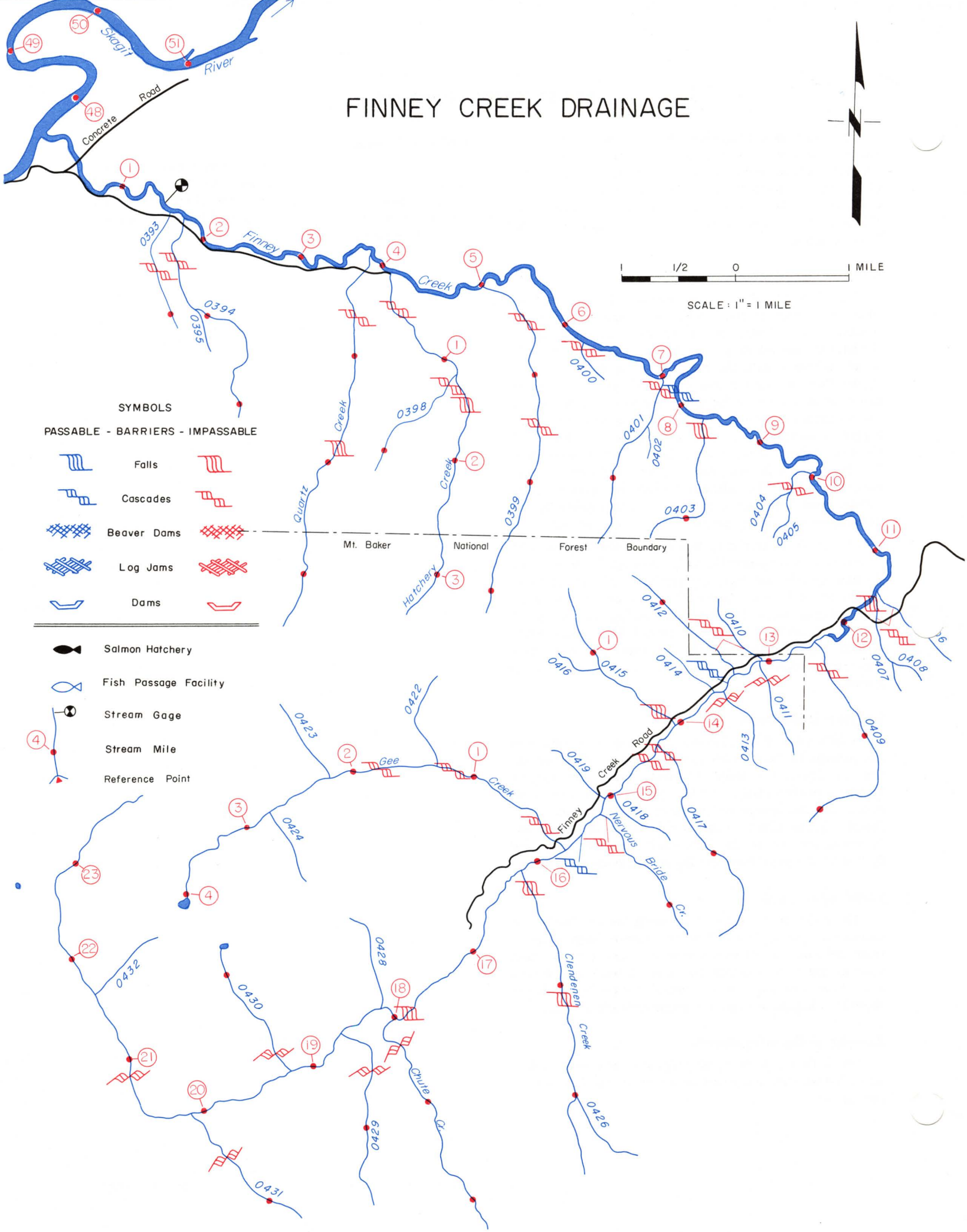
The major limiting factor affecting salmon production within this system occurs from the extensive logging operations and road construction activities along the creek which have caused serious silting and erosion problems. Several slides have occurred from the denuded hillsides and heavy deposits of logging debris have accumulated in the stream.

Beneficial Developments

No facilities, projects, or programs have been undertaken within this watershed to benefit or increase salmon production.

Habitat Needs

Future logging activities within the watershed should be closely monitored and coordinated with salmon use and stream habitat protection. The regrowth of trees and brush on the hillsides within the watershed will immensely aid the salmon production of the system.


FINNEY 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
Mt. Baker
National
Forest
Boundary
Skagit
River
Concrete
Road
Finney
Creek
Quartz
Creek
Gee
Creek
Hatchery
Creek
Creek
Road
Nelvous
Bride
Cr.
Clendenen
Creek
Chute
Cr.
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0394
0395
0398
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FINNEY CREEK DRAINAGE
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink, Chum, Sockeye
0392	Finney Creek	LB-47.5	23.8	—	Chin., Coho, Pink, Chum
0393	Unnamed	LB-1.6	1.1	—	Unknown
0394	Unnamed	LB-1.7	2.1	—	(Coho), (Chum)
0396	Quartz Creek	LB-3.9	3.5	—	(Chin.), Coho, Pink, (Chum)
0397	Hatchery Creek	LB-4.1	3.4	—	Coho, Pink,(Chum)
0398	Unnamed	LB-1.2	1.2	—	None
0399	Unnamed (Ruxall Cr.)	LB-5.0	3.2	—	(Coho), (Chum)
0401	Unnamed	LB-7.0	1.6	—	None
0403	Unnamed	LB-8.25	1.4	—	None
0409	Unnamed	RB-12.4	2.2	—	None
0412	Unnamed	LB-13.35	1.4	—	None
0415	Unnamed	LB-14.05	1.5	—	None
0417	Unnamed	RB-14.35	1.8	—	None
0420	Nervous Bride Cr.	RB-15.2	1.35	—	None
0421	Gee Creek	LB-15.65	4.0	—	None
0425	Clendenen Cr.	RB-16.2	2.7	—	None
0427	Chute Creek	RB-18.0	2.2	—	None
0429	Unnamed	RB-18.6	1.7	—	None
0430	Unnamed	LB-19.2	1.2	—	None
0431	Unnamed	RB-20.1	1.3	—	None

LOWER BAKER RIVER

This section includes the main river from its mouth at Skagit River mile 56.5 near Concrete, through Lake Shannon and Baker Lake to R.M. 17.9. There are 20 tributary streams entering Lake Shannon providing 96.35 stream miles, and 16 tributaries within Baker Lake containing 76.5 stream miles. Swift Creek drainage is discussed with Skagit Map 1220.

Stream Description

The lower Baker River has an adult salmon collection facility at R.M. 0.25. The lower Baker powerhouse is located at R.M. 0.9 and the lower Baker Dam, which forms Lake Shannon, is at R.M. 1.1. Lake Shannon is 8.1 miles long and extends to the upper Baker Dam at R.M. 9.1 which forms 10.1 mile-long Baker Lake.

Baker River originates from snowfields on Mt. Baker and Mt. Shuksan and flows southerly to the Skagit. This is a very stable watershed, although the more precipitous small tributary streams carry heavy runoff during the winter and spring seasons.

The Baker River originally flowed through a deep valley, but in 1927 the Puget Sound Power and Light Company built the 285-foot high lower Baker Dam, and in 1955 the 312-foot high upper Baker Dam. Total hydroelectric generating capacity is 198,350 kw. The town of Concrete, located near the mouth of the Baker River, was built around the construction of lower Baker Dam and the Lone Star Cement Company's limestone quarry operation. Mt. Baker National Forest encompasses a considerable portion of the watershed where extensive logging takes place. The Forest Service also operates recreational facilities around Baker Lake.

Below lower Baker Dam the river contains a moderate slope and gradient with an average yearly flow of 2,520 cfs. Both lake levels undergo seasonal fluctuations from power generation and runoff storage. Lake Shannon becomes extremely turbid during the spring. Hillsides around the two lakes have largely been logged off for timber and construction of the reservoirs and are in various stages of regrowth.

The principal tributaries to Lake Shannon include Sulphur, Rocky, and Bear creeks on the west shoreline and Thunder Creek on the east shoreline. The important streams entering Baker Lake on the west shoreline include Sandy, Little Sandy, Boulder, Little Park and Park creeks and Swift Creek on the east shore. Access to all the tributaries on the east bank are influenced by the reservoir level.

Salmon Utilization

Chinook, sockeye, coho, and pink utilize the Baker River system. Adults are trapped and hauled from the lower Baker collection facility to the lower end of Baker Lake where they are released. Baker Lake contains excellent salmon rearing, particularly for sockeye and coho. Both Sandy and Little Sandy creeks support coho, but no salmon utilize Boulder Creek. Coho use Park Creek while Little Park Creek is very important for both sockeye and coho. Swift Creek is the only east bank tributary to contain limited spawning for coho.

Limiting Factors

Annual stocking of rainbow trout in Baker Lake creates predation on both coho and sockeye fry. Boulder Creek flows through a wide channel and has very high, fast flows during the spring runoff. It also contains large bottom substrate with little suitable gravel for salmon use. The extreme lake fluctuations curtail the use of many of the smaller lake tributaries, while the upper watersheds of many of the streams are too precipitous to be of any value. Logging activities within the area have caused considerable silting and stimulate fast runoff conditions. Glacial flour creates heavy turbidity within Lake Shannon in the spring months. This, along with cold water conditions, hampers the production of food organisms. The unrestricted Skagit Bay Indian trap fishery has cropped better than half of the adult returns of Baker Lake sockeye each year, which has been damaging on years of poor return.

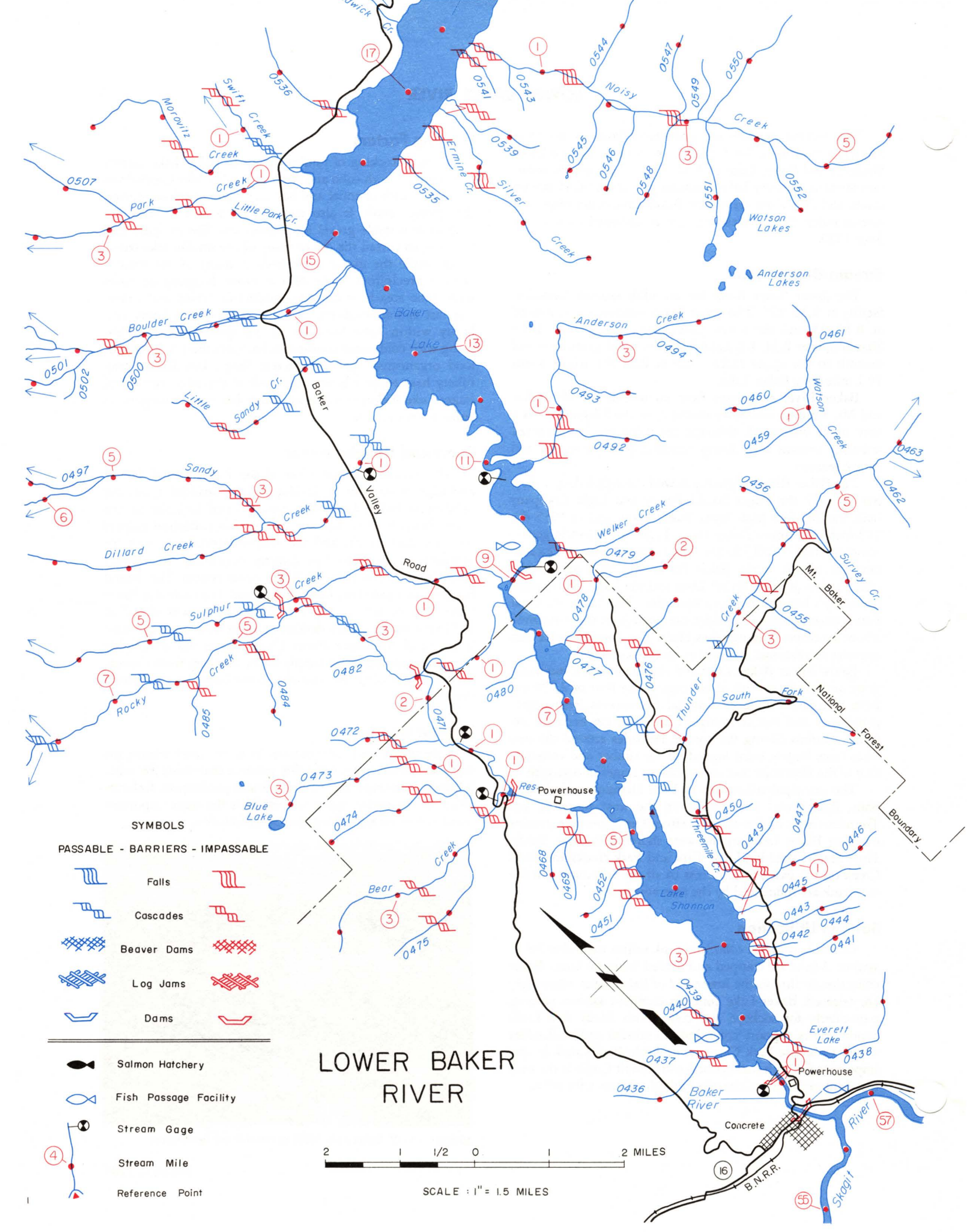
Beneficial Developments

The excellent cooperation of the Puget Sound Power and Light Company in developing the artificial spawning beaches at Baker Lake, the trap-and-haul facilities in the lower Baker system, the two juvenile fish collection gulpers (one on each lake), and the transportation pipelines for downstream migrants has directly benefitted the salmon production level within the Baker River system. The federal hatchery at Birdsview, built about 1900 to handle the Baker Lake runs of fish, particularly the sockeye, was closed in 1947 due to the steady decline of these runs after the construction of the lower Baker Dam. The extremely muddy winter and spring water supply to the hatchery from Grandy Creek, which occurred annually, contributed to this steady decline.

Habitat Needs

Due to the wide fluctuations in water level within the two lake systems, there are few streams that could be rehabilitated to increase the natural salmon production. Reforestation of the entire upper watershed is the most important requirement for sustaining salmon production.

PHOTO 03-19. Baker Lake looking towards the headwaters.


LOWER BAKER RIVER
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
SCALE : 1" = 1.5 MILES
2 MILES
Baker Lake
Baker River
Boulder Creek
Little Sandy Cr.
Sandy Creek
Dillard Creek
Sulphur Creek
Rocky Creek
Blue Lake
Bear Creek
Park Creek
Little Park Cr.
Swift Creek
Morovitz Creek
Ermine Cr.
Silver Creek
Noisy Creek
Watson Lakes
Anderson Lakes
Anderson Creek
Watson Creek
Welker Creek
Survey Cr.
Thunder Creek
South Fork
Threemile Cr.
Lake Shannon
Everett Lake
Concrete
Powerhouse
Res.
Valley Road
Mt. Baker National Forest Boundary
B.N.R.R.
Skagit River

LOWER BAKER RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	
0435	Baker River	RB-56.5	32.4	298.0	Chin., Coho, Sockeye
	Baker Lake	Outlet-1.1	—	—	
0436	Unnamed	RB-1.6	1.6	—	None
0438	Unnamed	LB-1.8	2.4	—	None
0441	Unnamed	LB-2.7	1.4	—	None
0443	Unnamed	LB-3.01	1.7	—	None
0445	Unnamed	LB-3.3	1.7	—	None
0446	Unnamed	LB-3.5	2.2	—	Unknown
0447	Unnamed	RB-0.8	1.2	—	None
0448	Threemile Cr.	LB-3.7	1.4	—	Unknown
0449	Unnamed	LB-0.15	1.0	—	None
0452	Unnamed	RB-4.4	1.1	—	None
0453	Thunder Creek	LB-4.7	8.0	—	(Coho)
0454	S. Fork Thunder Cr.	LB-1.6	2.5	—	Unknown
0456	Unnamed	RB-4.2	1.0	—	None
0457	Survey Cr.	LB-4.3	1.5	—	None
0458	Watson Cr.	RB-5.1	2.4	—	None
0460	Unnamed	RB-1.25	1.1	—	None
0463	Unnamed	LB-5.8	1.7	—	None
0465	Unnamed	LB-6.6	1.2	—	None
0468	Unnamed	RB-5.49	1.2	—	Unknown
0470	Bear Creek	RB-5.5	4.2	14.4	(Coho)
0471	Rocky Cr. Diversion Canal	LB-0.9	2.4	—	None
0472	Unnamed	RB-1.4	1.5	—	None
0473	Unnamed	LB-1.4	3.2	—	None
0474	Unnamed	RB-0.5	2.0	—	None
0475	Unnamed	RB-1.8	1.9	—	None
0476	Unnamed	LB-6.1	2.0	—	Unknown
0478	Unnamed	LB-7.7	2.0	—	None
0479	Unnamed	RB-1.0	1.0	—	None
0481	Rocky Cr.	RB-8.6	10.8	—	(Coho)
0484	Unnamed	RB-4.8	1.2	—	None
0486	Unnamed	LB-8.3	1.0	—	None
0487	Unnamed	LB-8.4	1.3	—	None

LOWER BAKER RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0488	Sulphur Creek	RB-8.85	9.3	—	(Coho)
0489	Unnamed	LB-7.3	2.2	—	None
	Baker Lake	Outlet-9.19	—	—	
0490	Welker Creek	LB-9.5	1.9	—	Unknown
0491	Anderson Creek	LB-10.7	4.3	—	(Coho)
0492	Unnamed	LB-0.6	1.5	—	None
0493	Unnamed	LB-1.5	1.1	—	None
0495	Sandy Creek	(RB-12.9	7.6	—	(Chin.), Coho, Sockeye
0496	Dillard Creek	RB-2.8	3.3	—	None
0497	Unnamed	LB-5.1	2.1	—	None
0498	Little Sandy Cr.	RB-13.1	3.2	—	Coho, (Sockeye)
0499	Boulder Creek	RB-14.5	6.5	—	(Chin.), (Coho), (Sockeye)
0501	Unnamed	RB-3.8	2.0	—	None
0503	Unnamed	RB-4.3	1.7	—	None
0504	Unnamed	RB-0.5	1.2	—	None
0505	Little Park Cr.	RB-15.0	1.0	—	Unknown
0506	Park Creek	RB-15.4	6.1	—	(Chin.), Coho, (Sockeye)
0507	Unnamed	LB-2.7	2.8	—	None
0508	Unnamed	LB-4.65	1.3	—	None
0509	Swift Creek	RB-15.7	9.6	—	(Chin.), Coho), (Sockeye)
	(See Skagit 1203)				
0536	Unnamed	RB-16.7	1.4	—	Unknown
0538	Silver Creek	LB-17.1	3.0	—	Unknown
0539	Unnamed	LB-17.2	1.4	—	Unknown
0540	Chadwick Creek	RB-17.75	1.1	—	(Coho), (Sockeye)
0542	Noisy Creek	LB-17.9	6.1	—	Unknown
0544	Unnamed	RB-1.65	1.5	—	None
0545	Unnamed	LB-1.9	1.1	—	None
0546	Unnamed	LB-2.3	1.0	—	None
0547	Unnamed	RB-2.89	1.1	—	None
0548	Unnamed	LB-2.9	1.3	—	None
0550	Unnamed	RB-3.29	1.8	—	None
0551	Unnamed	LB-3.3	1.6	—	None
0552	Unnamed	LB-4.15	1.0	—	None
	(Continued Skagit 1203)				

UPPER BAKER RIVER

This section includes the upper Baker River with over 13 river miles, and 25 tributaries providing an additional 88 linear stream miles. Also shown are the smaller north shore Baker Lake tributaries, Swift and Shannon creeks, which total 53 miles in stream length. The area is located north of Concrete, entirely within Mt. Baker National Forest, and is accessible via the Baker Valley Road.

Stream Description

From perennial snowfields high on Mt. Baker and Mt. Shuksan, the Baker flows generally southwest for more than 13 miles to the head of Baker Lake, which is the upper reservoir for Puget Sound Power and Light's power production facilities. Principal tributaries include Pickett, Pass, Bald Eagle, and Sulphide creeks.

The upper 5 to 6 miles of the Baker fall through a constricted, steep-sloped, densely-forested valley. Below Bald Eagle Crdek (R.M. 26.9) the valley floor alternately broadens and narrows, opening onto a fairly wide, flat flood plain just above the lake. Bottomland holds mixed deciduous and coniferous timber, providing mostly dense stream-side cover throughout. The steeper mountain slopes have dense coniferous timber with numerous sheer rock outcroppings. Steep mountainous terrain also rises quickly from the lake's upper shorelines. There is only limited development in the upper drainage designed specifically for salmon production and recreation purposes.

The river's upper 4-5 miles, to the vicinity of Pass Creek (R.M. 27.8) has steep gradient with numerous cascades and rapids and a few fast riffles and pool stretches. Most of the channel is narrowly confined with only a few split areas. The bottom is mainly large rock and boulder with some rubble-gravel stretches.

Below Bald Eagle Creek, for the next 2 to 3 miles, the river alternately has a moderate to moderately steep gradient, with only a few cascades or rapids. Fast riffles and some good pool-riffle stretches predominate. Some increase in channel splitting occurs, serving mainly as overflow channels. Stream width during early fall months ranges from 12 to over 20 yards. The bottom is largely rubble with a number of boulder-strewn areas, some good quality gravel riffles, and patch gravel areas.

In the 4-mile stretch from Sulphide Creek (R.M. 23.0) to its mouth the Baker has moderate gradient with good pool-riffle balance. The channel shifts and meanders, producing numerous channel splits, particularly near the mouth. Fall widths range generally from 15 to over 25 yards. The bottom is composed mainly of gravel and rubble, with numerous long, broad gravel riffles.

Baker River tributaries, as well as those meeting the northern shores of Baker Lake, exhibit mostly steep mountainous characteristics over the majority of their lengths. Cascades and rapids prevail, with only a few pool-riffle stretches. Most have bottoms of boulder and rubble. Some offer relatively short access with a moderate gradient occurring near their confluence with the river or lake. Their banks maintain relatively dense, mostly deciduous cover throughout.

Salmon Utilization

The Baker River provides salmon habitat upstream to the vicinity of Pass Creek and for short distances into larger tributaries. Swift and Shannon creeks also provide some salmon use area. These waters draining to upper Baker Lake are utilized by chinook and coho salmon, as well as some sockeye. Most sockeye spawning occurs in the artificial spawning beach facilities, with fairly heavy natural spawning in Channel Creek and the areas of upwelling river groundwater and springs along the shoreline at the lake inlet.

Limiting Factors

Steepening gradient conditions in the river above Pass Creek, and in the lower reaches of most tributaries, is the principal factor limiting production in this area. Production from these waters can be affected by efficiency of downstream migrant collection facilities that transport juveniles to the main Baker River downstream from this section.

Beneficial Developments

As a result of Puget Sound Power and Light Company's construction of upper Baker Dam, an artificial spawning beach complex was built at the head of Baker Lake. This facility was designed specifically to handle beach spawning sockeye salmon, whose natural lake shore habitat was inundated by the project. Adult salmon destined for the upper drainage are trapped in the lower river, and hauled by truck for release into the artificial beach facilities and into Baker Lake. The first 3,000 sockeye are handled in the 2 large artificial beaches, and all other fish are released in the lower lake to seek natural spawning grounds.

Habitat Needs

Principal habitat requirements include preserving the stream-side cover, and maintaining stream and streambed conditions in their natural state.

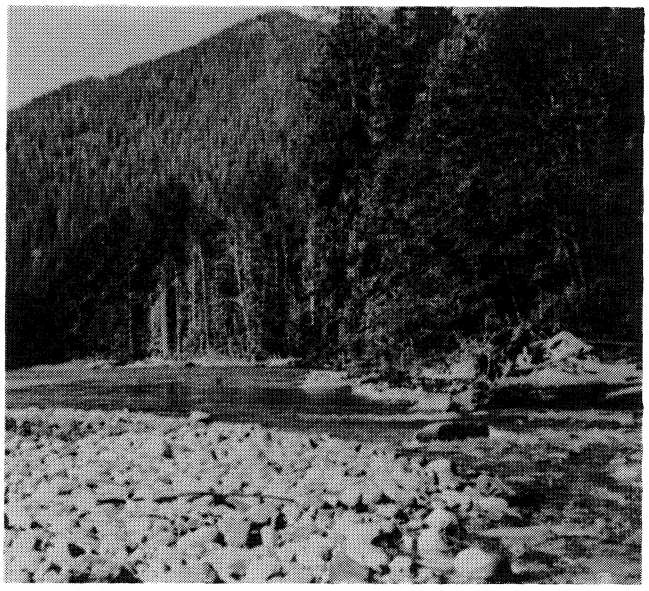
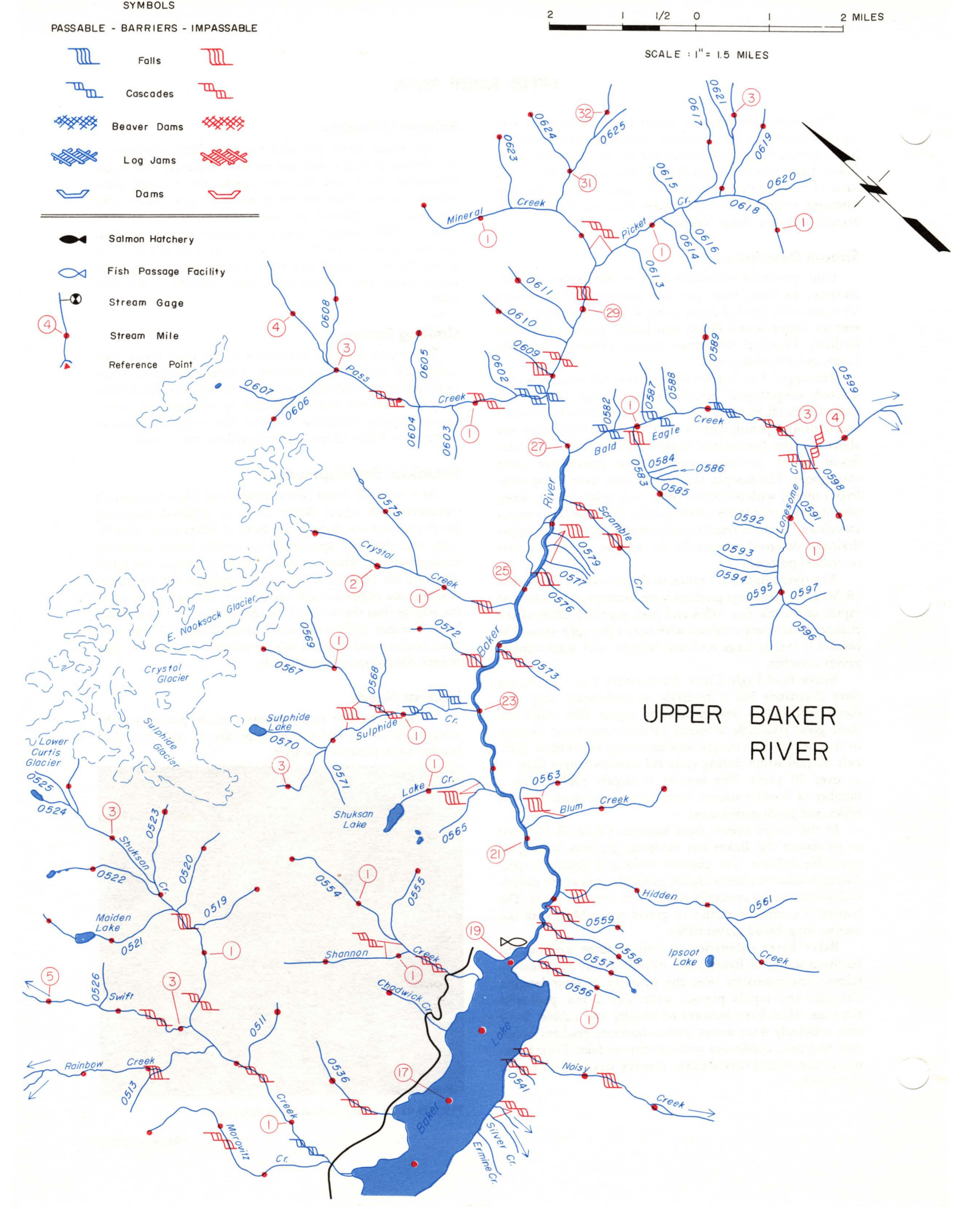


PHOTO 03-20. Baker River above Sulfide Creek.


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
UPPER BAKER RIVER
Mineral Creek
Picket Cr.
Pass Creek
Crystal Creek
Eagle Creek
Bald Cr.
Lonesome Cr.
Scramble Cr.
Sulphide Cr.
Lake Cr.
Blum Creek
Hidden Creek
Ipsoot Lake
Shannon Creek
Chadwick Cr.
Lake
Noisy Creek
Silver Cr.
Ermine Cr.
Morovitz Cr.
Rainbow Creek
Swift Cr.
Shuksan Cr.
Maiden Lake
Shuksan Lake
Sulphide Lake
Crystal Glacier
E. Nooksack Glacier
Sulphide Glacier
Lower Curtis Glacier
River
Baker
Lake
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UPPER BAKER RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink, Chum, Sockeye
0435	Baker River				Chin.,Coho,Sockeye
0509	Swift Creek	RB-15.7	9.6	—	(Chin.), (Coho), (Sockeye)
0510	Morovitz Cr.	RB-0.21	3.0	—	(Coho), Sockeye)
0511	Unnamed	LB-1.8	1.1	—	None
0512	Rainbow Cr.	RB-2.4	6.1	9.13	None
0515	Unnamed	LB-3.1	1.3	—	None
0516	Unnamed	LB-4.9	1.5	—	None
0518	Shuksan Creek	LB-2.8	4.4	—	None
0519	Unnamed	LB-1.4	1.0	—	None
0520	Unnamed	LB-1.7	1.3	—	None
0521	Unnamed	RB-1.75	2.15	—	None
	Maiden Lake	Outlet-1.3	—	—	
0522	Unnamed	RB-2.0	1.5	—	None
0523	Unnamed	LB-2.2	1.1	—	None
0528	Unnamed	LB-6.3	1.1	—	None
0529	Unnamed	LB-6.7	1.5	—	None
0530	Unnamed	LB-0.1	1.5	—	None
0531	Unnamed	RB-7.1	1.6	—	None
0532	Unnamed	RB-0.35	1.1	—	None
0533	Unnamed	LB-7.9	1.2	—	None
0534	Unnamed	LB-8.2	1.1	—	None
0536	Unnamed	RB-16.7	1.4	—	Unknown
	(See Skagit 1103)				
0538	Silver Creek	LB-17.1	3.0	—	Unknown
	(See Skagit 1103)				
0539	Unnamed	LB-17.2	1.4	—	Unknown
	(See Skagit 1103)				
0540	Chadwick Creek	RB-17.75	1.1	—	(Coho), (Sockeye)
	(See Skagit 1103)				
0542	Noisy Creek	LB-17.9	6.1	—	Unknown
	(See Skagit 1103)				
0553	Shannon Creek	RB-18.5	2.5	—	(Coho), (Sockeye)
0554	Unnamed	LB-0.85	2.0	—	None
0555	Unnamed	LB-0.25	1.0	—	None
0556	Unnamed	LB-19.2	1.3	—	(Coho), (Sockeye)
0557	Unnamed	RB-0.2	1.4	—	Unknown

UPPER BAKER RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0558	Unnamed	LB-19.6	1.6	—	Unknown
0559	Unnamed	LB-19.8	1.1	—	Unknown
0560	Hidden Creek	LB-20.1	3.7	—	(Coho), (Sockeye)
0562	Blum Creek	LB-21.1	2.0	—	(Coho)
0563	Unnamed	LB-21.2	1.8	—	(Coho), (Sockeye)
0564	Lake Creek	RB-21.7	1.4	—	(Coho), (Sockeye)
	Shuksan Lake	Outlet-1.4	—	—	
0566	Sulphide Creek	RB-23.0	3.1	10.0	(Chin.), (Coho), (Sockeye)
0567	Unnamed	LB-1.2	2.0	—	None
0572	Unnamed	RB-23.6	1.1	—	None
0574	Crystal Creek	RB-24.8	3.1	—	Unknown
0575	Unnamed	LB-1.4	1.6	—	(Coho), (Sockeye)
0580	Scramble Creek	LB-26.3	1.8	—	Unknown
0581	Bald Eagle Creek	LB-26.9	5.3	17.0	(Chin.), (Coho), (Sockeye)
0583	Unnamed	LB-0.95	1.25	—	Unknown
0589	Unnamed	RB-2.1	1.2	—	Unknown
0590	Lonesome Creek	LB-3.3	2.8	—	None
0598	Unnamed	LB-3.4	1.2	—	None
0601	Pass Creek	RB-27.75	4.8	9.60	(Chin.), (Coho), (Sockeye)
0604	Unnamed	LB-1.75	1.0	—	None
0606	Unnamed	RB-3.0	1.1	—	None
0608	Unnamed	LB-3.1	1.4	—	None
0610	Unnamed	RB-28.5	1.3	—	None
0611	Unnamed	RB-28.7	1.2	—	None
0612	Picket Creek	LB-29.6	3.4	7.88	None
0617	Unnamed	RB-1.6	1.5	—	None
0618	Unnamed	LB-1.9	1.3	—	None
0619	Unnamed	RB-0.2	1.2	—	None
0622	Mineral Creek	RB-30.5	2.0	—	None
0623	Unnamed	LB-0.6	1.0	—	None
0624	Unnamed	RB-31.0	1.0	—	None

SKAGIT RIVER
Rockport Area

This section contains 15.6 miles of mainstem Skagit River between the town of Concrete, near the mouth of the Baker River, upstream to the mouth of Illabot Creek. Twenty-three tributary streams plus 2 sloughs enter within this stretch, providing an additional 82.0 linear miles of drainage. The Sauk River, which also converges with the Skagit at R.M. 67.2 in this section, is discussed separately under Skagit map 1420. Access to this stretch of river is via State Highway 20 parallel to the north shoreline and by the South Skagit Highway along the southern side of the river.

Stream Description

This mainstem section of the Skagit River lies between R.M. 56.0 and 71.6 and flows generally northwesterly. The river in this section has a well defined river channel varying from 500 to 1,200 feet wide, contains many islands, split channels, and sloughs with broad gravel bars. The valley floor throughout this section is broad and flat, particularly between Concrete and Rockport, and averages about one mile in width. The side valley terrain is comprised of steep hillsides ascending into a mountain range. They are heavily forested in various stages of second growth timber. The stream gradient is moderate and contains several braided channels. Between R.M. 66 and 67 the mouth of the Sauk has continually changed its point of entry into the Skagit. The stream bottom contains good substrate with considerable fines, particularly below the mouth of the Sauk River. It also has broad riffles, long glides and pools between R.M. 56 and 67. Above the confluence of the Sauk River it is comprised mainly of a series of riffles and long glides. Stream bank cover is composed essentially of hardwood and brush interspersed with clear-cuts, farmlands, and sections of conifer and deciduous growth. Two important sloughs occur within this section; McLeod Slough at the mouth of the Sauk River and Barnaby Slough above Rockport.

The town of Concrete and the community of Rockport are the two populated centers. Otherwise, the area is composed of low intensity agriculture, rural and recreational summer homes, boat launching areas, and the county park at R.M. 67. Forestry is the major activity and industry of the area. Recreational fishing, boating, hiking, and mountain climbing are the attractions of the area.

Jackman Creek is the only important tributary stream for fish production within this stretch. It flows through a steep valley of which the lower 4 miles have been clear-cut. A great deal of debris accumulation and erosion occurs here. A falls is located at R.M. 0.75. Headwaters of Jackman Creek originate at the 3,000-foot elevation on the Bald Mountain range. The 22 unnamed tributaries within this section are precipitous in nature and very short run, with minimal flows during the summer months.

Salmon Utilization

The mainstem Skagit in this section provides excellent transportation, spawning, and rearing for chinook, coho, pink, and chum salmon. Jackman Creek provides production area in the lower three-quarters mile below the falls for coho and pink salmon. The many small unnamed tributaries provide only limited access and salmon production habitat for the salmon species.

Limiting Factors

Major floods that originate from the Sauk River system influence the area below the confluence of the Sauk and Skagit. Silting and muddy conditions prevail in this lower section. River fluctuations from power generation upstream create serious stranding mortality problems for juvenile salmon. Adult salmon redds are also exposed under these conditions. The harvesting of cottonwood along the river bottom has resulted in reduced stream bank cover. Logging has also influenced the salmon production in Jackman Creek.

Beneficial Developments

The Barnaby Slough complex is utilized by the Washington Department of Game for steelhead production. No other facilities, projects, or programs have been initiated in this area to increase salmon production.

Habitat Needs

Major requirements to maintain the natural production habitat within this stretch include preserving the natural banks and stream cover as a buffer strip along the river. Debris removal and reforestation of the hillsides would benefit the salmon production within Jackman Creek. Good flood control and bank protection practices are needed to maintain the natural environment along the river in this area.

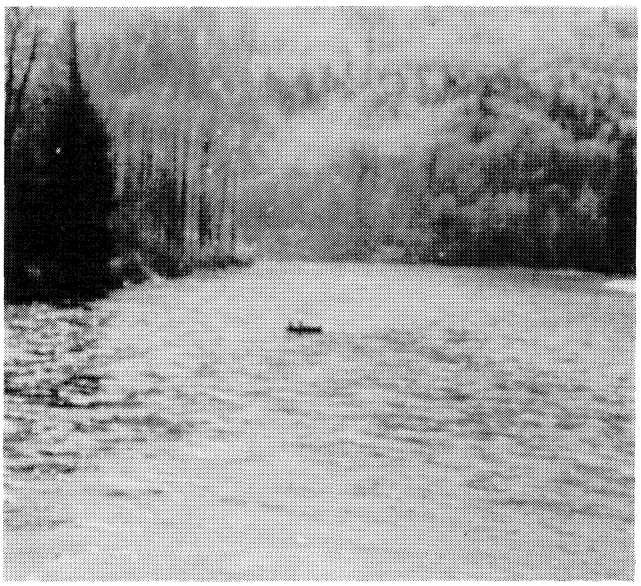
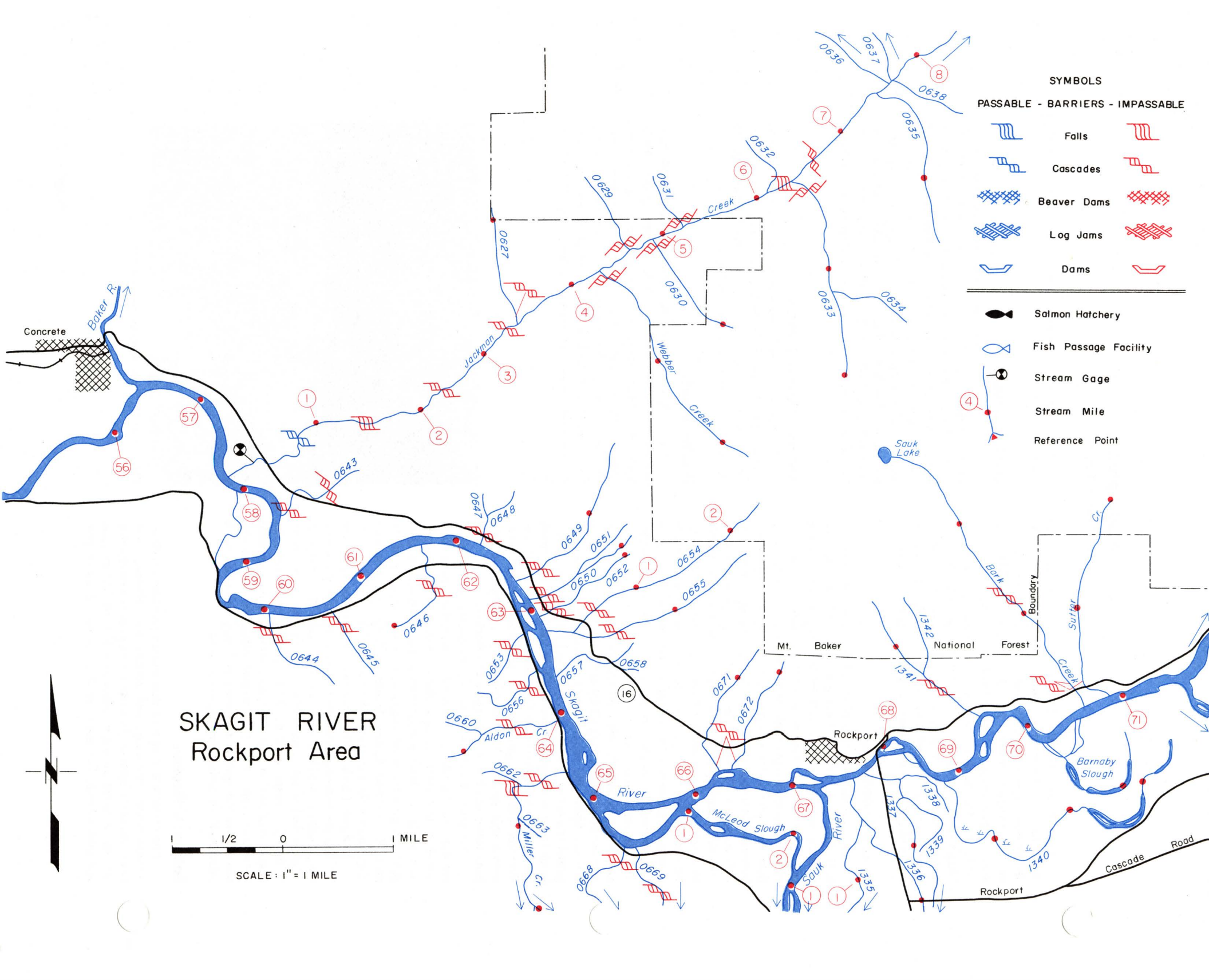


PHOTO 03-21. Skagit River below Rockport.


SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
SKAGIT RIVER
Rockport Area
SCALE : 1" = 1 MILE
1/2
0
1 MILE
Concrete
Baker R.
Jackman Creek
Webber Creek
Sauk Lake
Bark
Boundary
Sutter Cr.
Mt. Baker National Forest
Skagit River
McLeod Slough
Sauk River
Aldon Cr.
Miller Cr.
Barnaby Slough
Rockport
Cascade Road
Rockport

SKAGIT RIVER — ROCKPORT AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
0626	Jackman Creek	RB-57.8	11.2	—	(Chin.), Coho, Pink, (Chum)
0627	Unnamed	RB-3.4	1.1	—	None
0628	Webber Creek	LB-4.3	2.3	—	None
0630	Unnamed	LB-4.9	1.1	—	None
0633	Unnamed	LB-6.35	2.0	—	None
0635	Unnamed	LB-7.5	1.6	—	None
0636	Unnamed	RB-7.65	1.8	—	None
0637	Unnamed	RB-7.69	1.2	—	None
0639	Unnamed	LB-8.8	1.0	—	None
0641	Unnamed	LB-9.7	1.0	—	None
0642	Unnamed	LB-10.2	1.3	—	None
0646	Unnamed	LB-61.7	1.0	—	Unknown
0649	Unnamed	RB-62.7	1.7	—	Unknown
0650	Unnamed	RB-62.9	1.1	—	Unknown
0652	Unnamed	RB-63.05	1.0	—	Unknown
0654	Unnamed	RB-63.2	2.4	—	(Coho), (Chum)
0655	Unnamed	LB-0.3	1.8	—	Unknown
0659	Aldon Creek	LB-64.0	1.2	—	Unknown
0661	Miller Creek	LB-64.7	3.6	—	Coho, (Chum)
0666	Unnamed	LB-2.35	1.0	—	None
0667	McLeod Slough	LB-65.15	2.4	—	Chin., Coho, Pink, Chum
0668	Unnamed	LB-0.35	1.0	—	Unknown
0669	Unnamed	LB-0.4	2.65	—	Coho, (Chum)
0671	Unnamed	RB-66.3	1.3	—	None
0672	Unnamed	RB-66.4	1.1	—	Unknown
0673	Sauk River	LB-67.2	56.7	—	Chin., Coho, Pink, Chum
	(See Skagit 1403)				
1335	Unnamed	LB-67.55	2.3	—	Coho,(Pink),(Chum)
1336	Unnamed	RB-0.4	1.1	—	Coho,(Pink),(Chum)
1337	Unnamed	LB-67.65	1.95	—	(Coho), (Chum)
1340	Unnamed	LB-68.8	3.5	—	Coho,(Pink),(Chum)
1341	Unnamed	(RB-69.5	1.5	—	Unknown
1343	Barnaby Slough	LB-70.2	1.5	—	Coho, Chum

SKAGIT RIVER — ROCKPORT AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1344	Bark Creek	RB-70.7	2.9	—	(Coho), (Chum)
	Sauk Lake	Outlet-2.9	—	—	
1345	Sutter Creek	RB-70.9	2.0	—	(Coho), (Chum)
	(Continued Skagit 2003)				

LOWER SAUK RIVER

The lower Sauk River includes the 13.2 miles below the mouth of the Suiattle downstream to the confluence of the Sauk River witm the Skagit River at R.M. 67.2 near the town of Rockport. Nine tributaries and one slough provide an additional 55.8 linear stream miles of drainage. Access is via the Rockport-Darrington Road that parallels the east shoreline and via the Concrete-Sauk Valley Road on the west shoreline up to R.M. 7.0.

Stream Description

Of the 56.7 miles of the mainstem Sauk River the lower 13 miles flows generally northerly. It flows through a broad valley up to R.M. 4.0 and is then confined up to R.M. 7.0 where it fans out again up to the confluence with the Suiattle River. The Sauk contains good pool-riffle ratios within this stretch and contains many side channels and splits below R.M. 4.0. Rinker Ridge forms the hill on the west slope and the Suiattle Mountain range forms the east slope, all within the Mt. Baker National Forest.

The lower valley floor is generally forested with deciduous trees and scattered conifers. The hillsides forming the side valleys have all been logged off and now contain deciduous and conifer mixed stands in various stages of regrowth.

The stream gradient is rather moderate with a drop in elevation of 12 feet per mile. Flow records from the Sauk River U.S.G.S. gauging station at R.M. 6.0 for the past 43 years of record show an average discharge of 4,347 cfs. The river generally meanders within a wide streambed from R.M. 0 to 5.0 and from R.M. 9.0 to 13.0. McLeod Slough at the mouth of the Sauk River is 2.4 miles in length and is an important overflow secondary mouth entering the Skagit River. The stream bottom is composed of excellent substrate material; however, it does have compacted areas coated with glacial flour from the Suiattle system. The stream banks are firm and well defined with extensive gravel bars and clay banks with large boulders forming the shoreline.

Rockport is the only community within this section. Small amounts of agricultural, grazing, and pasture land are located in the lower 4 miles. Logging and forestry are the main land use. A summer home development occurs between R.M. 5.0 and 6.0.

The principal tributaries in this stretch include Hilt, White, and Rinker creeks. Hilt Creek drops almost vertically off the hillside above the lower falls located at R.M. 0.7. Below it has a moderate to gentle gradient with good pool-riffle ratios. White Creek descends off a steep, forested hill and is precipitous even below the lower falls at about stream mile 0.7. The bottom composition is largely rubble and boulders. Rinker Creek flows through a narrow steep-banked valley that only flattens near the mouth. Above R.M. 1.0 it flows through a flat logged-off bench land. Land use here is forestry, and the area is in various stages of reforestation.

Salmon Utilization

The lower Sauk River provides transportation, spawning, and rearing for chinook, coho, chum, and pink salmon. McLeod Slough contains a gentle gradient and provides good chum spawning area. Chinook spawning is heavier above R.M. 13.0 than in the lower stretch. Both coho and pink salmon utilize the lower portion of Hilt Creek. Only a few coho utilize the area below the falls in White Creek. In Rinker Creek coho and chum have been observed spawning at the lower end.

Limiting Factors

The lower Sauk River here is affected by the heavy runoff and flooding mainly from the glacial flows of the Suiattle system. Short boulder and rubble rapids occur in stretches of the main river which restrict the spawning areas. The small tributary streams within this section all contain falls on the steep hillside areas and are extremely precipitous in the upper stretches. Hilt Creek contains many beaver dams and a large slide has reduced fish utilization. White Creek contains very little good spawning area due to the coarse substrate of the stream. Extensive logging activity within this area has seriously influenced the natural stream habitat and fish production.

Beneficial Developments

No facilities, projects, or programs have been developed within this section to increase salmon production.

Habitat Needs

Requirements to maintain the natural production habitat within this stretch include maintaining a buffer strip along the river banks and reforestation of the hillsides.

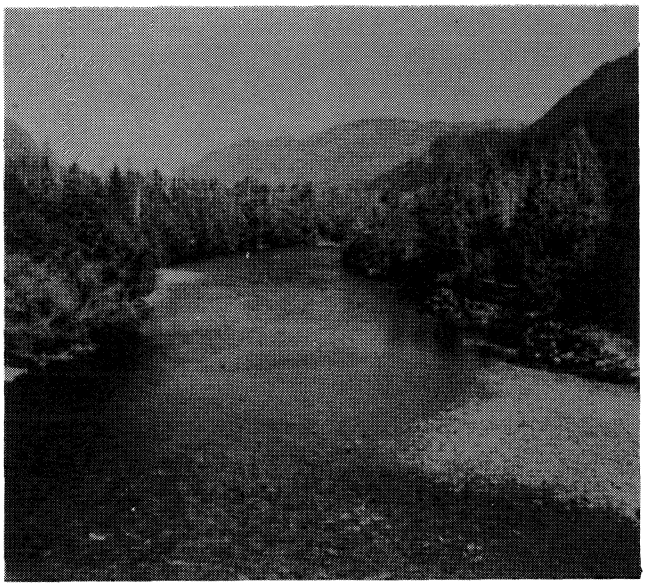
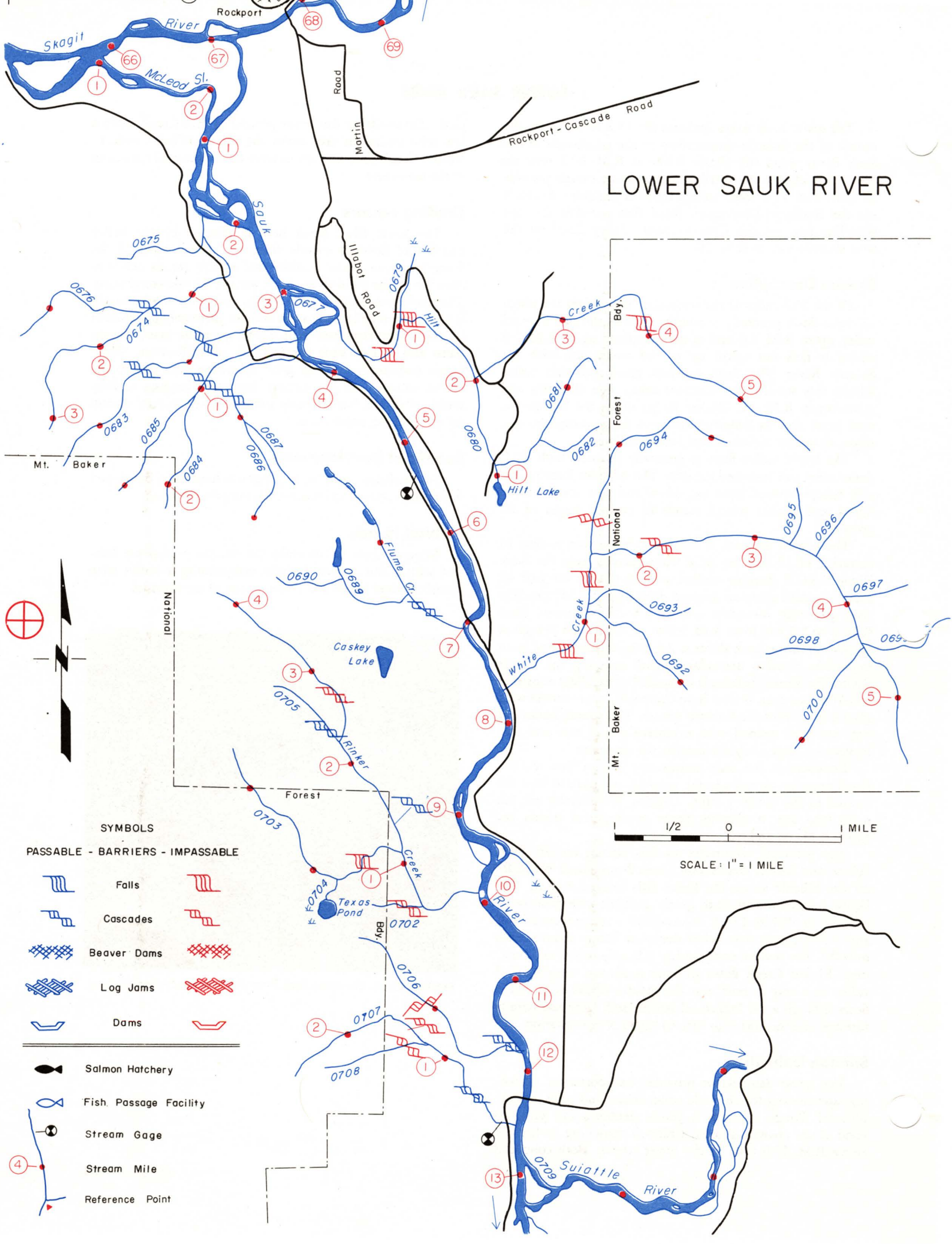


PHOTO 03-22. The lower Sauk River contains ideal salmon habitat.


LOWER SAUK RIVER
Rockport
Skagit River
McLeod Sl.
Martin Road
Rockport - Cascade Road
Illabot Road
Sauk
Hilt Creek
Hilt Lake
Flume Cr.
Caskey Lake
White Creek
Rinker Creek
Texas Pond
Suiattle River
Mt. Baker National Forest
Bdy.
0675
0676
0674
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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 SAUK RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	Chin., Coho, Pink, Chum
0667	McLeod Slough	LB-65.15	2.4	—	Chin., Coho, Pink, Chum
0668	Unnamed	LB-0.35	1.0	—	Unknown
0669	Unnamed	LB-0.4	2.65	—	Coho, (Chum)
0671	Unnamed	RB-66.3	1.3	—	None
0672	Unnamed	RB-66.4	1.1	—	Unknown
0673	Sauk River	LB-67.2	56.7	—	Chin., Coho, Pink, Chum
0674	Unnamed	LB-1.7	3.1	—	Coho,(Pink),(Chum)
0676	Unnamed	LB-1.5	1.35	—	Unknown
0677	Unnamed Slough	RB-3.0	0.9	—	Chin., Coho, Pink, Chum
0678	Hilt Creek	RB-0.6	5.8	—	Coho, Pink, Chum
0680	Unnamed	LB-2.0	1.1	—	None
0681	Unnamed	RB-0.95	1.3	—	None
0683	Unnamed	LB-3.4	2.45	—	Coho,(Pink),(Chum)
0684	Unnamed	LB-3.5	2.2	—	Coho,(Pink),(Chum)
0685	Unnamed	LB-1.1	1.0	—	Unknown
0686	Unnamed	LB-3.65	2.0	—	Coho,(Pink),(Chum)
0688	Flume Creek	LB-7.05	1.8	—	(Coho), (Chum)
	Unnamed Pond	Outlet-1.8	—	—	
0691	White Creek	RB-7.7	5.6	—	Coho, (Pink), Chum
0692	Unnamed	LB-1.1	1.1	—	None
0694	Unnamed	RB-1.65	2.2	—	None
0699	Unnamed	RB-4.35	1.7	—	None
0700	Unnamed	LB-4.4	1.1	—	None
0701	Rinker Creek	LB-9.9	4.2	—	Coho, (Pink), Chum
0703	Unnamed	RB-1.1	2.4	—	Coho,(Pink),(Chum)
0706	Unnamed	LB-11.9	1.7	—	Unknown
0707	Unnamed	LB-12.55	2.6	—	Coho,(Pink),(Chum)
0710	Suiattle River	RB-13.2	45.0	346.0	Chin., Coho, (Pink), (Chum)
	(See Skagit 1503)				
	(Continued Skagit 1703)				

LOWER SUIATTLE RIVER

There are 45.0 linear miles of mainstem Suiattle River of which this lower section includes 23.4 miles upstream from its confluence with the Sauk River at R.M. 13.2. Also, 30 tributaries provide an additional 232.2 linear miles of drainage. Access is via the U.S. Forest Service road that follows the entire northern shoreline and along the southern shoreline above R.M. 12.0. The Skagit-Snohomish county line bisects the river at R.M. 13.5.

Stream Description

The lower Suiattle River flows in a west-northwest direction meandering through a confined valley floor downstream to R.M. 3.0 where it enters the broad Sauk River valley. The right bank tributaries originate high in the Glacier Peak Wilderness Area within the Mt. Baker National Forest. The left bank tributaries are shorter streams originating from the 4,000-foot elevation on Prairie Mountain. The Suiattle valley varies in width between 0.5 and 1.0 miles and progressively becomes narrower and steeper upstream. There is sufficient width within the valley for the river to meander. The side valley terrain rises abruptly onto the steep-sloped mountains covered with large conifers. Stream bank cover contains good deciduous growth mixed with some conifer. Gradient is moderate and gentle in the lower section and typically has long, fast riffle areas and short glides and pools. It descends at the rate of about 800 feet in the 23 miles, or 35 feet per mile. Flows recorded for the Suiattle above Big Creek in 1970 and '71 show a maximum of 20,100 cfs and minimum of 582 cfs. The channel periodically changes near the mouth and has an overflow channel in the lower one-half mile. Bottom composition is mostly coarse material with scattered boulders and rubble. Patch gravel sections suitable for spawning occur throughout the area. Stream banks are firm with large rocks and boulders protecting the edges and expansive gravel bars in some areas.

Land use is confined to forestry and recreation. No communities or farms are located here.

The principal tributaries are Big, Tenas, Buck, Straight, and Lime creeks. Big Creek flows through a narrow, steep canyon for one mile above a falls at R.M. 0.5 where it drops into a flat area along the river. It is heavily wooded with a steep slope on the west bank and gentle slopes on the east bank. Tenas Creek is likewise a precipitous stream with steep gradient above R.M. 1.0 and moderate gradient below. It flows through a narrow valley which widens near the mouth. Buck Creek also contains a steep gradient above R.M. 1.0 where it passes through a forested valley with heavy boulders and rubble with scattered patch gravel. Straight Creek is a precipitous stream flowing through a logged-off area of steep slopes. Lime Creek flows from a heavily logged-off hill down through a deep, narrow valley. These streams all are similar in that the lower half-mile near the mouth contains the best gravel and riffle areas.

Salmon Utilization

The lower Suiattle River provides transportation, spawning, and rearing for spring and fall chinook and coho. Some excellent spawning areas for chinook are found in the mainstem. It is also extensively used for spring chinook rearing. Poor visibility due to turbidity has restricted the observations for chinook spawning in the mainstem. Chinook and coho utilize the lower 0.5 miles below the falls in Big Creek. Spring chinook and coho spawning is generally scattered in Tenas Creek, particularly below R.M. 1.0. Buck Creek contains spring chinook and coho spawning up to R.M. 1.5 where cascades become extremely steep. Best spawning occurs below R.M. 0.5 in excellent gravel riffles. Only coho have been observed in Straight Creek. Lime Creek contains good spring chinook spawning with concentrated spawning below the road crossing.

Limiting Factors

Steep gradients and impassable cascades or falls occur on all the tributary streams which curtail the available spawning and rearing areas. Heavy runoffs containing glacial silt along with cold water conditions limit the salmon production and growth of food chain organisms. Logging activities, particularly road building, have accelerated the runoff and siltation problems. Campgrounds located on Buck Creek have also encroached upon the lower stream areas.

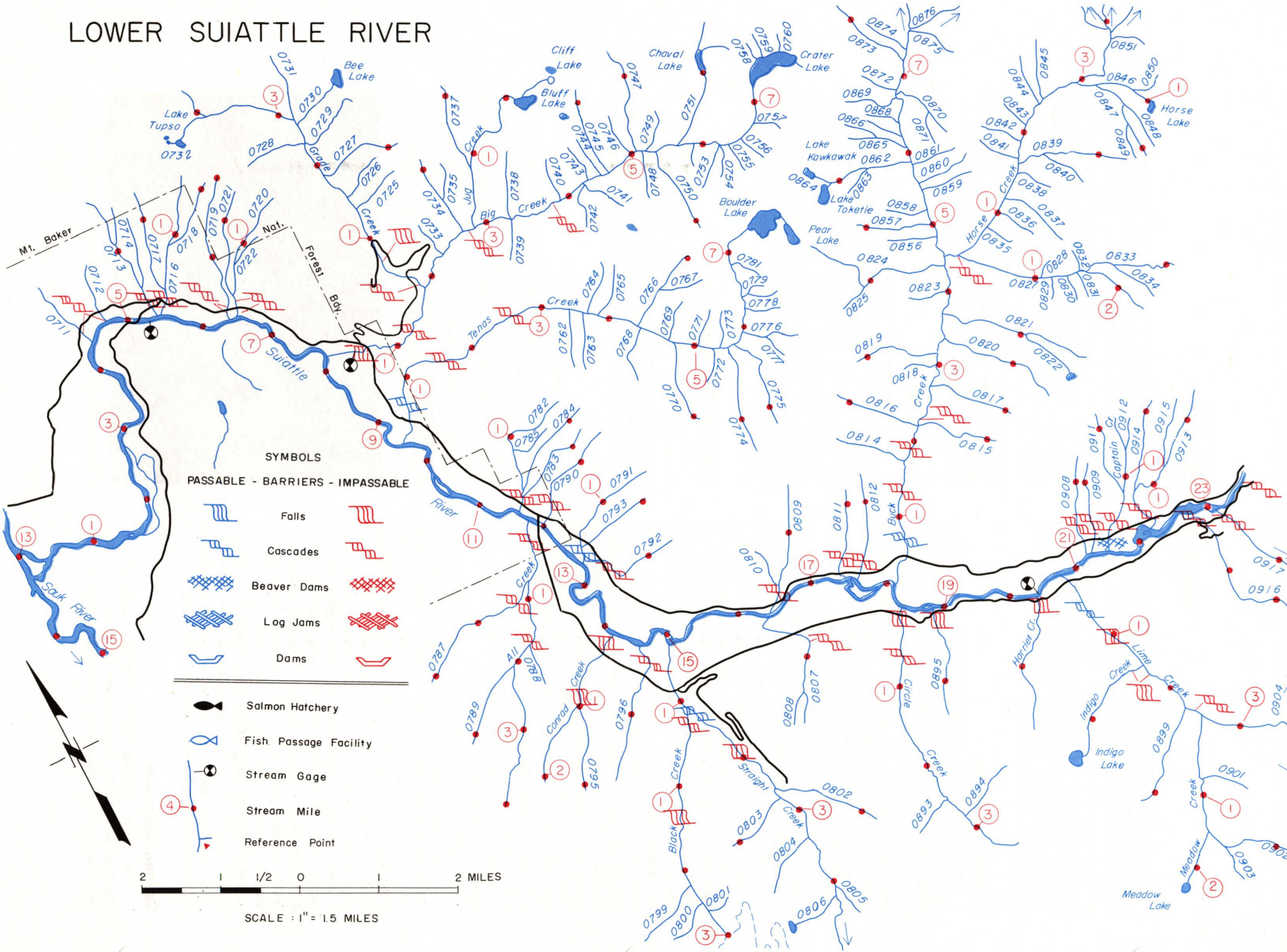
Beneficial Developments

An overflow and channel washout occurred on Tenas Creek near R.M. 1, allowing the stream to run rampant through the woods. This was corrected with channel improvement. No other facilities, projects or programs have occurred within this river system to increase salmon production.

Habitat Needs

Maintaining the natural production habitat within this stream includes coordination of logging activities and reforestation. Big Creek should be surveyed above the falls at R.M. 0.5 to determine potential fish production and the feasibility of installing a fish ladder. Coordination is needed with the U.S. Forest Service in developing the Buck Creek campgrounds to prevent encroachment. A slide on Big Creek near R.M. 2.0 is also causing serious siltation to this system.

PHOTO 03-23. Cascades and large rubble restrict salmon habitat.


LOWER SUIATTLE RIVER
Mt. Baker Nat. Forest Bdy.
Suiattle River
Sauk River
Bee Lake
Lake Tupso
Grade Creek
Jug Creek
Big Creek
Cliff Lake
Bluff Lake
Chaval Lake
Crater Lake
Lake Kawkawak
Lake Toketie
Boulder Lake
Pear Lake
Horse Creek
Horse Lake
Tenas Creek
Black Creek
Straight Creek
Conrad Creek
All Creek
Harriet Cr.
Captain Cr.
Lime Creek
Indigo Creek
Indigo Lake
Circle Creek
Meadow Creek
Meadow Lake
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

LOWER SUIATTLE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				
0673	Sauk River				Chin., Coho, Pink, Chum
0710	Suiattle River	RB-13.2	45.0	346.0	Chin., Coho, (Pink), (Chum)
0713	Unnamed	RB-5.4	1.75	—	Unknown
0716	Unnamed	RB-5.45	1.6	—	Unknown
0717	Unnamed	RB-0.3	1.4	—	None
0718	Unnamed	LB-0.9	1.0	—	None
0719	Unnamed	RB-6.4	2.0	—	None
0720	Unnamed	RB-6.5	1.4	—	None
0721	Unnamed	RB-0.35	1.4	—	None
0723	Big Creek	RB-7.8	7.95	—	Chin., Coho, (Pink), (Chum)
0724	Grade Creek	RB-1.8	4.4	—	None
0727	Unnamed	LB-1.9	1.1	—	None
0734	Unnamed	RB-2.6	1.1	—	None
0736	Jug Creek	RB-2.8	2.6	—	None
0737	Unnamed	RB-0.8	1.1	—	None
	Bluff Lake	Outlet-2.1	—	—	
	Cliff Lake	Outlet-2.6	—	—	
0745	Unnamed	RB-4.6	1.2	—	None
0747	Unnamed	RB-5.09	1.4	—	None
0750	Unnamed	LB-5.35	1.1	—	None
0751	Unnamed	RB-5.65	1.65	—	None
	Crater Lake	Outlet-7.15	—	—	
	Unnamed Lake	Outlet-7.95	—	—	
0761	Tenas Creek	RB-9.6	7.5	10.5	Chin., Coho, (Pink), (Chum)
0766	Unnamed	RB-4.35	1.0	—	None
0770	Unnamed	LB-4.76	1.05	—	None
0774	Unnamed	LB-5.5	1.4	—	None
0775	Unnamed	LB-5.6	1.2	—	None
	Boulder Lake	Outlet-7.5	—	—	
0782	Unnamed	RB-11.6	1.8	—	Unknown
0783	Unnamed	LB-0.25	1.2	—	None
0784	Unnamed	LB-0.35	1.2	—	None
0786	All Creek	LB-11.75	4.0	—	Unknown

LOWER SUIATTLE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0787	Unnamed	LB-0.85	2.05	—	None
0789	Unnamed	LB-2.05	1.15	—	None
0790	Unnamed	RB-12.0	1.5	—	Unknown
0791	Unnamed	RB-12.7	1.6	—	Unknown
0792	Unnamed	LB-0.05	1.4	—	Unknown
0793	Unnamed	LB-0.2	1.0	—	Unknown
0794	Conrad Creek	LB-14.15	2.0	—	Coho, (Chum)
0795	Unnamed	RB-1.0	1.1	—	None
0796	Unnamed	LB-14.5	1.9	—	Unknown
0797	Straight Creek	LB-15.1	5.7	—	Chin., Coho, (Pink), (Chum)
0798	Black Creek	LB-1.05	3.1	—	Unknown
0802	Unnamed	RB-2.55	1.3	—	None
0803	Unnamed	LB-2.7	1.1	—	None
	Thornton Lake	Outlet-5.7	—	—	
0807	Unnamed	LB-16.4	1.9	—	(Coho), (Chum)
0809	Unnamed	RB-16.41	1.7	—	Unknown
0811	Unnamed	RB-17.4	1.2	—	Unknown
0812	Unnamed	RB-17.55	1.3	—	Unknown
0813	Buck Creek	RB-18.1	10.1	—	Chin., Coho, (Pink), Chum
0815	Unnamed	LB-2.19	1.1	—	None
0816	Unnamed	RB-2.2	1.1	—	None
0817	Unnamed	LB-2.7	1.1	—	None
0819	Unnamed	RB-3.15	1.1	—	None
0820	Unnamed	LB-3.4	1.6	—	None
0821	Unnamed	LB-3.7	1.9	—	None
0824	Unnamed	RB-4.35	1.95	—	None
0826	Horse Creek	LB-4.5	4.8	—	None
0827	Unnamed	LB-0.15	2.5	—	None
0833	Unnamed	RB-1.6	1.1	—	None
0839	Unnamed	LB-1.55	1.3	—	None
0846	Unnamed	LB-2.9	1.0	—	None
0847	Unnamed	LB-0.25	1.1	—	None
	Horse Lake	Outlet-1.0	—	—	
0857	Unnamed	RB-5.0	1.1	—	None
0862	Unnamed	RB-5.85	1.2	—	None
0873	Unnamed	RB-7.1	1.2	—	None

LOWER SUIATTLE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0876	Unnamed	LB-7.55	2.2	—	None
0878	Unnamed	LB-1.15	1.0	—	None
0882	Unnamed	LB-8.25	1.1	—	None
0883	Unnamed	LB-8.4	1.5	—	None
0886	Unnamed	RB-8.5	1.7	—	None
0887	Unnamed	LB-0.4	1.25	—	None
0892	Circle Creek	LB-18.4	3.6	—	(Chin.),Coho,(Chum)
0896	Harriet Creek	LB-20.35	1.9	—	Coho,(Pink),(Chum)
0897	Lime Creek	LB-20.8	7.1	—	Chin., Coho, (Pink), (Chum)
0898	Indigo Creek	LB-1.55	1.5	—	None
	Indigo Lake	Outlet-1.5	—	—	
0899	Unnamed	LB-2.35	1.2	—	None
0900	Meadow Creek	LB-2.55	2.2	—	None
0902	Unnamed	RB-1.55	1.2	—	None
	Meadow Lake	Outlet-2.2	—	—	
0908	Unnamed	RB-21.15	1.35	—	Unknown
0909	Unnamed	RB-21.2	1.2	—	Unknown
0910	Captain Creek	RB-21.45	1.7	—	Coho, (Chum)
0911	Unnamed	RB-0.71	1.2	—	None
0913	Unnamed	RB-22.1	2.3	—	Unknown
0914	Unnamed	RB-0.7	1.2	—	None
0916	Unnamed	LB-22.7	2.2	—	Unknown
0917	Unnamed	LB-23.1	1.7	—	Unknown
	(Cont. Skagit 1603)				

UPPER SUIATTLE RIVER

The upper 21.8 miles of mainstem Suiattle originate from Glacier Peak on the south slope and from Downey Mountain and Mt. Buckindy on the north slope, all within the Mt. Baker National Forest. There are also 29 tributary streams in this upper section providing 212.2 additional linear miles of drainage. The upper portions of Downey Creek and Sulphur Creek lie within Skagit County while the remainder of the watershed is in Snohomish County. Road access follows the Suiattle River only up to R.M. 27.5 where it ends.

Stream Description

The mainstem Suiattle between R.M. 23.8 and 45.0 flows generally west within this section. Below Sulphur Creek the mainstem Suiattle meanders with many channel splits. The stream gradient increases above R.M. 27.0 where huge boulders and rocks occur in the mainstem above Milk Creek. The river above contains well defined banks with the gradient becoming increasingly steeper above R.M. 29.0. The side-slope valleys are steep, mountainous, rugged terrain alternately heavily forested and clear-cut. The bottom composition is largely boulders and rubble with mostly riffle sections. Stream banks within this section contain brush and grass among the large rocks with deciduous trees bordering the river up to R.M. 29.0, beyond which little cover exists.

Land use within the area is generally for forestry and recreation, which consists mainly of camping, hiking, and mountain climbing.

The tributary streams within this section are pristine in nature in the higher elevations and precipitous, containing many cascades and falls. The principal tributaries include Downey, Sulphur, and Milk creeks, which originate from the foot of the glaciers. Downey Creek flows through a narrow canyon in a wooded valley. This canyon extends almost to the mouth and contains a steep gradient. The stream contains largely rubble and boulders below the lower cascade with only patches of gravel. Sulphur Creek flows through a forested valley of moderate width which narrows at R.M. 2.0. It contains a moderate gradient flattening near the mouth. Milk Creek originates from a glacier area flowing through large boulders and rubble with low deciduous brush along the stream banks. Due to the glacial flour and turbidity, the bottom composition of this stream could not be determined.

Salmon Utilization

Spring chinook are known to utilize the mainstem up to the mouth of Milk Creek. However, the turbidity has prohibited surveys for spring chinook spawning above this area. The mainstem is also inaccessible in the late fall months during the coho spawning period. Spawning of spring chinook and coho is known to occur at the mouth of the major tributaries. Both spring chinook and coho utilize Downey Creek, particularly in the lower 0.5 miles. In Sulphur Creek spring chinook and coho spawning has been observed as far upstream as the cascades. In Milk Creek coho and spring chinook have been reported, although spawning observations have not been conducted.

Limiting Factors

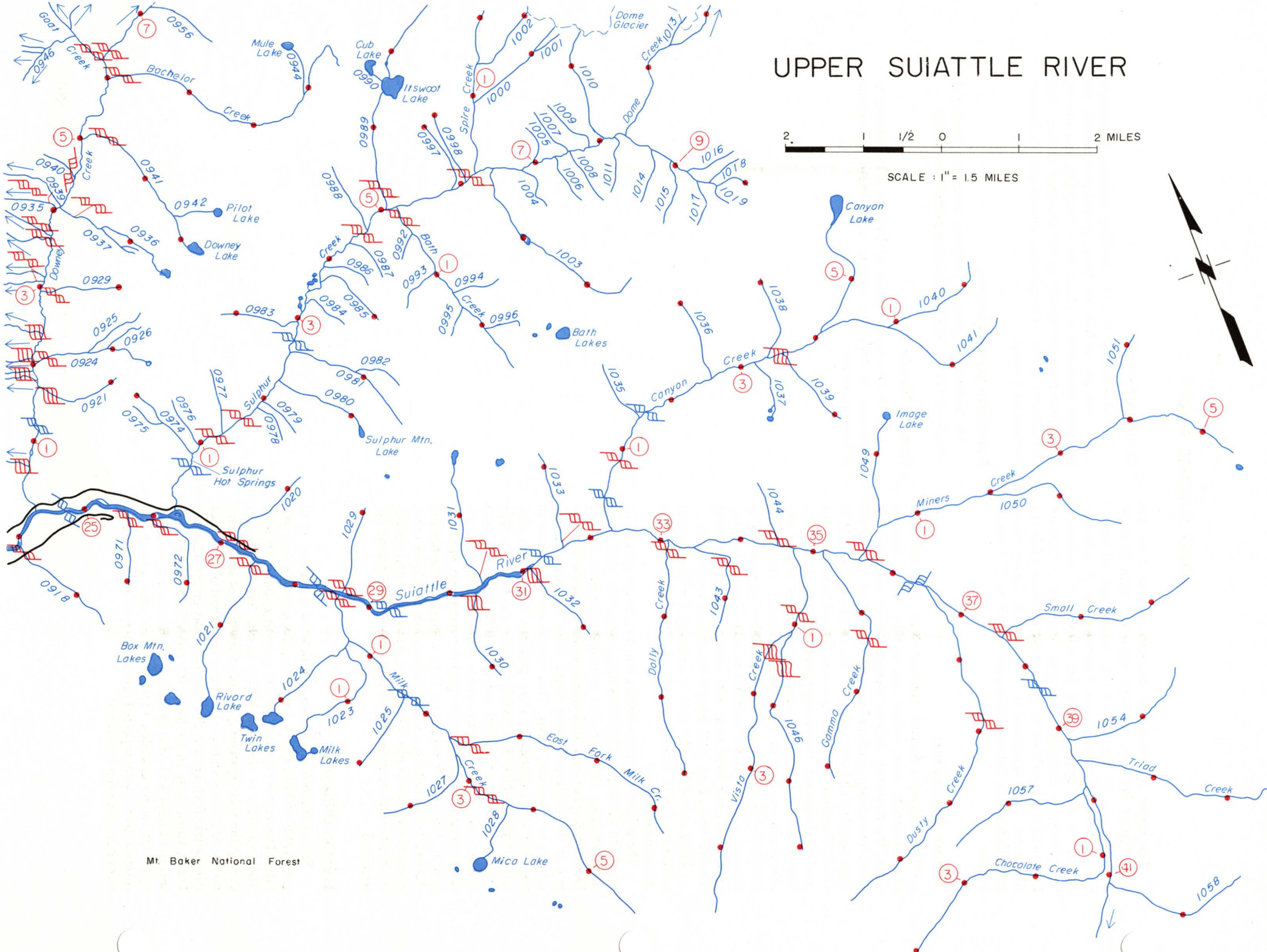
Major limiting factors curtailing salmon production within this area include the heavy glacial melt runoffs, the excessive quantities of glacial flour, turbidity, and the extreme gradients, particularly in the tirbutary streams. Falls and cascades in the lower tributary streams provide barriers to upstream passage.

Beneficial Developments

No facilities, projects, or programs have been developed within this area to benefit or increase salmon production.

Habitat Needs

Due to the rugged terrain of the area, it is essential to coordinate the logging programs to maintain the salmon and stream habitat.


UPPER SUIATTLE RIVER
2 1 1/2 0 1 2 MILES
SCALE : 1" = 1.5 MILES
Goat Creek
Bachelor Creek
Mule Lake
Cub Lake
Itswoot Lake
Spire Creek
Dome Glacier
Dome Creek
Pilot Lake
Downey Lake
Downey Creek
Bath Lakes
Canyon Lake
Canyon Creek
Image Lake
Miners Creek
Sulphur Creek
Sulphur Hot Springs
Sulphur Mtn. Lake
Suiattle River
Box Mtn. Lakes
Rivord Lake
Twin Lakes
Milk Lakes
Milk Creek
East Fork Milk Cr.
Mica Lake
Dolly Creek
Vista Creek
Gamma Creek
Small Creek
Dusty Creek
Triad Creek
Chocolate Creek
Mt. Baker National Forest

UPPER SUIATTLE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
0673	Sauk River				Chin., Coho, Pink, Chum
0710	Suiattle River				Chin., Coho, (Pink), (Chum)
0918	Unnamed	LB-23.8	1.5	—	None
0919	Downey Creek	RB-24.4	10.7	35.2	Chin., Coho, (Pink), Chum)
0920	Unnamed	RB-0.6	1.6	—	None
0921	Unnamed	LB-1.7	1.1	—	Unknown
0924	Unnamed	LB-1.95	1.5	—	Unknown
	Unnamed Lake	Outlet-1.5	—	—	
0928	Unnamed	RB-2.3	1.2	—	None
0929	Unnamed	LB-2.9	1.0	—	None
0930	Unnamed	RB-3.05	1.4	—	None
	Unnamed	Outlet-1.4	—	—	
0932	Unnamed	RB-3.2	1.6	—	None
0933	Unnamed	RB-3.6	1.3	—	None
0936	Unnamed	LB-4.04	1.5	—	Unknown
	Unnamed Lake	Outlet-1.5	—	—	
0939	Unnamed	RB-4.05	1.3	—	None
0941	Unnamed	LB-5.0	2.15	—	None
	Downey Lake	Outlet-2.15	—	—	
0943	Bachelor Creek	LB-6.0	3.8	—	Unknown
0945	Goat Creek	RB-6.3	2.6	—	None
0946	Unnamed	RB-0.45	1.4	—	None
0950	Bench Creek	LB-1.0	1.2	—	None
	Bench Lake	Outlet-1.2	—	—	
0958	Unnamed	LB-8.05	1.2	—	None
0960	Unnamed	LB-8.45	1.35	—	None
0961	Unnamed	RB-8.65	1.9	—	None
0962	Unnamed	RB-0.3	1.4	—	None
	Slim Lake	Outlet-1.3	—	—	
0965	Unnamed	LB-8.75	1.8	—	None
0966	Unnamed	LB-0.55	1.2	—	None
	Unnamed Lake	Outlet-10.7	—	—	
0971	Unnamed	LB-25.6	1.0	—	None
0972	Unnamed	LB-26.0	1.3	—	None

UPPER SUIATTLE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0973	Sulphur Creek	RB-26.3	10.0	33.3	Chin., Coho, (Pink), (Chum)
0974	Unnamed	RB-0.8	1.0	—	Unknown
0980	Unnamed	LB-2.25	1.2	—	None
0981	Unnamed	LB-2.65	1.8	—	None
0983	Unnamed	RB-2.95	1.2	—	None
0985	Unnamed	LB-3.65	1.0	—	None
0989	Unnamed	RB-5.05	2.6	—	None
	Itswoot Lake	Outlet-1.5	—	—	
0991	Bath Creek	LB-5.15	2.5	—	None
0997	Unnamed	RB-5.85	1.0	—	None
0998	Unnamed	RB-6.05	1.0	—	None
0999	Spire Creek	RB-6.25	2.1	—	None
1000	Unnamed	LB-1.0	1.4	—	
1002	Unnamed	LB-1.4	1.0	—	None
1003	Unnamed	LB-6.45	2.7	—	None
1010	Unnamed	RB-8.0	1.6	—	None
1012	Dome Creek	RB-8.25	2.1	—	None
1020	Unnamed	RB-27.2	1.2	—	None
1021	Unnamed	LB-27.5	1.9	—	Unknown
1022	Milk Creek	LB-28.6	5.8	—	Chin., (Coho)
1023	Unnamed	LB-0.6	1.8	—	None
1024	Unnamed	LB-0.1	1.2	—	None
1025	Unnamed	LB-1.6	1.0	—	None
1026	E. Fork	RB-2.4	3.4	—	None
1027	Unnamed	LB-2.6	1.4	—	None
1029	Unnamed	RB-28.61	1.1	—	None
1030	Unnamed	LB-30.3	1.2	—	None
1031	Unnamed	RB-30.4	1.7	—	None
1032	Unnamed	LB-31.1	1.1	—	None
1033	Unnamed	RB-31.65	1.2	—	None
1034	Canyon Creek	RB-32.3	5.9	14.7	(Chin.), (Coho)
1036	Unnamed	RB-2.6	1.0	—	None
1038	Unnamed	RB-3.3	1.1	—	None
1039	Unnamed	LB-3.5	1.1	—	None
1040	Unnamed	LB-4.1	2.3	—	None
1041	Unnamed	LB-0.9	1.8	—	None
	Canyon Lake	Outlet-5.9	—	—	

UPPER SUIATTLE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1042	Dolly Creek	LB-33.1	3.0	—	Unknown
1043	Unnamed	LB-33.4	1.5	—	Unknown
1045	Vista Creek	LB-34.7	4.9	—	Unknown
1046	Unnamed	RB-1.1	3.0	—	None
1047	Gamma Creek	LB-35.1	3.2	—	Unknown
1048	Miners Creek	RB-35.6	5.5	11.4	Unknown
1049	Unnamed	RB-0.45	1.5	—	None
1050	Unnamed	LB-1.9	1.8	—	None
1051	Unnamed	RB-3.9	1.2	—	None
1052	Dusty Creek	LB-36.5	4.8	—	Unknown
1053	Small Creek	RB-37.6	2.7	3.61	None
1054	Unnamed	RB-39.2	1.8	—	None
1055	Triad Creek	RB-39.5	2.8	—	None
1056	Chocolate Creek	LB-39.8	4.0	—	None
1057	Unnamed	LB-0.1	1.8	—	None
1058	Unnamed	RB-41.1	1.8	—	None
1059	Unnamed	LB-42.0	2.1	—	None
1060	Unnamed	RB-42.15	1.7	—	None
1061	Unnamed	RB-44.2	1.3	—	None

SAUK RIVER
Darrington Area

This section of the Sauk River lies between the mouth of the Suiattle River and R.M. 26.0, approximately four miles above the town of Darrington. It contains 12.7 miles of mainstem river plus 13 tributary streams providing an additional 69.2 linear miles of drainage. Accesss to this stretch is via the Sauk River Road and the Crawford Loop Road north of Darrington and by the Mountain Loop Road and West Shore Forest Service Road south of Darrington.

Stream Description

The mainstem Sauk River between R.M. 13.2 and 26.0 flows in a northerly direction through the broad Sauk Prairie Valley below R.M. 21.0 and a confined narrow valley above Darrington. Prairie Mountain and Gold Mountain form the side-valley slopes on the east while North Mountain and Jumbo Mountain form the western valley slopes. These hillsides ascend rapidly and have been extensively logged by clear-cutting, particularly below the town of Darrington. Much of these hillsides lie within the Mt. Baker National Forest.

The stream gradient is moderate up to R.M. 21.0 containing broad riffles, long glides, and pools. The gradient becomes steeper up to R.M. 26.0 where fast riffles predominate. Below the town of Darrington the channel meanders and serpentines with many side-overflow channels and numerous split channels. The stream bottom contains exceptional spawning gravel up to R.M. 20.0. Above this point the bottom material gradually increases in coarseness with scattered gravel sections among rubble and boulders. Stable stream banks contain broad gravel bars and are bordered by deciduous trees and conifers.

The town of Darrington is the only major community within this stretch. The Sauk River valley is heavily used for agricultural crops, grazing, and dairying while the hillsides and mountain slopes are utilized extensively for forestry and recreation. Currently, there is one large river-front development.

The principal tributaries within this stretch include Dan, Decline, and Clear creeks. Dan Creek flows through a relatively wide valley with moderate slopes to R.M. 2.0 where it drops off to the Sauk River valley. This watershed has been almost entirely logged off with few forested sections remaining. The Sauk River above the town of Darrington between R.M. 21.0 and 26.0 flows through a progressively narrower valley that is heavily forested and becomes gradually steeper. The bottom composition is largely rubble and boulder with scattered gravel sections. Long, fast riffles predominate throughout this section.

Salmon Utilization

This section of the Sauk River provides excellent transportation, spawning, and rearing area for chinook, coho, pink, and chum. Although spring chinook generally spawn further upstream, this area provides excellent rearing area for the juveniles. A race of summer chinook utilizes this stretch of river extensively, particularly below R.M. 21.0. Good chum spawning is located in the many side and split channels.

Four species of salmon utilize Dan Creek with excellent spawning taking place in the lower stream below the road. The lower one mile of stream contains a gentle to moderate gradient with good spawning conditions. Coho are known to spawn up to decline Creek, which is not accessible. Coho utilize Clear Creek upstream to the first cascade which creates a passage block. The other short run tributaries in this section provide limited salmon production due to low water conditions and limited accessibility.

Limiting Factors

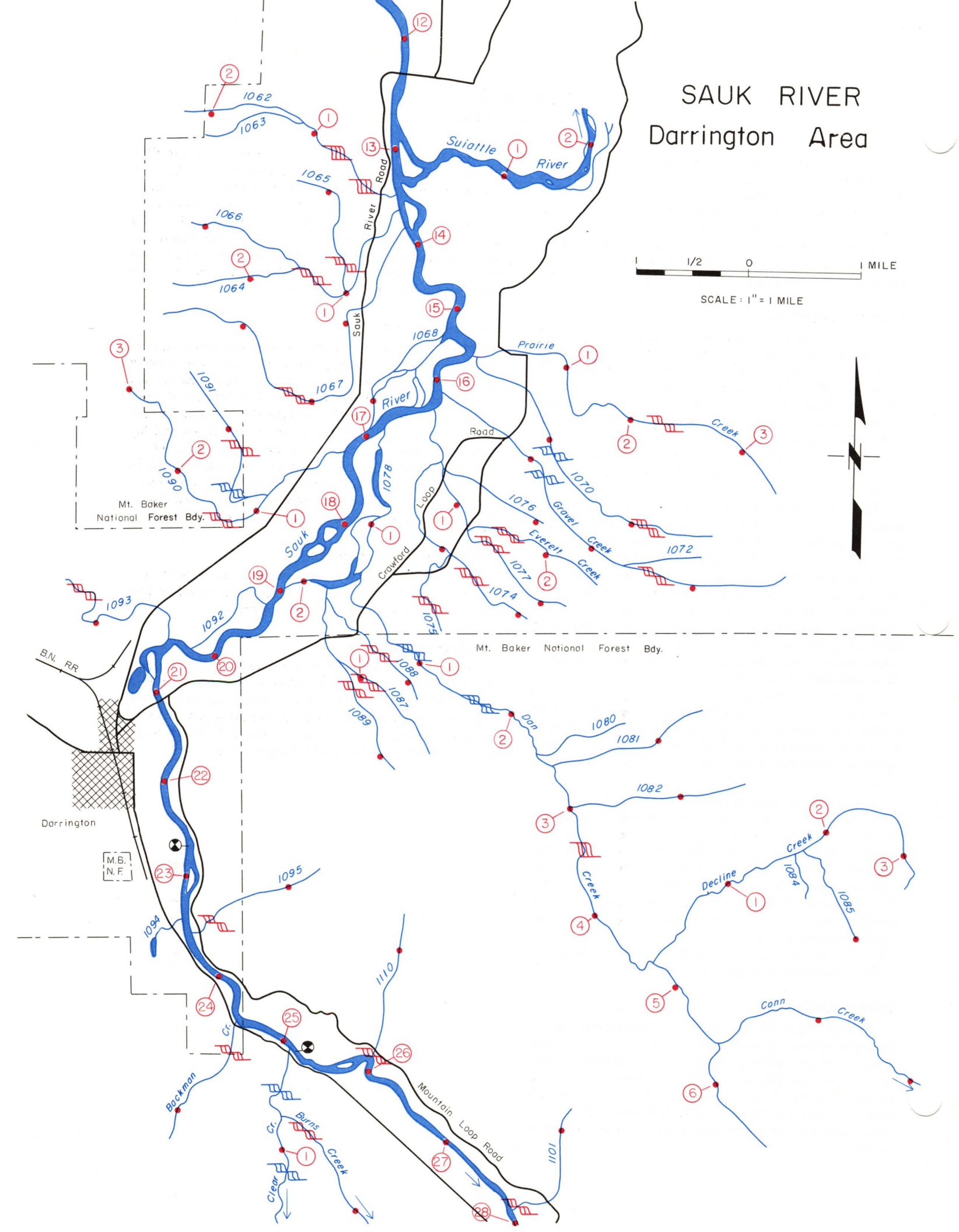
Major limiting factors include extreme flows, logging activities, and land developments. The extensive logging and road building has created conditions of fast runoff and accelerated erosion of the watershed. The logging of hardwoods has cleared the lands along the river bottom. The siltation of streambeds and the occurrence of debris and log jams are commonplace. The accelerated trend toward recreational developments along the main river has resulted in extensive bank protection measures. The Sauk River channels are cutting into the lower section of Dan Creek. Beaver dams have also been detrimental in Dan Creek.

Beneficial Developments

Set-back levees and bank protection have been constructed in the lower one-half mile above the mouth of Dan Creek to keep the stream within its channel.

Habitat Needs

Requirements to maintain the natural production habitat and stream environment within this section of the Sauk River include removal of logs and debris within Dan and Decline creeks. Flood plain zoning laws are urgently needed to restrict summer home and recreational developments within the 100-year flood plain along the river.


SAUK RIVER
Darrington Area
1/2
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1 MILE
SCALE : 1" = 1 MILE
Suiattle River
Sauk River
Prairie Creek
Gravel Creek
Everett Creek
Crawford Loop Road
Dan Creek
Decline Creek
Conn Creek
Burns Creek
Clear Cr.
Backman Cr.
Mountain Loop Road
River Road
Mt. Baker National Forest Bdy.
Darrington
B.N. RR
M.B. N.F.
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SAUK RIVER — DARRINGTON AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink, Chum, Sockeye
0673	Sauk River				Chin., Coho, Pink, Chum
0710	Suiattle River				Chin., Coho, (Pink), (Chum)
1062	Unnamed	LB-13.4	2.3	—	(Coho), (Chum)
1064	Unnamed	LB-13.6	2.7	—	(Coho), (Chum)
1065	Unnamed	LB-1.0	1.4	—	Unknown
1066	Unnamed	LB-1.6	1.1	—	None
1067	Unnamed	LB-13.8	3.8	—	(Coho), (Chum)
1068	Unnamed Side Channel	LB-15.2	1.2	—	Chin., Coho, Pink, Chum
1069	Prairie Creek	RB-15.5	3.4	—	(Coho), (Pink), (Chum)
1070	Unnamed	LB-0.05	2.7	—	(Coho), (Chum)
1071	Gravel Creek	RB-16.1	3.9	—	(Coho), (Chum)
1073	Everett Creek	RB-16.3	2.6	—	Coho,(Pink),(Chum)
1074	Unnamed	LB-0.55	2.1	—	(Coho), (Chum)
1076	Unnamed	RB-0.6	1.1	—	Unknown
1077	Unnamed	LB-1.26	1.2	—	Unknown
1078	Unnamed Side Channel	RB-16.8	2.2	—	Chin., Coho, Pink, Chum
1079	Dan Creek	RB-1.5	6.8	16.5	Chin., Coho, Pink, Chum
1081	Unnamed	RB-2.6	1.5	—	None
1082	Unnamed	RB-3.0	1.6	—	None
1083	Decline Creek	RB-4.7	3.4	3.7	None
1085	Unnamed	LB-1.75	1.2	—	Nooe
1086	Conn Creek	RB-5.65	3.5	—	None
1087	Unnamed	RB-1.8	1.9	—	(Coho), (Chum)
1088	Unnamed	RB-0.15	1.2	—	Unknown
1089	Unnamed	LB-0.6	1.2	—	Unknown
1090	Unnamed	LB-17.2	3.0	—	(Coho), (Chum)
1091	Unnamed	LB-0.85	1.6	—	Unknown
1092	Unnamed Side Channel	LB-19.2	1.0	—	Chin., Coho, Pink, Chum
1093	Unnamed	LB-20.5	1.6	—	Unknown
1095	Unnamed	RB-23.5	1.3	—	Unknown
1096	Backman Creek	LB-24.5	1.3	—	Coho, (Chum)

SAUK RIVER — DARRINGTON AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1097	Clear Creek	LB-25.1	9.3	—	(Chin.), Coho, (Pink), (Chum)
	(See Skagit 1803)				
1110	Unnamed	RB-25.9	1.3	—	None
	(Continued Skagit 1803)				

SAUK RIVER
Whitechuck Area

The Sauk River between R.M. 25.0 and 35.0 contains 10 miles of mainstem plus eight tributary streams and three side channels providing an additional 61.5 linear miles of drainage. In addition, the Whitechuck River converges at R.M. 31.9, but is discussed separately with Skagit Map 1900. Access to this stretch of river is via the Mountain Loop Road on the north shore and by the south shore road that is being constructed and terminates at about R.M. 25.5. Logging and Forest Service roads also follow the south shore from the Whitechuck River upstream to Falls Creek.

Stream Description

This stretch of the Sauk River flows through a moderately broad valley floor up to R.M. 34.0 where it begins to neck down. The valley walls rise sharply on both sides with Whitechuck Mountain and Stujack Pass rising to over 6,000 feet in elevation on the north slope and Helena Ridge on Iron Mountain at 4,800 feet forming the south slope of this rugged, scenic area. Below R.M. 34.0 the gradient is moderate with long rubble and boulder-strewn riffles. Pools are intermittent above the Whitechuck, with broad gravel bars and many side channels and splits. This 10-mile section of river contains a moderate gradient with a drop of approximately 50 feet per mile. The valley floor is moderate in width, but narrows from R.M. 32.0 to 34.0. Below the confluence of the Whitechuck, the river is influenced by glacial flour and turbidity. The stream banks are covered with deciduous trees and conifers while the mountain slopes are heavily forested on either side.

Land use is essentially forestry and recreation with no communities located within this stretch of river. Logging is the major activity and patch, clear-cut logging has occurred at the higher elevations. The Falls Creek watershed has been logged throughout.

Principal tributaries within this section include Clear, Murphy, Goodman, and Falls creeks. They all contain similar habitat and physical characteristics.

Salmon Utilization

This section of the Sauk River is used for transportation, spawning, and rearing by spring chinook, coho, and pink salmon. Although this is not a good spawning area, spawning is scattered in patch gravel areas. More suitable spawning area occurs above R.M. 34.0. The tributary streams contain limited spawning within the lower sections that are accessible.

Limiting Factors

Major limiting factors affecting this section of the Sauk River include extreme stream flows, glacial flour, silt deposits, and effects of logging. Road construction has been the major man-caused limiting factor within the area.

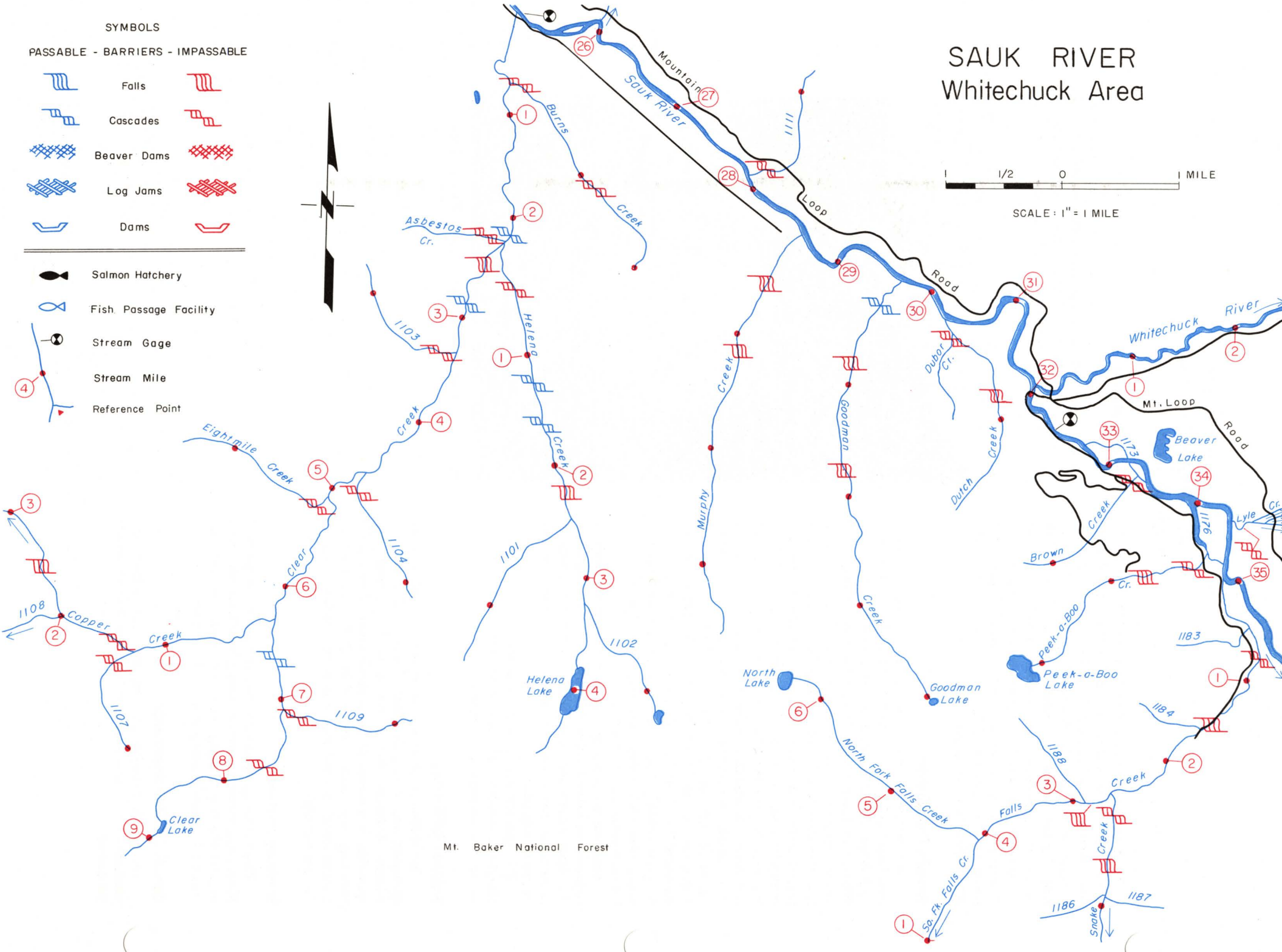
Beneficial Developments

No specific facilities, projects, or programs have been conducted within this section to benefit or increase salmon production.

Habitat Needs

Requirements to maintain the natural production habitat within this river section include classifying this area as a wild and scenic recreational area. Logging activities within this area should be coordinated to be compatible with fisheries needs.

PHOTO 03-24. Sauk River riffle section above Whitechuck River.


SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
SAUK RIVER
Whitechuck Area
1 1/2 0 1 MILE
SCALE: 1" = 1 MILE
Mountain
Sauk River
Loop
Road
Burns Creek
Asbestos Cr.
Helena Creek
1103
1101
1102
1104
1111
Eightmile Creek
Clear Creek
Copper Creek
1108
1107
1109
Clear Lake
Helena Lake
Murphy Creek
Goodman Creek
Dubar Cr.
Dutch Creek
Whitechuck River
Mt. Loop Road
Beaver Lake
1173
1176
Brown Creek
Lyle Cr.
Peek-a-Boo Cr.
Peek-a-Boo Lake
1183
1184
Goodman Lake
North Lake
North Fork Falls Creek
1188
Falls Creek
So. Fk. Falls Cr.
Snake Creek
1186
1187
Mt. Baker National Forest

SAUK RIVER — WHITECHUCK AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
0673	Sauk River				Chin., Coho, Pink, Chum
1097	Clear Creek	LB-25.1	9.3	29.0	(Chin.), Coho, (Pink), (Chum)
1098	Burns Creek	RB-0.7	2.0	—	Unknown
1100	Helena Creek	RB-2.21	4.6	6.96	Unknown
1101	Unnamed	LB-2.45	1.5	—	None
1102	Unnamed	RB-3.2	1.2	—	None
	Helena Lake	Outlet-3.8	—	—	
1103	Unnamed	LB-3.3	1.2	—	None
1104	Unnamed	RB-4.7	1.1	—	None
1105	Eightmile Creek	LB-5.1	1.5	—	None
1106	Copper Creek	LB-6.3	3.2	—	None
1107	Unnamed	RB-1.3	1.0	—	None
1109	Unnamed	RB-7.1	1.1	—	None
	Clear Lake	Outlet-8.8	—	—	
1110	Unnamed	RB-25.9	1.3	—	None
1111	Unnamed	RB-27.9	1.2	—	Unknown
1112	Murphy Creek	LB-28.6	3.6	—	Coho, (Pink)
1113	Goodman Creek	LB-29.7	4.0	—	Coho, (Pink)
1114	Dutch Creek	LB-30.3	1.9	—	Coho, (Pink)
1116	Whitechuck River	RB-31.9	21.6	86.2	(Chin.), (Coho), (Pink)
	(See Skagit 1903)				
1174	Unnamed Side Channel	LB-33.2	0.2	—	Chin., Coho, Pink
1175	Brown Creek	LB-0.15	1.2	—	Unknown
1176	Unnamed Side Channel	LB-33.95	0.65	—	Chin., Coho, Pink
1177	Peek-A-Boo Creek	LB-0.45	2.1	—	(Coho)
1178	Lyle Creek	RB-34.4	1.2	—	Unknown
1182	Falls Creek	LB-34.85	6.4	—	(Chin.), (Coho), (Pink)
1185	Shade Creek	RB-2.7	1.9	—	None
1189	South Fork	RB-4.15	1.3	—	None
	Falls Creek Cont. as N. Fork	@ mi. 4.16	—	—	
	North Lake	Outlet-6.4	—	—	
	(Continued Skagit 1903)				

UPPER SAUK-WHITECHUCK RIVER

The upper Sauk River is formed by the North Fork Sauk and South Fork Sauk which converge at R.M. 40.0, plus the Whitechuck River that enters the Sauk River at R.M. 31.9. The North Fork Sauk River is a continuation of the Sauk and contains 17 miles of mainstem plus 28 tributaries providing an additional 93.95 miles of drainage. The South Fork contains 12.9 miles of mainstem and includes 20 tributaries adding 48.2 miles of drainage. The Whitechuck River contains 21.6 miles of mainstem plus 35 tributaries providing an additional 89.25 miles of drainage. These headwaters all lie within the Mt. Baker National Forest and originate from the snowfields between the 5,600-foot and 7,800-foot elevations of the surrounding mountains, all within Snohomish County. Access is via the Mountain Loop Highway to R.M. 40.0 and along the South Fork. Forest Service roads extend up the North Fork to R.M. 47.0 and up the Whitechuck River to R.M. 11.5.

Stream Description

This entire upper watershed all lies within rugged mountainous country of similar nature. The main Sauk River between the confluence of the Whitechuck and R.M. 40.0 flows in a north-northwest direction through a one-half mile wide valley floor, but becomes more constricted upstream of Bedal Creek. The North Fork flows generally westerly and lies between Pugh Mountain and Red Mountain on the north slope and Bedal Peak and Sloan Peak on the south slope. The South Fork Sauk River flows generally northerly to its confluence and lies between Bedal Peak and Sheep Mountain on the east shore and between Twin Peaks and Lewis Peak on the west shore. The Whitechuck River flows westerly and lies between Whitechuck Mountain and Meadow Mountain on the north slope and Pugh Mountain on the south slope.

The North Fork is confined to a narrow valley below R.M. 43.0 and then broadens in the upper watershed. The Whitechuck River valley is confined above R.M. 2.0 and becomes progressively narrower upstream. The South Fork also lies in a generally confined valley. These streams all contain steep gradients, dropping over 100 feet per mile. All tributary streams have a bottom composition of rubble and boulders with only scattered spawning areas. The mainstem Sauk River between R.M. 35.0 and 40.0 contains numerous side channels with rubble and boulders, but progressively more gravel downstream. Stream banks within this area are stable, as much of the area is comprised of solid bedrock. Stream bank cover throughout the area is excellent with mixed deciduous and coniferous trees and brush.

No towns or communities are located within this upper headwaters area and land use is essentially for forestry and recreation with numerous campgrounds along the tributary streams. A few residences are located near the Bedal Creek Campgrounds and a small recreational development occurs at R.M. 37.0.

The many small tributaries within this area are precipitous and pristine in nature. All occur in rugged mountainous terrain and contain many cascades and falls. The major tributary to the North Fork system is Sloan Creek with Elliott Creek being the major South Fork tributary.

Salmon Utilization

The mainstem Sauk River between R.M. 35.0 and 40.0 provides excellent spawning and rearing for spring chinook, coho, pink, and a few chum. This area also provides exceptional rearing area for spring chinook and coho. The North Fork provides spawning for chinook, coho, and pink up to the falls at R.M. 41.2. In the South Fork spawning of spring chinook, coho, and pink occurs with limited coho use in the tributary streams. The Whitechuck River contains spawning for spring chinook and coho. Surveys for chum spawning have been impossible to perform during the months of November and December in this watershed due to poor visibility and high flows.

Limiting Factors

Major limiting factors to fish production within this upper watershed include extreme flows, limited spawning area, and precipitous tributaries. Road building and logging activities have been detrimental to the mainstem and tributaries. The fast runoff of snow melt creates flooding conditions which wash out the small gravel substrate leaving only boulders and coarse material. Cold water conditions in this extreme upper watershed tend to retard fish growth and reduce the abundance of food organisms.

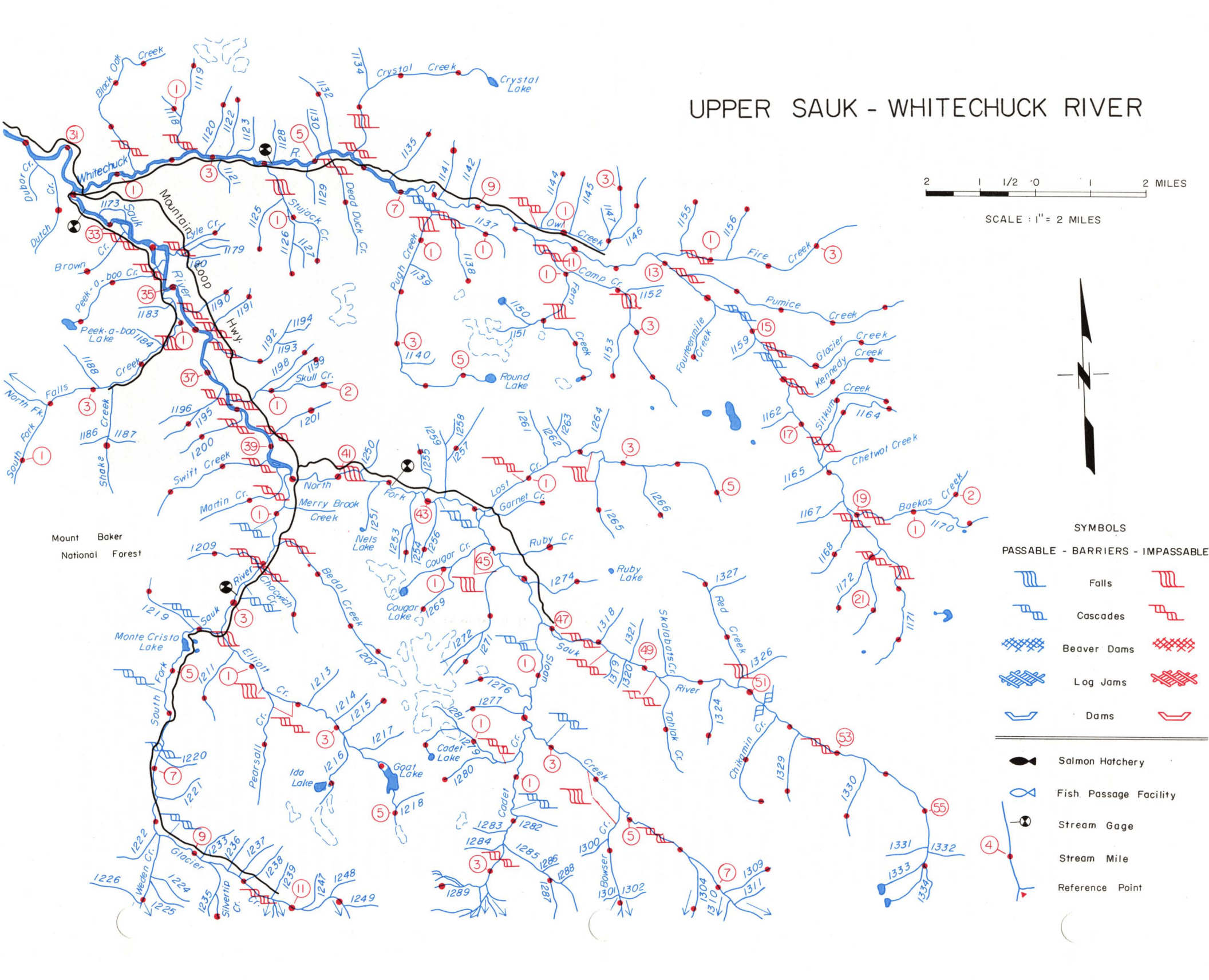
Beneficial Developments

No facilities, projects, or programs have been undertaken within this area to benefit or increase salmon production.

Habitat Needs

A major requirement for maintaining the natural salmon production and stream habitat would be to classify this entire upper watershed as a wild and scenic area. Buffer strips and stream cover should be maintained on all the watersheds within this area.

PHOTO 03-25. South Fork Sauk River near Monte Cristo.


UPPER SAUK - WHITECHUCK RIVER
2 1 1/2 0 1 2 MILES
SCALE : 1" = 2 MILES
Mount Baker National Forest
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
Whitechuck R.
Mountaineer Cr.
Dubop Cr.
Dutch Cr.
Black Oak Creek
Crystal Creek
Crystal Lake
Dead Duck Cr.
Stujack Cr.
Sauk Cr.
Brown Cr.
Peek-a-boo Cr.
Peek-a-boo Lake
Peek-a-boo Loop
Hwy.
River
North Fk. South Fork Falls Creek
Shake Creek
Swift Creek
Martin Cr.
North Fork Merry Brook Creek
Skull Cr.
Nels Lake
Lost Garnet Cr.
Round Lake
Pugh Creek
Own Creek
Fern Creek
Camp Cr.
Fourteenmile Creek
Fire Creek
Pumice Creek
Glacier Creek
Kennedy Creek
Sitkum Creek
Chetwot Creek
Baekos Creek
Ruby Cr.
Ruby Lake
Red Creek
Cougar Cr.
Cougar Lake
Bedal Creek
Chocwich Cr.
Monte Cristo Lake
South Fork Sauk River
Elliott Cr.
Pearsall Cr.
Ida Lake
Goat Lake
Cadet Lake
Cadet Cr.
Cadet Creek
Slide Cr.
Skalabats Cr.
Tahlak Cr.
Chiwamin Cr.
Bowser Cr.
Glacier Cr.
Weden Cr.
Silvertip Cr.

UPPER SAUK — WHITECHUCK RIVERS
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
0673	Sauk River				Chin., Coho, Pink, Chum
1116	Whitechuck River	RB-31.9	21.6	86.2	(Chin.), (Coho), (Pink)
1117	Black Oak Creek	RB-1.4	3.6	—	Unknown
1118	Unnamed	RB-2.3	1.4	—	Unknown
1119	Unnamed	LB-0.75	1.1	—	None
1120	Unnamed	RB-2.9	1.1	—	None
1122	Unnamed	RB-3.3	1.1	—	None
1124	Stujack Creek	LB-4.0	2.0	—	Unknown
1125	Unnamed	LB-0.7	1.0	—	None
1126	Unnamed	LB-0.9	1.0	—	None
1131	Dead Duck Creek	LB-5.3	1.9	—	Unknown
1132	Unnamed	RB-5.4	1.5	—	None
1133	Crystal Creek	RB-5.8	3.7	—	Unknown
	Crystal Lake	Outlet-3.7	—	—	
1135	Unnamed	RB-6.7	1.1	—	None
1136	Pugh Creek	LB-7.3	5.4	—	Unknown
1137	Unnamed	RB-0.6	1.7	—	None
1138	Unnamed	LB-0.3	1.0	—	None
	Round Lake	Outlet-5.4	—	—	
1141	Unnamed	RB-8.1	1.1	—	None
1143	Owl Creek	RB-9.8	3.4	—	Unknown
1144	Unnamed	RB-0.5	1.0	—	None
1146	Unnamed	LB-2.0	1.5	—	None
1148	Camp Creek	LB-10.4	4.7	—	Unknown
1149	Fern Creek	LB-1.0	3.0	—	None
1153	Unnamed	LB-2.85	1.0	—	None
1154	Fire Creek	RB-12.8	3.8	5.74	Unknown
1155	Unnamed	RB-0.4	1.0	—	None
1156	Unnamed	RB-1.3	1.0	—	None
1157	Pumice Creek	RB-13.3	4.4	—	Unknown
1158	Fourteenmile Creek	LB-14.1	1.2	—	None
1160	Glacier Creek	RB-15.4	2.7	—	Unknown
1161	Kennedy Creek	RB-16.1	2.4	—	Unknown
1163	Sitkum Creek	RB-17.4	2.0	—	None
1164	Unnamed	RB-17.7	2.1	—	None

UPPER SAUK — WHITECHUCK RIVERS
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1168	Unnamed	LB-18.85	1.6	—	None
1169	Baekos Creek	RB-19.0	2.5	—	Unknown
1170	Unnamed	LB-1.4	1.3	—	None
1171	Unnamed	RB-19.75	2.7	—	Unknown
1172	Unnamed	LB-20.1	1.1	—	None
1178	Lyle Creek	RB-34.4	1.2	—	Unknown
	(See Skagit 1803)				
1182	Falls Creek	LB-34.85	6.4	—	(Chin.), (Coho), (Pink)
	(See Skagit 1803)				
1190	Unnamed	RB-35.4	1.2	—	Unknown
1191	Unnamed	RB-36.2	1.2	—	None
1192	Unnamed	RB-36.25	1.85	—	Unknown
1195	Unnamed	LB-37.4	1.4	—	Unknown
1197	Skull Creek	RB-37.6	2.1	—	Unknown
1198	Unnamed	RB-0.9	1.2	—	None
1199	Unnamed	RB-1.0	1.0	—	None
1200	Unnamed	LB-38.1	1.7	—	Unknown
1201	Unnamed	RB-38.8	1.4	—	Unknown
1202	Swift Creek	LB-39.4	2.4	—	Unknown
1203	Martin Creek	LB-39.5	1.9	—	Unknown
1204	S. Fork Sauk R.	LB-39.7	12.95	42.6	Chin., Coho, Pink
1206	Bedal Creek	RB-1.6	3.2	—	(Chin.), (Coho), (Pink)
1208	Chocwich Creek	RB-2.04	1.7	—	Unknown
1209	Unnamed	LB-2.05	1.4	—	Unknown
1210	Elliott Creek	RB-3.6	5.3	13.0	Unknown
1211	Unnamed	LB-0.5	1.6	—	None
1212	Pearsall Creek	LB-1.5	1.9	—	None
1215	Unnamed	RB-3.2	1.0	—	None
1216	Unnamed	LB-3.3	1.4	—	None
	Goat Lake	Outlet-3.95	—	—	
1219	Unnamed	LB-4.15	1.3	—	None
	Monte Christo Lk.	Outlet-4.4	—	—	
1223	Weden Creek	LB-8.4	2.6	—	Unknown
1227	Canyon Creek	RB-1.15	1.0	—	None
1228	Unnamed	RB-1.25	1.1	—	None
1229	Unnamed	RB-1.35	1.1	—	None
	Weden Lake	Outlet-2.24	—	—	

UPPER SAUK — WHITECHUCK RIVERS
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1234	Silvertip Creek	LB-9.3	1.1	—	Unknown
	S. Fk. Sauk R. cont. as Glacier Creek	@ mi. 10.6	—	—	
1240	Seventysix Creek	LB-10.61	2.1	—	None
1241	Unnamed	LB-0.1	1.1	—	None
	Sauk R. cont. as N. Fork Sauk R.	@ mi. 39.71	—	81.4	
1252	Unnamed	LB-42.45	1.2	—	None
1255	Unnamed	RB-42.8	1.2	—	None
1256	Unnamed	LB-43.2	1.2	—	None
1257	Unnamed	RB-43.35	1.6	—	None
1260	Lost Creek	RB-44.3	5.2	—	None
1265	Unnamed	LB-2.45	1.4	—	None
1266	Unnamed	LB-3.4	1.1	—	None
1267	Garnet Creek	RB-44.35	1.0	—	None
1268	Cougar Creek	LB-45.0	1.8	—	None
1269	Unnamed	RB-0.9	1.1	—	None
	Cougar Lake	Outlet-1.8	—	—	
1271	Unnamed	LB-45.4	2.3	—	None
1274	Unnamed	RB-46.1	1.4	—	None
1275	Sloan Creek	LB-46.8	9.65	29.2	None
1276	Unnamed	LB-1.5	1.4	—	None
1277	Unnamed	LB-2.0	1.1	—	None
1278	Cadet Creek	LB-2.4	4.1	—	None
1279	Unnamed	LB-0.55	2.2	—	None
1280	Unnamed	RB-0.45	1.0	—	None
	Cadet Lake	Outlet-2.2	—	—	
1285	Unnamed	RB-2.45	1.8	—	None
1289	Unnamed	LB-3.2	1.15	—	None
1299	Bowser Creek	LB-4.7	2.7	—	None
	Bowser Lake	Outlet-2.7	—	—	
1304	Unnamed	LB-6.15	2.7	—	None
1309	Unnamed	RB-7.2	1.0	—	None
	Little Blue Lake	Outlet-9.2	—	—	
	Blue Lake	Outlet-9.65	—	—	
1322	Tahlak Creek	LB-49.4	1.9	—	None
1324	Unnamed	LB-50.5	1.3	—	None
1325	Red Creek	RB-50.9	2.5	—	None
1328	Chikamin Creek	LB-51.75	2.0	—	None

UPPER SAUK — WHITECHUCK RIVERS
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1329	Unnamed	LB-52.25	1.3	—	None
1330	Unnamed	LB-53.5	1.4	—	None
	Unnamed Lake	Outlet-56.7	—	—	

SKAGIT RIVER
Marblemount Area

This section includes the mainstem Skagit River from the mouth of Illabot Creek upstream 11.3 miles to the confluence of Bacon Creek, plus nine tributary streams and three side channels that provide an additional 74 linear miles of drainage. Also within this section are two other major tributaries, the Cascade River and Bacon Creek, which directly influence the stream environment within this area. The Cascade River is discussed with Skagit Map 2220 and Bacon Creek under Skagit Map 2420. Access to this stretch of river is via State Highway 20, which parallels the river along the northwesterly shoreline.

Stream Description

The Skagit River moves south from Bacon Creek (R.M. 82.9) to the Cascade River where it turns 90° and flows west-southwest to Illabot Creek (R.M. 71.6). The valley floor is broad and flat up to the confluence of Diobsud Creek at R.M. 80.7 where it necks down rapidly. Illabot Peak (3,200 feet), Lookout Mountain (5,700 feet), and Teebone Ridge (6,400 feet) form the mountain range on the east and south slopes. The north and west slopes are formed by Helen Buttes (4,870 feet) and Diobsud Buttes (5,870 feet). The principal tributary to the Skagit River within this section is Diobsud Creek. Marblemount and Corkindale are the only communities within this 11-mile stretch of river. The valley floor within this area is used for agricultural food crops, dairy, and pastureland with some residential homes. Forestry and recreation comprise the land use in the adjacent mountains. The lower mile of Diobsud Creek also contains some agriculture use with heavily forested areas in the upper watershed.

The Skagit's side valley slopes throughout this section are steep-cragged rock outcroppings. The hillsides are heavily forested, with patch logging and clear-cut sections and with some reforested areas. The main Skagit River through this section contains a moderate gradient with excellent long riffles and glides with deep pools. U.S.G.S. flow records at Marblemount for a 21-year period average 5,624 cfs. The mainstem river contains well defined channels with extensive gravel bars and beach areas. A long, deep hole occurs at the curve below the Cascade River. This entire section of river contains long spawning riffles with excellent substrate. The stream banks are stable with production from deciduous trees, brush, vegetation and occasional stretches of riprap. Good shade occurs along the south bank of the river from R.M. 71.0 to 78.0 and is comprised mainly of deciduous trees and brush.

The minor tributaries within this stretch of the Skagit River are Rocky, Corkindale, Backus, O'Brien, and Olsen creeks. Access to the mouths of these small streams is affected by river level fluctuations.

Salmon Utilization

The Skagit River in this area provides transportation, spawning, and rearing for chinook, coho, pink, and chum salmon. This section is perhaps the most heavily utilized for chinook spawning in the entire river. Chum spawning concentrations occur in Marblemount Slough, other split channels, and along the banks. Pink salmon spawning is heavy in the main river throughout this area. All species utilize the tributaries. In Diobsud Creek heavy chinook and pink salmon spawning occurs in the lower one mile with lesser activity upstream. Coho ascend to all accessible areas upstream.

Limiting Factors

Major limiting factors occur from flow fluctuations created by the operation of the power generation plants at Ross, Diablo, and Gorge dams. River level changes due to power peaking have created serious losses of juvenile salmon within this section of river and in the Skagit River downstream. Logging activities, particularly road construction and clear-cut logging, have created serious siltation problems and accelerated runoff from snowmelt and rain in these precipitous mountain ranges. The recent completion of the North Cascade Highway has attracted heavy tourist use while the populations of the small town and rural areas are increasing.

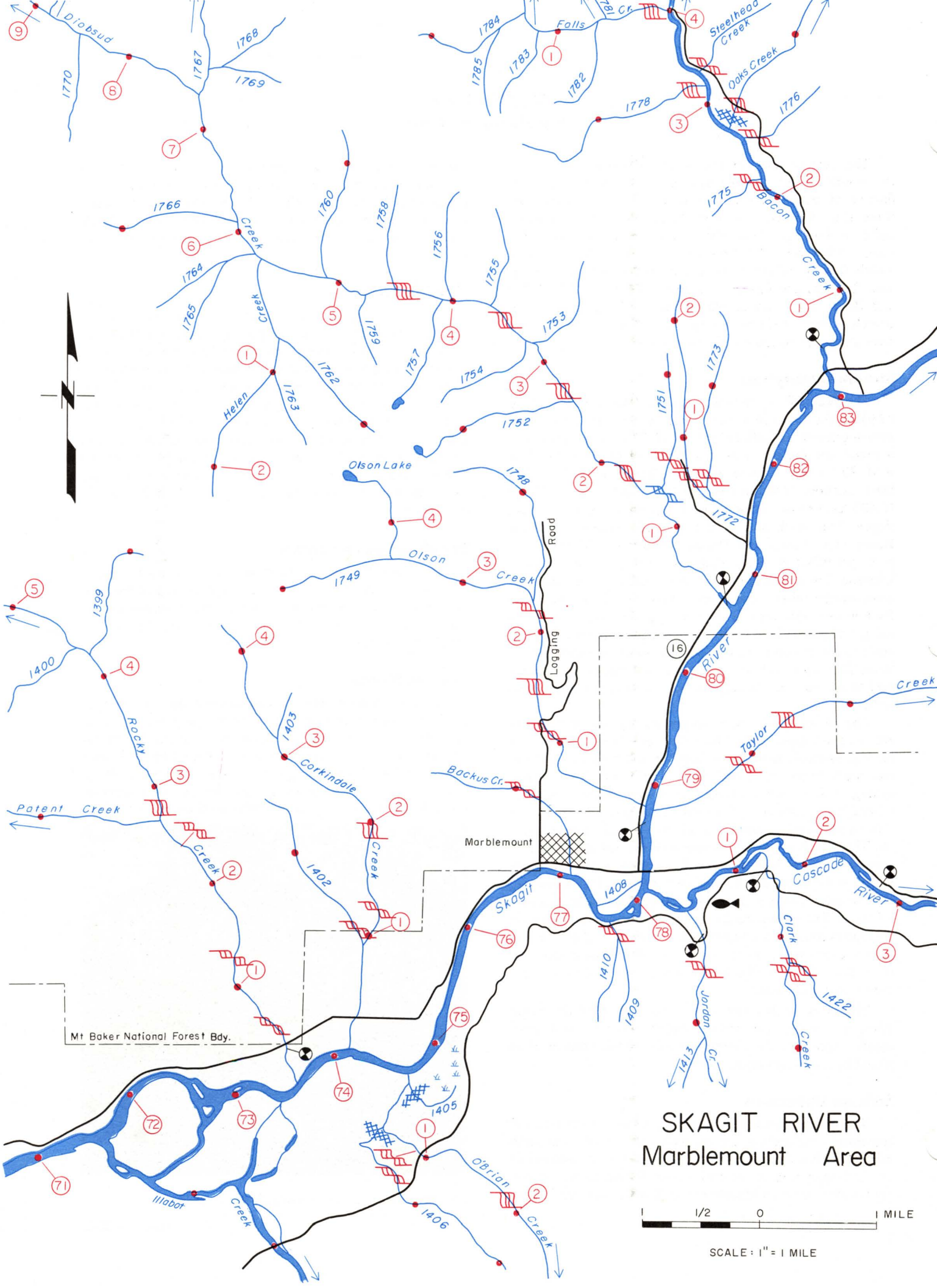
Beneficial Developments

The Washington Department of Fisheries' Skagit Hatchery is located on Clark Creek, a tributary of the Cascade River, and provides the artificial salmon production for the entire river system. The Wild and Scenic Rivers Act should protect this section of the river.

Habitat Needs

A major requirement for maintaining the natural production habitat of this section of the Skagit River is to protect the river environment. Long range plans by Skagit County and the town of Marblemount should be developed under the Shorelines Management Act to protect the Skagit River Valley in its natural state and prevent land developments from encroaching on the 100-year flood plain.

PHOTO 03-26. Chinook spawners on visible redds.



SKAGIT RIVER
Marblemount Area

SKAGIT RIVER — MARBLEMOUNT AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	Chin., Coho, Pink Chum, Sockeye
1346	Illabot Creek (See Skagit 2103)	LB-71.6	15.1	—	Chin., Coho, Pink, Chum
1396	Rocky Creek	RB-73.6	5.8	—	Coho,(Pink),(Chum)
1397	Patent Creek	RB-2.7	2.3	—	None
1399	Unnamed	LB-4.2	1.1	—	None
1401	Corkindale Creek	RB-74.1	4.3	—	Coho, (Pink), Chum
1402	Unnamed	RB-0.9	1.6	—	Unknown
1404	O'Brian Creek	LB-74.6	3.0	—	Coho,(Pink),(Chum)
1406	Unnamed	LB-0.5	2.1	—	Unknown
1407	Backus Creek	RB-77.1	1.7	—	(Coho), (Chum)
1411	Cascade River (See Skagit 2203)	LB-78.1	27.9	—	Chin., Coho, Pink, Chum
1746	Taylor Creek	LB-78.79	3.4	—	(Coho), (Chum)
1747	Olson Creek	RB-78.8	4.6	—	Coho,(Pink),(Chum)
1748	Unnamed	LB-2.3	1.7	—	None
1749	Unnamed	RB-3.7	1.0	—	None
	Olson Lake	Outlet-4.6	—	—	
1750	Diobsud Creek	RB-80.7	10.7	—	Chin., Coho, Pink, (Chum)
1751	Unnamed	LB-1.4	1.2	—	None
1752	Unnamed	RB-2.6	1.5	—	None
1760	Unnamed	LB-5.1	1.3	—	None
1761	Helen Creek	RB-5.7	2.2	—	None
1762	Unnamed	RB-0.7	1.1	—	None
1766	Unnamed	RB-6.1	1.2	—	None
1767	Unnamed	LB-7.3	2.0	—	None
1771	Unnamed	LB-8.8	1.1	—	None
1772	Unnamed	RB-81.5	2.3	—	Unknown
1773	Unnamed	LB-0.4	1.65	—	Unknown
1774	Bacon Creek (See Skagit 2403) (Continued Skagit 2403)	RB-82.9	11.3	—	Chin., Coho, Pink, Chum

ILLABOT CREEK DRAINAGE

Illabot Creek contains 15.1 miles of mainstem plus 31 tributary streams and two side channels providing an additional 55.75 linear miles of drainage. It flows northwesterly from the Glacier Peak wilderness area and joins the Skagit River at R.M. 71.6. Access is via the Rockport-Cascade Road that crosses the stream at R.M. 1.9.

Stream Description

Illabot Creek originates from the snowfields of Snowking Mountain, Mt. Chaval and Illabot Peak above the 5,000-foot elevation. From R.M. 10.0 at Illabot Lake to R.M. 2.5 the stream descends through a narrow canyon. The stream channel within this section contains numerous cascades and falls with continuous large boulders and rubble. The tributaries are precipitous and tumble off steep slopes which have been extensively logged. Gradient in this upper section drops at the rate of 200 feet per mile and an impassable falls occurs at R.M. 2.5. Below the falls the stream has a moderate gradient with a gravel bottom. The deciduous forest bordering the stream has been heavily logged. From R.M. 1.25 to 0.75 the stream runs through a wide channel with good gravel and splits temporarily into two channels. Below R.M. 0.75 the stream gets deeper with a sand bottom and little spawning gravel. A Skagit side channel enters the creek at R.M. 0.5. The west bank of the lower 0.4 miles is riprapped.

Below the Rockport-Cascade Road the land is used for agriculture while most of the watershed above the highway is used extensively for forestry. The creek has been channelized from R.M. 2.0 to below the road. The gradient becomes steep above R.M. 2.0 where the stream enters a narrow canyon. The upper watershed has been extensively logged and is growing back in various stages of reforestation.

Salmon Utilization

Illabot Creek is utilized by chinook, coho, chum, and pink salmon. The best spawning occurs between R.M. 0.5 and 1.25. Chinook, pink, and chum utilize this lower section; however, chum spawn mostly in Illabot Slough near the mouth of Illabot Creek. The other species are found extensively up to R.M. 1.5 with a few migrating up to the falls.

Limiting Factors

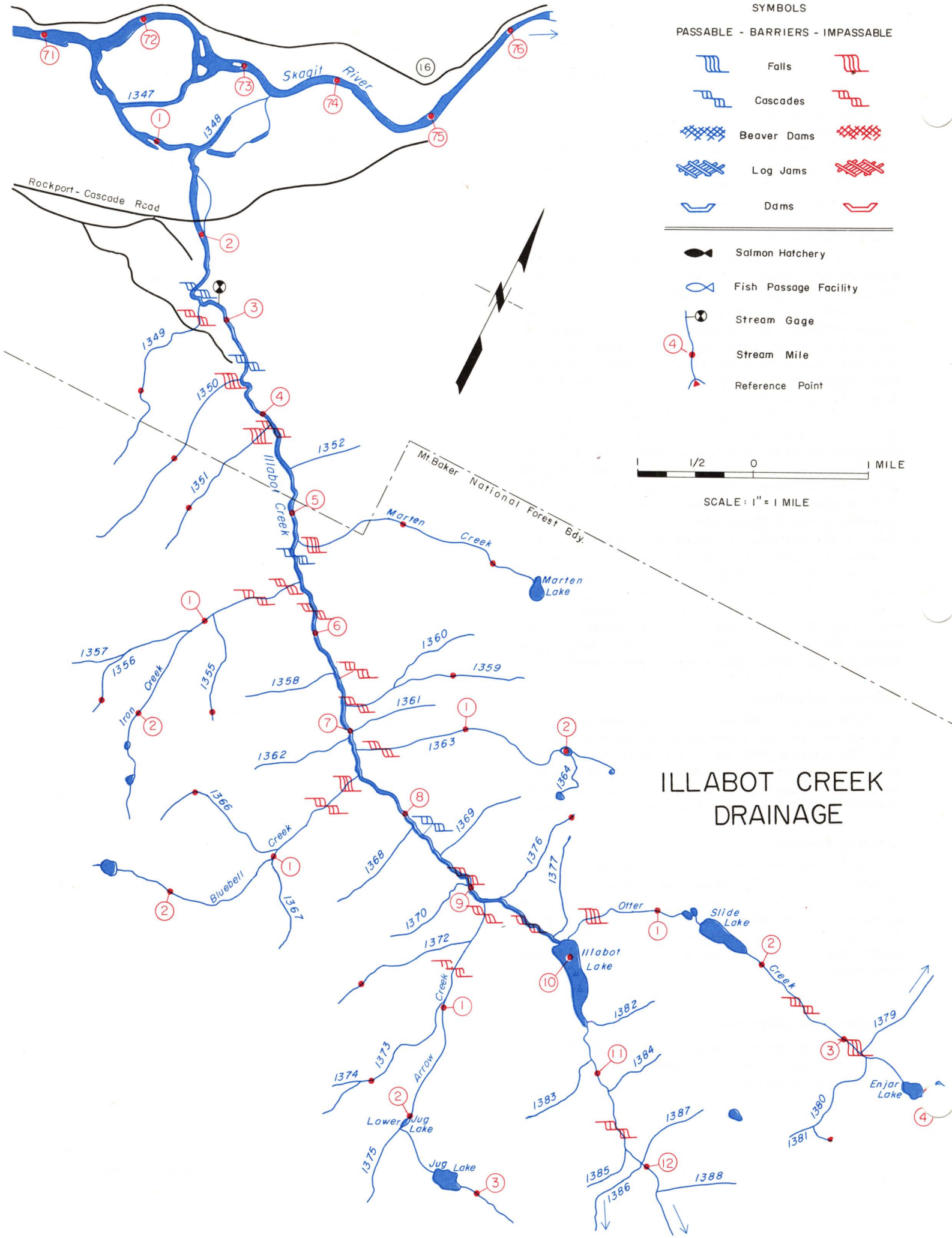
Logging activities have been the major limiting factor within this watershed by causing flash runoffs and erosion to occur. The steep gradient of the upper watershed and lack of access and suitable habitat for rearing of salmon have reduced the productivity of this stream. A formal channelized section below R.M. 2.0 has also affected the natural stream environment.

Beneficial Developments

No facilities, projects, or programs have been undertaken within the Illabot Creek watershed to benefit or increase salmon production.

Habitat Needs

Maintaining a buffer strip along the banks of the stream is of prime importance to this watershed. Reforestation is also necessary in the upper watershed.


SYMBOLS
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Falls
Cascades
Beaver Dams
Log Jams
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Stream Gage
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Reference Point
1/2
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SCALE: 1" = 1 MILE
ILLABOT CREEK DRAINAGE
Skagit River
Rockport - Cascade Road
Mt. Baker National Forest Bdy.
Illabot Creek
Marten Creek
Marten Lake
Iron Creek
Bluebell Creek
Otter Creek
Slide Lake
Illabot Lake
Arrow Creek
Lower Jug Lake
Jug Lake
Enjar Lake
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ILLABOT CREEK DRAINAGE
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	Chin., Coho, Pink, Chum, Sockeye
1346	Illabot Creek	LB-71.6	15.1	—	Chin., Coho, Pink, Chum
1349	Unnamed	LB-2.7	1.7	—	Unknown
1350	Unnamed	LB-3.65	1.9	—	Unknown
1351	Unnamed	LB-4.1	1.4	—	Unknown
1353	Marten Creek	RB-5.2	2.4	—	None
1354	Iron Creek	LB-5.5	2.9	—	None
1355	Unnamed	RB-0.9	1.1	—	None
1356	Unnamed	LB-1.2	1.1	—	None
1359	Unnamed	RB-6.75	1.6	—	None
1363	Unnamed	RB-7.2	2.4	—	None
	Unnamed Lake	Outlet-2.4	—	—	
1365	Bluebell Creek	LB-7.4	2.7	—	None
1366	Unnamed	LB-0.95	2.3	—	None
1371	Arrow Creek	LB-9.2	3.5	—	None
1372	Unnamed	LB-0.4	1.3	—	None
1373	Unnamed	LB-0.9	1.5	—	None
	Lower Jug Lake	Outlet-2.0	—	—	
	Jug Lake	Outlet-2.6	—	—	
1376	Unnamed	RB-9.3	1.0	—	None
1378	Otter Creek	RB-9.9	4.1	—	None
	Slide Lake	Outlet-1.4	—	—	
1379	Unnamed	RB-3.2	1.5	—	None
1380	Unnamed	LB-3.3	1.0	—	None
	Enjar Lake	Outlet-3.8	—	—	
	Hamar Lake	Outlet-4.1	—	—	
1386	Unnamed	LB-11.95	1.0	—	None
1395	Unnamed	RB-13.6	1.2	—	None

LOWER CASCADE RIVER

The Cascade River is a major tributary of the Skagit River and converges at R.M. 78.1 about 200 yards downstream of the Marblemount-Cascade bridge. The lower Cascade River contains 16.0 miles of mainstem plus 26 tributaries providing an additional 138.4 linear miles of drainage. Access to this stretch of river is via the Marblemount-Cascade Road which generally follows along the northern hillside of the river valley.

Stream Description

The mountain range forming the north slope of the Cascade River is formed by Lookout Mountain (5700 feet) and Hidden Lake Peaks (6600 feet). Razorback Mountain (5800 feet) and Snowking Mountain (6600) form the south slope of the Cascade River valley. The lower Cascade River flows northerly from R.M. 16.0 to 8.0 and then turns and flows westerly to the Skagit River. Boulder Creek, a left bank tributary, is the major stream within this stretch of the Cascade River. It enters the Cascade at R.M. 4.0 and is six miles in length. The tributary streams to this section of the Cascade River originate at around the 4400-foot elevation on the surrounding mountains. Other tributaries include Jordan, Irene, Marble, Sibley, and Found creeks.

Land use within this lower river valley is forestry, agriculture, and recreation. Agricultural lands are generally confined to the area below Boulder Creek at R.M. 4.0, while forestry occurs throughout the mountain and side valley terrain. These areas are heavily logged where road construction is feasible and much of the flat, bottomland has been selectively logged.

The Cascade River valley is wide at the mouth and progressively narrows upstream. The stream gradient is moderate, descending at about 50 feet per mile in the lower 16-mile stretch; however, sections of the river vary in steepness. The river channel is wide up to R.M. 2.5 and then becomes confined to R.M. 8.0. At this point it opens out onto a flat valley floor and meanders over this terrain to R.M. 16.0. The stream bottom is wide and contains good gravel substrate up to R.M. 2.5. Above this point the bottom contains rubble and boulders with increasing velocity up to R.M. 8.0. From R.M. 8.0 to 16.0 the river bottom contains good gravel with excellent pool-riffle ratios. Stream banks are largely composed of rock formations and heavy clay between R.M. 2.5 to 8.0. The flat valley above R.M. 8.0 contains fairly stable banks that receive overflow, forming backwater ponds. Stream bank cover is generally good, although it is partially logged throughout this section and contains considerable fallen logs and debris. All of the tributary streams are steep and precipitous and contain cascades and falls. Only the short sections near their mouths are accessible for fish usage.

Salmon Utilization

The lower 16 miles of the Cascade River are utilized by chinook, coho, pink, and chum salmon for transportation, spawning, and rearing. In the lower one mile chinook and coho spawn in the main river, particularly below the hatchery, while pink and chum utilize the bank sections and side channels. Between R.M. 2.5 and 8.0 fish use is limited to migration and rearing, while between R.M. 8.0 and 16.0 the river is utilized by spring chinook and coho for migration, spawning, and rearing. The lower one mile of Jordan Creek is utilized heavily by coho salmon. Clark Creek is used mainly for hatchery water supply. All other tributaries have minor use only at their mouths, due to cascades, falls, and generally steep gradients.

Limiting Factors

Major limiting factors within this section of river are the precipitous nature of the tributary streams, steep gradients, and the large streambed substrate. Extensive logging activities, particularly clear-cut sections, have caused considerable erosion and siltation within this stream. The cold glacial waters also restrict the growth of food organisms.

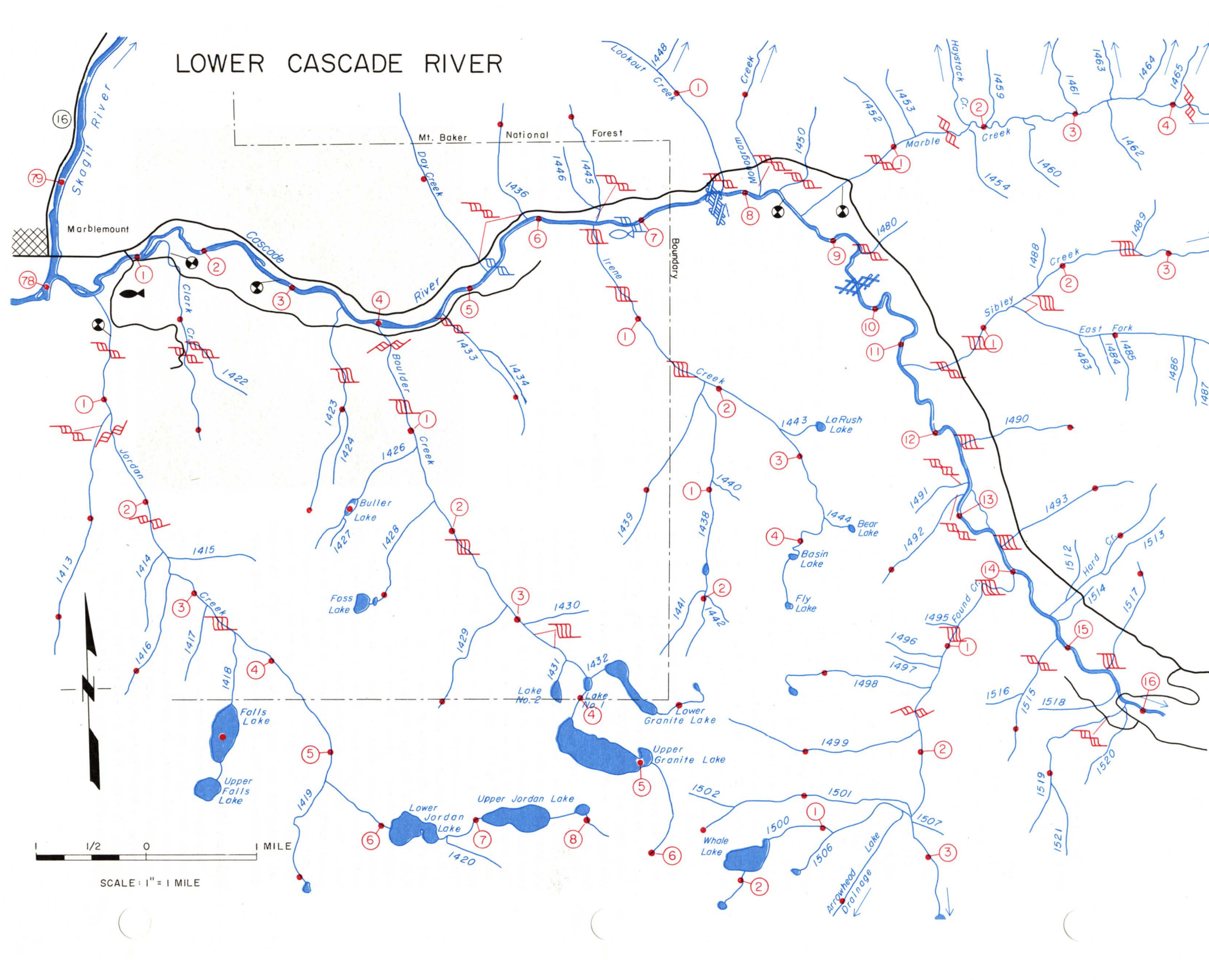
Beneficial Developments

The Skagit River Salmon Hatchery on Clark Creek was constructed by the Washington Department of Fisheries and has been in operation for many years. New spawning channels have recently been completed in conjunction with this station. Fingerling salmon from this hatchery have been planted into the Cascade River and many other Skagit River tributaries, as well as other watersheds. A huge, heavy rock ledge forming a cascade at R.M. 6.8 and a huge boulder that constricted the channel at R.M. 7.9 were blasted out in 1968 -69 to permit passage to salmon at any water stage to the upper river.

Habitat Needs

To realize the full production potential of this watershed, investigations should be made into the feasibility of barren area plants into the higher, steeper tributary streams. Buffer strips should be left along the stream sections to afford natural protection and shade for the upper tributaries.

PHOTO 03-27. Cascade River in vicinity of Marble Creek.


LOWER CASCADE RIVER
Skagit River
Marblemount
Cascade River
Clark Cr.
Day Creek
Mt. Baker National Forest
Boundary
Lookout Creek
Morgan Creek
Marble Creek
Haystack Cr.
Irene Creek
Boulder Creek
Jordan Creek
Sibley Creek
East Fork
Hard Cr.
Found Cr.
Buller Lake
Foss Lake
LaRush Lake
Bear Lake
Basin Lake
Fly Lake
Falls Lake
Upper Falls Lake
Lake No. 2
Lake No. 1
Lower Granite Lake
Upper Granite Lake
Lower Jordan Lake
Upper Jordan Lake
Whale Lake
Arrowhead Lake
Drainage
1/2 0 1 MILE
SCALE: 1" = 1 MILE

LOWER CASCADE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				Chin., Coho, Pink Chum, Sockeye
1411	Cascade River	LB-78.1	27.9	185.0	Chin., Coho, Pink, Chum
1412	Jordan Creek	LB-0.4	8.25	—	Chin., Coho, Pink, (Chum)
1413	Unnamed	LB-1.15	2.4	—	None
1416	Unnamed	LB-2.7	1.3	—	None
1418	Unnamed	LB-3.6	1.4	—	None
	Falls Lake	Outlet-0.7	—	—	
	Upper Falls Lake	Outlet-1.4	—	—	
1419	Unnamed	LB-5.3	1.1	—	None
	Lower Jordan Lake	Outlet-6.1	—	—	
	Upper Jordan Lake	Outlet-7.05	—	—	
	Unnamed Lake	Outlet-7.95	—	—	
1421	Clark Creek	LB-1.05	2.1	—	Coho, Pink, (Chum)
1423	Unnamed	LB-3.6	2.0	—	(Coho), (Pink), (Chum)
1425	Boulder Creek	LB-4.0	6.0	—	(Chin.), Coho, Pink, (Chum)
1426	Unnamed	LB-1.15	1.5	—	None
	Buller Lake	Outlet-0.9	—	—	
1428	Unnamed	LB-1.7	1.2	—	None
1429	Unnamed	LB-2.8	1.1	—	None
	Lake No. 1	Outlet-3.8	—	—	
1432	Unnamed	RB-3.81	1.25	—	None
	Lower Granite Lake	Outlet-0.15	—	—	
	Unnamed Lake	Outlet-1.25	—	—	
	Upper Granite Lake	Outlet-4.2	—	—	
1433	Unnamed	LB-4.6	1.4	—	Unknown
1435	Day Creek	RB-5.2	1.85	—	Unknown
1436	Unnamed	RB-5.9	1.2	—	Unknown
1437	Irene Creek	LB-6.5	4.75	6.44	Unknown
1438	Unnamed	LB-1.9	2.5	—	None
1439	Unnamed	LB-0.1	1.5	—	None
	Basin Lake	Outlet-4.3	—	—	
	Fly Lake	Outlet-4.75	—	—	
1445	Unnamed	RB-6.51	1.1	—	None
1447	Lookout Creek	RB-7.8	1.9	—	Unknown

LOWER CASCADE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1448	Unnamed	LB-1.3	1.1	—	None
1449	Monogram Creek	RB-8.1	1.8	—	Unknown
1451	Marble Creek	RB-8.6	6.6	—	(Chin.), Coho
1455	Haystack Creek	RB-1.81	2.1	—	None
1461	Unnamed	RB-3.0	1.3	—	None
1464	Unnamed	RB-3.4	1.4	—	None
1465	Unnamed	RB-4.0	1.8	—	None
1467	Unnamed	RB-4.6	2.2	—	None
1468	Unnamed	RB-0.8	1.4	—	None
1469	Unnamed	RB-0.95	1.3	—	None
1472	Unnamed	RB-5.15	1.9	—	None
1473	Unnamed	RB-5.5	1.8	—	None
1476	Unnamed	LB-5.6	1.0	—	None
1481	Sibley Creek	RB-11.2	4.0	—	(Chin.), Coho
1482	East Fork	LB-1.4	1.9	—	None
1490	Unnamed	RB-12.3	1.0	—	None
1492	Unnamed	RB-12.75	1.1	—	None
1493	Unnamed	RB-13.6	1.3	—	None
1494	Found Creek	LB-14.0	4.9	—	(Chin.), (Coho)
1498	Unnamed	LB-1.4	1.4	—	None
1499	Unnamed	LB-1.85	1.7	—	None
1500	Unnamed	LB-2.6	2.2	—	None
1501	Unnamed	LB-0.01	2.0	—	None
1503	Unnamed	RB-0.1	2.0	—	None
	Arrowhead Lake	Outlet-2.0	—	—	
	Whale Lake	Outlet-1.55	—	—	
	Unnamed Lake	Outlet-2.2	—	—	
	Found Lake	Outlet-3.65	—	—	
1509	Unnamed	LB-4.3	1.75	—	None
	Snowking Lake	Outlet-0.3	—	—	
1510	Unnamed	LB-0.6	1.1	—	None
	Cyclone Lake	Outlet-1.1	—	—	
	Unnamed Lake	Outlet-4.9	—	—	
1511	Hard Creek	RB-14.65	1.5	—	Unknown
1515	Unnamed	LB-14.85	1.3	—	Unknown
1517	Unnamed	RB-15.5	1.1	—	None
1519	Unnamed	LB-15.85	1.6	—	Unknown

(Continued Skagit 2303)

UPPER CASCADE RIVER

The upper Cascade River above R.M. 16.0 is comprised of 11.9 miles of mainstem plus 43 tributary streams containing 202.4 linear miles of drainage. This extensive network of headwater feeder streams is created from the snowmelt runoff of the many surrounding glaciers. Access to this upper watershed extends to R.M. 20.0 on the South Fork Cascade River and to R.M. 6.0 on the North Fork Cascade River. This entire watershed lies within the Skagit County boundary and is a part of the Mt. Baker National Forest.

Stream Description

The North Fork Cascade River is 7.1 miles in length and originates from Eldorado Peak Glacier (8,868-feet elevation) and Boston Peak Glacier (8,000-feet elevation). he Middle Fork Cascade River is 4.3 miles in length and starts from the Middle Cascade Glacier on Mt. Formidable (8,325-feet elevation). The South Fork Cascade River is a continuation of the mainstem Cascade River above R.M. 18.61 and is 9.3 miles in length. It originates from South Cascade Lake (elevation 5,292 feet) at the base of the South Cascade Glacier on 7,335-foot Lizard Mountain. Many small glaciers lie between Lizard Mountain and Mt. Buckindy (6,800 feet) to the west and these drain into the Kindy Creek and Mutchler Creek systems as well as into some smaller tributaries of the South Fork Cascade River.

The rugged mountain range surrounding this upper watershed is typical of the entire area. The side slopes are steep and heavily forested with large rock outcroppings. Open meadows covered with mountain heather, grasses, and scrub trees are found with glacier areas in the higher elevations. The tributaries generally begin at the 4,000-foot elevation or above, and land use within this upper Cascade basin is limited to forestry and recreation.

The river valley between R.M. 16.0 and 18.5 gradually narrows and is somewhat forested with fallen trees and debris scattered throughout this section of river. The gradient gradually becomes steeper and contains more rubble and boulders with some good spawning sections. The North Fork Cascade River from R.M. 0 to 0.5 contains heavy boulders and rubble with scattered gravel patches throughout its channel. A falls blocks fish passage where the canyon narrows at R.M. 0.5. From R.M. 0.5 to 4.5 the valley widens and is bordered by steep mountain slopes. The South Fork Cascade River from R.M. 18.5 to 21.0 has a moderate to steep gradient, which contains mostly rubble and boulders. The valley generally narrows upstream with both deciduous and coniferous trees forming a buffer zone along the entire South Fork. The tributary streams to both forks are precipitous and contain many falls and cascades.

Salmon Utilization

The upper Cascade River to the forks at R.M. 18.5 is utilized by spring chinook and coho for both spawning and rearing. However, fish use within this area is much less than in the river sections below R.M. 16.0. Both coho and spring chinook utilize the North Fork system up to the falls, where migration is blocked at R.M. 0.5, although the river above the falls has potential for spawning and rearing. The South Fork Cascade River provides spawning and rearing for both coho and spring chinook, but this upper area is rather poor compared to the river downstream.

Limiting Factors

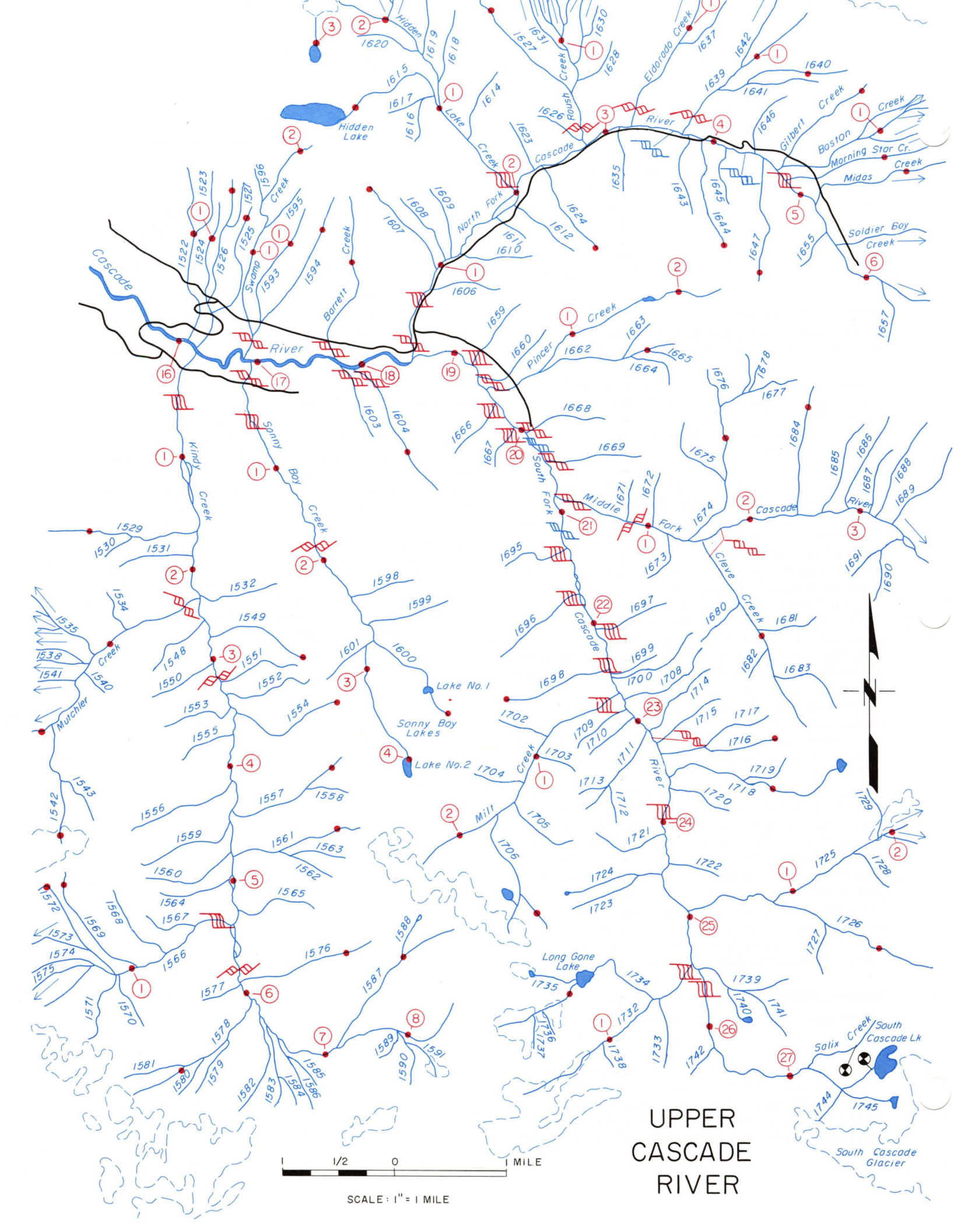
The major limiting factors to fish production in the upper Cascade watershed are the erratic stream flows from heavy snowmelts and the large, irregular substrate of the streams. The tributary streams are precipitous in nature and contain many cascades and falls which limit fish production. The impassable falls on the North Fork at R.M. 0.5 limits the available area in this stream for fish use. The patch, clear -cut logging in the upper watershed has been conducted away from the river itself; however, the streams are affected by the extensive runoff and debris from these areas.

Beneficial Developments

A partial block occurred during certain flow stages at approximately R.M. 17.8 near the mouth of Barrett Creek, but this has been corrected through removal of the large boulders in this area. Barren area plants from the Skagit hatchery have been made in the upper watersheds of the Cascade River.

Habitat Needs

The falls on the North Fork Cascade River should be evaluated to determine the feasibility of laddering in order to utilize the upper watershed for fish production. Logging activities in the upper watershed should also be coordinated to include fish protection measures.


Hidden Lake
Lake Creek
Cascade River
Swamp Creek
Barrett Creek
North Fork
Roush Creek
Eldorado Creek
Gilbert Creek
Boston Creek
Morning Star Cr.
Midas Creek
Soldier Boy Creek
Pincer Creek
South Fork
Middle Fork
Cleve Creek
Kindy Creek
Sonny Boy Creek
Mutchler Creek
Mill Creek
Salix Creek
Lake No. 1
Sonny Boy Lakes
Lake No. 2
Long Gone Lake
South Cascade Lk
South Cascade Glacier
1/2
0
1 MILE
SCALE : 1" = 1 MILE
UPPER CASCADE RIVER

UPPER CASCADE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River				
1411	Cascade River				Chin., Coho, Pink, Chum
1522	Unnamed	RB-16.1	1.55	—	Unknown
1524	Unnamed	RB-16.15	1.3	—	Unknown
1525	Unnamed	LB-0.3	1.1	—	None
1526	Unnamed	LB-0.4	1.1	—	None
1528	Kindy Creek	LB-16.2	8.5	23.5	(Chin.), (Coho)
1529	Unnamed	LB-1.65	1.4	—	None
1533	Mutchler Creek	LB-2.26	3.35	—	None
1542	Unnamed	RB-1.95	1.15	—	None
	Unnamed Lake	Outlet-3.35	—	—	
1549	Unnamed	RB-2.7	1.0	—	None
1554	Unnamed	RB-3.7	1.0	—	None
1557	Unnamed	RB-4.35	1.1	—	None
1561	Unnamed	RB-4.75	1.2	—	None
1566	Unnamed	LB-5.35	1.9	—	None
1569	Unnamed	LB-0.95	1.1	—	None
1572	Unnamed	LB-1.17	1.1	—	None
1576	Unnamed	RB-5.85	1.3	—	None
1578	Unnamed	LB-6.1	1.5	—	None
1587	Unnamed	RB-7.1	1.5	—	None
1592	Swamp Creek	RB-16.94	2.1	—	Unknown
1593	Unnamed	LB-0.2	1.4	—	None
1594	Unnamed	LB-0.2	1.3	—	None
1597	Sonny Boy Creek	LB-16.95	4.0	—	Unknown
1600	Unnamed	RB-2.7	1.0	—	None
	Sonny Boy Lake No. 1	Outlet-0.75	—	—	
	Sonny Boy Lake No. 2	Outlet-4.0	—	—	
1602	Barrett Creek	RB-17.79	1.6	—	Unknown
1604	Unnamed	LB-17.9	1.4	—	Unknown
1605	N. Fk. Cascade R.	RB-18.6	7.1	22.5	(Chin.), (Coho)
1607	Unnamed	RB-0.9	1.0	—	None
1613	Hidden Lake Creek	RB-2.0	3.05	—	None
1615	Unnamed	RB-1.0	1.1	—	None
	Unnamed Lake	Outlet-3.05	—	—	None
1624	Unnamed	LB-2.25	1.0	—	None

UPPER CASCADE RIVER
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1625	Roush Creek	RB-2.8	2.3	—	None
1627	Unnamed	RB-0.55	1.2	—	None
1631	Unnamed	RB-0.9	1.25	—	None
1634	Unnamed	LB-1.15	1.1	—	None
1636	Eldorado Creek	RB-3.3	1.55	—	None
1639	Unnamed	RB-3.75	1.6	—	None
1640	Unnamed	LB-0.45	1.35	—	None
1642	Unnamed	RB-0.7	1.2	—	None
1644	Unnamed	LB-3.85	1.0	—	None
1647	Unnamed	LB-4.5	1.1	—	None
1648	Boston Creek	RB-4.7	1.9	—	None
1649	Gilbert Creek	RB-0.05	1.1	—	None
1653	Morning Star Cr.	RB-4.8	2.1	—	None
1654	Midas Creek	RB-5.2	1.8	—	None
1656	Soldier Boy Creek	RB-5.6	1.1	—	None
	Cascade R. cont. as S. Fk. Cascade R.	@ mi. 18.61	—	—	
1661	Pincer Creek	RB-19.5	2.4	—	Unknown
1662	Unnamed	LB-0.55	1.3	—	None
1670	Middle Fk. Cascade R.	RB-20.8	4.3	—	Unknown
1674	Unnamed	RB-1.4	1.8	—	None
1679	Cleve Creek	LB-1.5	1.9	—	None
1684	Unnamed	RB-2.4	1.1	—	None
1698	Unnamed	LB-22.39	1.0	—	None
1701	Milt Creek	LB-22.65	2.4	—	None
1706	Unnamed	RB-1.6	1.2	—	None
1716	Unnamed	RB-23.4	1.0	—	None
1718	Unnamed	RB-23.6	1.7	—	None
1725	Unnamed	RB-24.95	2.7	—	None
1726	Unnamed	LB-0.8	1.5	—	None
1732	Unnamed	LB-25.44	1.9	—	None
1734	Unnamed	LB-0.45	1.8	—	None
	Long Gone Lk.	Outlet-0.7	—	—	
	S. Cascade Lake	Outlet-27.9	—	—	

BACON CREEK DRAINAGE

Bacon Creek is a right bank tributary 11.3 miles in length with 19 tributaries providing an additional 53.8 linear stream miles of drainage. It joins the Skagit River at R.M. 82.9. Copper Creek is a left bank Skagit tributary 3.0 miles in length with five tributaries providing some 4.0 additional linear miles of stream drainage. The Bacon Creek Road follows the creek upstream to R.M. 6.0.

Stream Description

The headwaters of Bacon Creek originate from the snowfields and glaciers on Bacon Peak (7,066 feet), Hagan Mountain (6,400 feet), Mt. Despair (7,292 feet), Mr. Triumph (7,270 feet), and Damnation Peak (5,635 feet) on the western mountain slope of the upper Skagit River Valley. The creek descends to a heavily forested valley with steep walls and a gradient of greater than 200 feet per mile above R.M. 6.0. The gradient lessens to about 75 feet per mile down to R.M. 2.0 where it flattens out to its confluence with the Skagit River. The heavily forested upper watershed of Bacon Creek above R.M. 4.0 is precipitous and contains large boulders and rubble throughout. A canyon with deep water flowing over large boulders occurs between R.M. 1.0 and 3.0.

The entire drainage lies within the Mt. Baker National Forest and the land is utilized extensively for forestry and recreation.

Falls Creek is the principal tributary with its confluence at R.M. 4.0. It is a small creek winding through forested land with heavy deciduous and coniferous trees, but only the lower 0.25 mile below an impassable falls contains good spawning gravel for fish use.

Copper Creek originates from the Lookout Mountain Range (5,700-foot elevation) northeast of Marblemount. It is a rather small stream with only the lower 0.25 miles being accessible to fish use.

Salmon Utilization

Bacon Creek contains runs of chinook, coho, and pink salmon up to R.M. 4.0. However, the best spawning occurs between R.M. 0 and 1.0. Chinook, coho, and pinks also utilize the lower 0.25 mile of Falls Creek. Steep gradients preclude use of the other small tributaries to Bacon Creek.

Limiting Factors

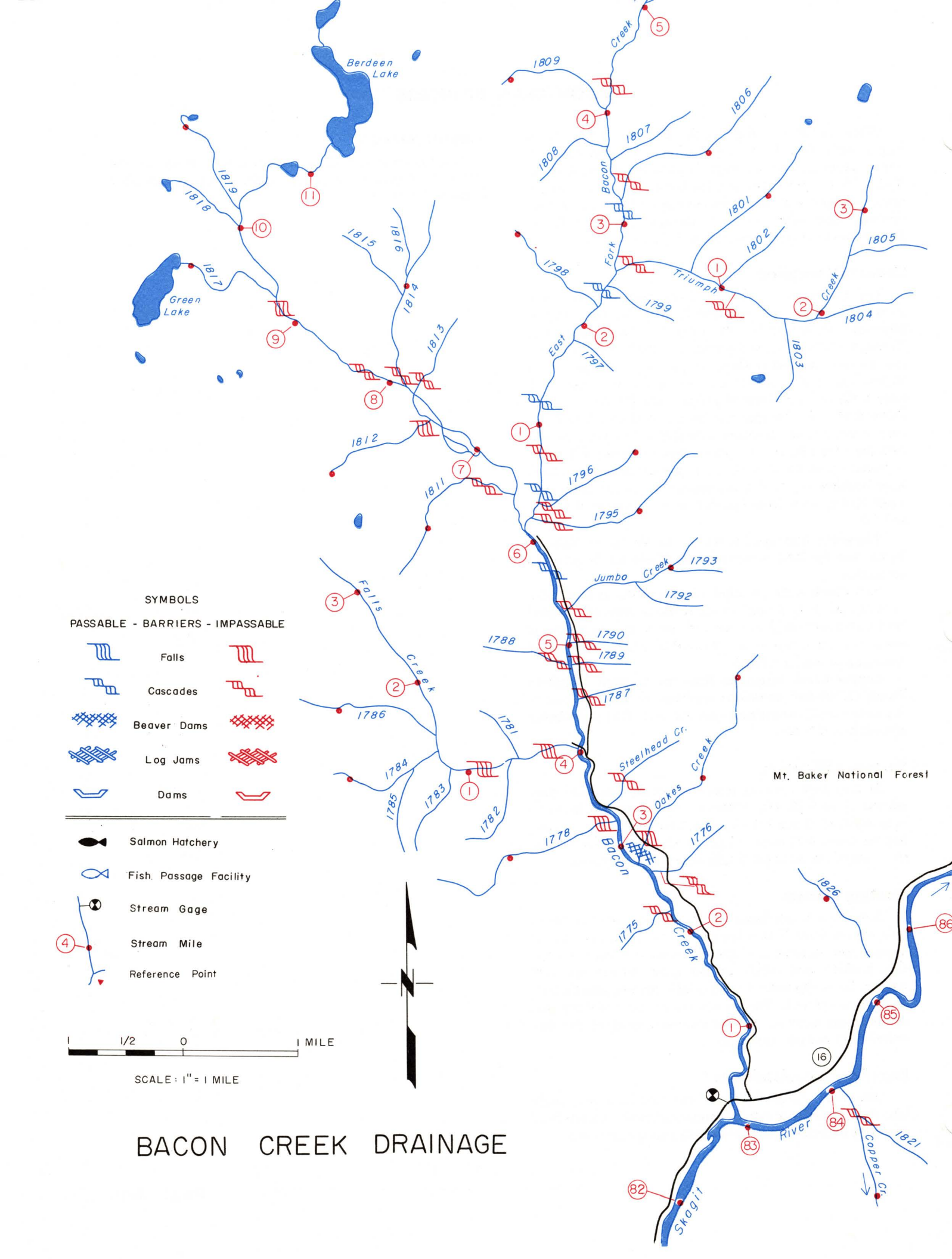
A major limiting factor within this watershed is the erratic stream flows. Heavy spring runoffs create shifting and downstream movement of gravel leaving the more undesirable boulders and rubble in the upper watersheds. Low summer flows also restrict the available rearing area for coho and spring chinook. The precipitous nature and steep gradients of the tributary streams eliminate much of this watershed from salmon utilization.

Beneficial Developments

Occasional plants of chinook and coho have been made into the Bacon Creek system. Stream clearance projects have also been undertaken to alleviate fish passage problems.

Habitat Needs

Investigations should be undertaken to determine the feasibility of barren area plants within the upper watershed of Bacon Creek.


Berdeen Lake
Green Lake
Bacon Creek
Fork
East
Triumph
Creek
Falls
Creek
Jumbo Creek
Steelhead Cr.
Oakes Creek
Bacon
Creek
River
Copper Cr.
Skagit
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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
Mt. Baker National Forest
BACON CREEK DRAINAGE

BACON CREEK DRAINAGE
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	
1774	Bacon Creek	RB-82.9	11.3	—	Chin., Coho, Pink, Chum
1777	Oakes Creek	LB-2.7	2.2	—	Coho,(Pink),(Chum)
1778	Unnamed	RB-3.2	1.9	—	Unknown
1780	Falls Creek	RB-4.0	3.4	—	Chin., Coho, Pink, (Chum)1
1784	Unnamed	RB-1.4	1.1	—	None
1786	Unnamed	RB-1.55	1.3	—	None
1791	Jumbo Creek	LB-5.3	1.4	—	Unknown
1794	E. Fk. Bacon Creek	LB-6.1	6.6	18.9	(Chin.), Coho
1795	Unnamed	LB-0.1	1.7	—	(Coho)1
1796	Unnamed	LB-0.3	1.0	—	Unknown
1798	Unnamed	RB-2.2	1.0	—	None
1800	Triumph Creek	LB-2.6	3.3	—	None
1801	Unnamed	RB-0.7	1.5	—	None
1806	Unnamed	LB-3.2	1.8	—	None
1809	Unnamed	RB-4.0	1.1	—	None
1811	Unnamed	RB-6.45	1.5	—	(Coho)
1812	Unnamed	RB-7.45	1.0	—	Unknown
1814	Unnamed	LB-7.85	1.8	—	Unknown
1817	Unnamed	RB-9.3	1.1	—	None
1819	Unnamed	RB-10.15	1.1	—	None
	Unnamed Lake	Outlet-10.75	—	—	
	Berdeen Lake	Outlet-11.3	—	—	
1820	Copper Creek	LB-84.1	3.0	3.77	None
1824	Unnamed	RB-2.2	1.1	—	None
1825	Unnamed	RB-2.4	1.0	—	None
1826	Unnamed	RB-85.1	1.3	—	None
	(Continued Skagit 2503)				

UPPER SKAGIT
Newhalem Area

This section of the upper Skagit River includes some 11.5 miles of mainstem Skagit and 22 tributary streams providing an additional 184.2 linear miles of stream drainage. In addition, two side channel ponds provide approximately 0.5 miles of spawning and rearing area. Access to this section is via the North Cascade State Highway 20.

Stream Description

Stream flow in this section of the upper Skagit River is controlled by reservoir releases from Gorge Dam, Diablo Dam, and Ross Dam. Goodell Creek, the principal right bank tributary, originates from the glaciers and snowfields on the Picket Range, including Pioneer Ridge, Mt. Despair, and Mt. Triumph on the west slopes of the Skagit Valley. Newhalem Creek, a left bank tributary, originates from glaciers and snowfields on Snowfield Peak and Eldorado Peak on the east slope of the valley.

This upper mainstem river section from R.M. 85.2 at the mouth of Alma Creek upstream to R.M. 94.2 at the Gorge Powerhouse contains all types of river environments, including pools, rapids, riffles, and glides. Although the river is confined in a well defined channel, it is able to meander and form braided reaches in several of the wider sections. State Highway 20 parallels the river for much of the way on the northern bank and in the lower portion of this section the road has been cut out of the cliff. The riprapped bank has little vegetation and no shade, although the southern shoreline is heavily forested with deciduous and coniferous trees. Below R.M. 88.0 the river runs through a gorge area which contains heavy rapids and large boulders.

Land use within the area is essentially for forestry and recreation. The only community is the small town of Newhalem, which is the headquarters for the Seattle City Light Company operations. The steep valley walls on both sides of the river are heavily forested and the slopes are largely rock formations. The stream gradient through this section is moderate, dropping about 200 feet in 11 miles, or less than 20 feet per mile.

Goodell Creek is the largest tributary with its confluence at R.M. 92.9. The stream flows generally south through a steep, narrow valley. Its gradient is very precipitous, but flattens in the lower 1.0 mile. The lower mile contains deciduous trees while the area upstream is a mixture of deciduous and coniferous trees. The bottom composition is largely boulder and rubble with a few riffle areas. A logging road provides access up to approximately R.M. 4.0.

Newhalem Creek flows northeasterly and enters the Skagit River at R.M. 93.3 about 0.25 miles below the town of Newhalem. The stream becomes quite steep after R.M. 0.5 where a small dam is a barrier to fish passage. The watershed above is heavily wooded with both coniferous and deciduous trees and is used for forestry and recreation.

Salmon Utilization

This section of the Skagit River provides transportation, spawning, and rearing for chinook, coho, pink, and chum. Chinook and pink spawn heavily throughout this section in the braided channels and other riffle areas upstream to the large riffle below the Gorge Powerhouse. Coho and chum prefer to utilize the bank sections and side sloughs. Newhalem Pond (R.M. 90.6) and County Line Gravel Pit Slough (R.M. 89.6) also provide spawning and rearing for chum and coho. Chinook, coho, and pink salmon utilize the lower mile of Goodell Creek where scattered spawning riffles are located. In Newhalem Creek coho and pink salmon spawn as far upstream as the small dam.

Limiting Factors

The steep gradients in the tributary streams in this section limit the accessible area for fish production. Some areas of heavy rapids and large boulder substrate reduce available spawning areas. The snowmelt and runoff from the mountains produce heavy floods which are deleterious to salmon production.

Beneficial Developments

No facilities, projects, or programs have been undertaken within this section to benefit or increase salmon production. Numerous plants of juvenile coho have been made into Goodell Creek.

Habitat Needs

The proposed construction of Copper Creek Dam by the Seattle City Light Company would eliminate this extremely productive section of river for fish use. This project is in the active planning stages. The proposed new highway construction along this section of river must be accomplished without infringing upon the river environment and a green belt of shade trees and low vegetation should be provided between the road and river wherever possible.

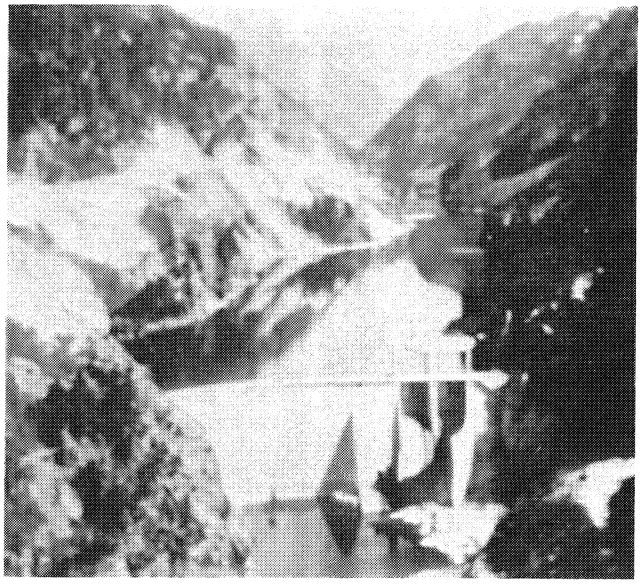
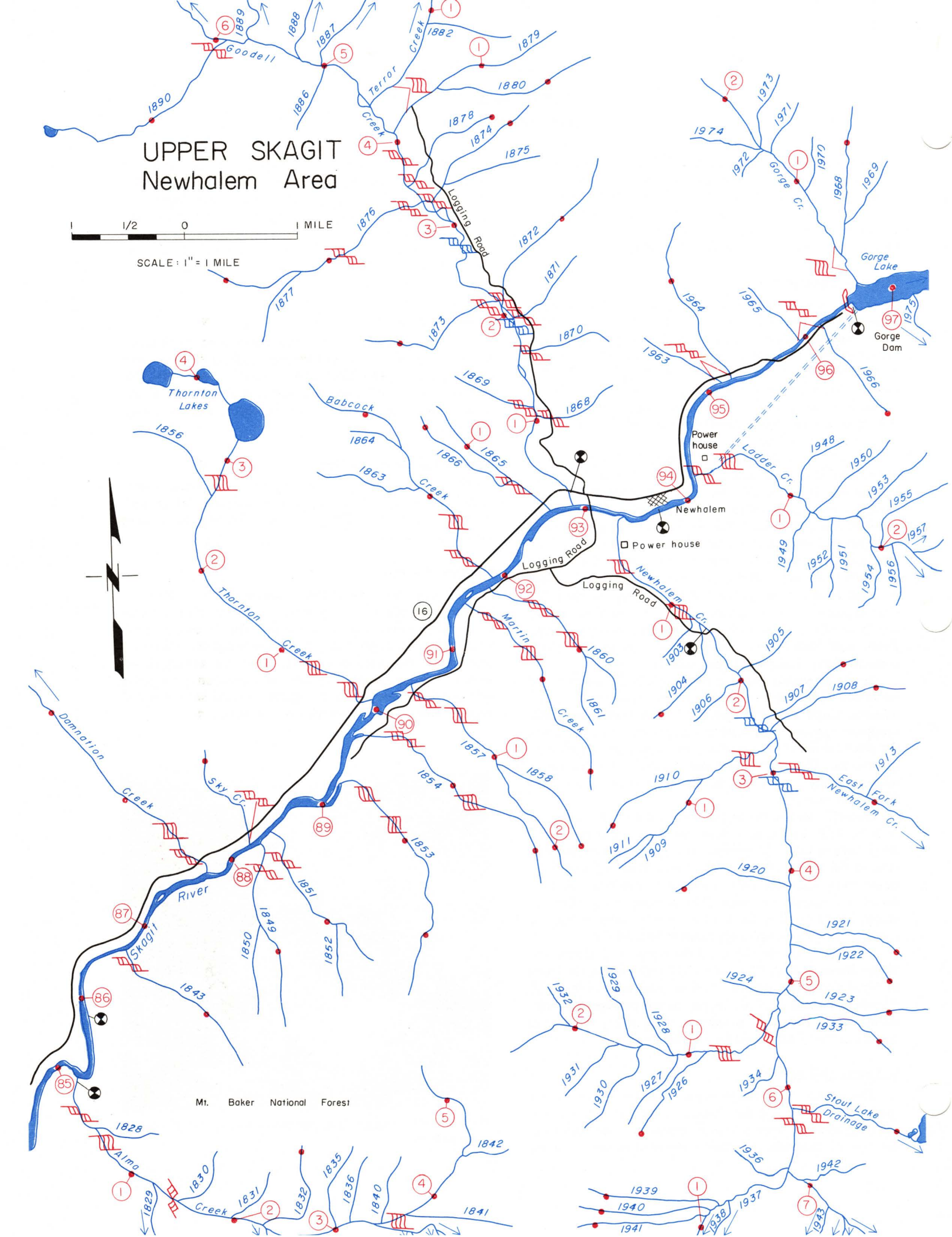


PHOTO 03-28. Gorge Dam provides water for the Newhalem power generation.


UPPER SKAGIT
Newhalem Area
1 1/2 0 1 MILE
SCALE: 1" = 1 MILE
Goodell
Terror Creek
Logging Road
Thornton Lakes
Babcock Creek
Thornton Creek
Damnation Creek
Sky Cr.
Martin Creek
Skagit River
Alma Creek
Gorge Cr.
Gorge Lake
Gorge Dam
Power house
Ladder Cr.
Newhalem
Power house
Logging Road
Logging Road
Newhalem Cr.
East Fork Newhalem Cr.
Stout Lake Drainage
Mt. Baker National Forest

UPPER SKAGIT — NEWHALEM AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	
1827	Alma Creek	LB-85.2	5.4	—	Chin., (Coho), Pink, (Chum)
1832	Unnamed	RB-2.3	1.0	—	None
1834	Unnamed	LB-2.7	1.0	—	None
1837	Unnamed	LB-3.3	1.5	—	None
1843	Unnamed	LB-86.7	1.5	—	Unknown
1844	Damnation Creek	RB-87.7	4.4	—	Coho,(Pink),(Chum)
1846	Unnamed	RB-2.6	1.0	—	None
1848	Sky Creek	RB-88.2	1.1	1.30	(Coho)
1849	Unnamed	LB-88.25	1.7	—	Unknown
1851	Unnamed	LB-88.4	1.5	—	Unknown
1853	Unnamed	LB-89.0	2.5	—	Unknown
1854	Unnamed	LB-89.6	2.3	—	Unknown
1855	Thornton Creek	RB-90.1	4.2	—	Coho, Pink, Chum
	Thornton Lake	Outlet-3.2	—	—	
	Middle Thornton Lake	Outlet-3.75	—	—	
	Upper Thornton Lake	Outlet-4.2	—	—	
1857	Unnamed	LB-90.4	2.3	—	Unknown
1858	Unnamed	RB-1.1	1.0	—	None
1859	Martin Creek	LB-91.5	2.2	—	Coho, Chum
1860	Unnamed	LB-91.8	1.6	—	Unknown
1862	Babcock Creek	RB-91.9	2.5	—	(Coho), (Chum)
1865	Unnamed	RB-92.7	1.4	—	(Coho), (Chum)
1866	Unnamed	RB-0.5	1.1	—	None
1867	Goodell Creek	RB-92.9	12.2	—	Chin., Coho, Pink, Chum
1872	Unnamed	LB-2.09	1.6	—	Unknown
1873	Unnamed	RB-2.1	1.3	—	Unknown
1874	Unnamed	LB-3.35	1.2	—	Unknown
1876	Unnamed	RB-3.4	2.2	—	Unknown
1878	Unnamed	LB-3.6	1.0	—	Unknown
1879	Unnamed	LB-4.1	1.7	—	None
1880	Unnamed	LB-0.55	1.4	—	None
1881	Terror Creek	LB-4.4	2.5	—	None
1883	Unnamed	LB-1.15	1.2	—	None
1884	Unnamed	LB-1.25	1.1	—	None
1887	Unnamed	LB-5.05	1.4	—	None
1888	Unnamed	LB-5.25	1.3	—	None

UPPER SKAGIT — NEWHALEM AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1889	Unnamed	LB-5.7	1.1	—	None
1890	Unnamed	RB-5.9	1.9	—	None
	Unnamed Lake	Outlet-1.9	—	—	
1893	Crescent Creek	LB-7.3	2.3	—	None
1895	Unnamed	RB-8.2	1.2	—	None
1896	Unnamed	RB-8.7	1.1	—	None
1899	Unnamed	RB-9.55	1.1	—	None
1902	Newhalem Creek	LB-93.3	8.8	—	(Chin.), Coho, (Pink), (Chum)
1904	Unnamed	LB-1.3	1.1	—	None
1907	Unnamed	RB-2.5	1.1	—	None
1908	Unnamed	RB-2.6	1.2	—	None
1909	Unnamed	LB-2.7	1.9	—	None
1910	Unnamed	LB-0.8	1.1	—	None
1912	E. Fk. Newhalem Cr.	RB-3.0	4.0	—	None
1914	Unnamed	RB-1.75	1.3	—	None
1915	Unnamed	RB-1.9	1.1	—	None
1917	Unnamed	RB-2.8	1.0	—	None
1919	Unnamed	LB-3.15	1.1	—	None
	Unnamed Lake	Outlet-4.0	—	—	
1920	Unnamed	LB-4.15	1.1	—	None
1921	Unnamed	RB-4.5	1.1	—	None
1922	Unnamed	RB-4.7	1.0	—	None
1923	Unnamed	RB-5.1	1.3	—	None
1925	Unnamed	LB-5.3	2.6	—	None
1926	Unnamed	RB-0.8	1.0	—	None
1933	Unnamed	RB-5.5	1.1	—	None
1935	Unnamed	RB-6.2	1.3	—	None
1937	Unnamed	LB-6.85	1.9	—	None
1939	Unnamed	LB-0.8	1.2	—	None
1940	Unnamed	LB-0.85	1.2	—	None
1941	Unnamed	LB-0.9	1.1	—	None
	Unnamed Lake	Outlet-8.25	—	—	
1947	Ladder Creek	LB-94.2	4.3	7.95	None
1957	Unnamed	RB-2.3	1.2	—	None
1958	Unnamed	LB-2.7	1.0	—	None
1959	Unnamed	RB-2.95	1.0	—	None
1960	Unnamed	RB-2.96	1.6	—	None
1964	Unnamed	RB-95.15	1.5	—	None

UPPER SKAGIT — NEWHALEM AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
1966	Unnamed	LB-96.2	1.0	—	None
1967	Gorge Creek	RB-96.7	2.3	—	None
1968	Unnamed	LB-0.25	1.3	—	None
	(Continued Skagit 2603)				

UPPER SKAGIT
Ross Lake Area

This section covers the Skagit River drainage above Gorge Dam at R.M. 96.6 up to the U.S.-Canadian border at R.M. 127.0. Access to this rugged Cascade Mountain area is via the North Cascade State Highway 20 above the community of Newhalem.

The Skagit River has not been cataloged north of the Canadian border.

Stream Description

The actual source of the Skagit River is Allison Pass in Canada at R.M. 162.3, some 35 miles north of the U.S.-Canadian border. The upper Skagit River within Washington State is located in the Ross Lake area of the rugged Cascade Mountain range in the eastern portion of Whatcom County. Three reservoirs were formed behind dams in the main river channel by Seattle City Power and Light Company above Newhalem, the headquarters of their Skagit operations. Gorge Dam, located at R.M. 96.6, was the original woodcrib dam built in 1919. This was replaced in 1950 by a concrete diversion dam and by the present high dam in 1961. It is 300 feet high and 670 feet long, backing up a reservoir 4.5 miles long.

Diablo Dam, located at R.M. 100.9, was completed in 1930 and was the highest arch-type dam in the world.It is 389 feet high and 1,180 feet long. It created a five-mile long lake including Thunder Arm.

Ross Dam, located at R.M. 105.1, is the largest dam and reservoir on the Skagit River. It was completed in 1949 and 540 feet high. Ross Lake extends some 24 miles northward backing 1.5 miles into Canada. This entire area is known as the Ross Lake National Recreation area and is accessible only by trail or boat.

There are 33 tributary streams above Ross Dam feeding into Ross Lake that provide 946.7 linear miles of stream drainage. Diablo Lake contains 8 tributaries with some 203 linear miles of stream drainage. In Gorge Reservoir there are 6 tributaries that provide 54.1 miles of stream drainage.

This entire upper Cascade Recreational Area contains rugged mountains with deep canyons and towering craggy peaks. There are many glaciers, snowfields, and heather meadows found in this alpine environment. Timberline is generally between 4,500 and 5,500 feet where isolated patches of contoured mountainhemlock and alpine fir are separated by park-like meadows among the rock clefts. Deep valleys in the area contain conifers, particularly Douglas fir mixed with western hemlock and western red cedar. The area receives a great deal of moisture in the winter months in the form of snow and cold rain. Some of the higher elevations accumulate snow packs up to 20 feet in depth.

Salmon Utilization

Gorge Dam creates a complete barrier to anadromous species upstream, therefore the high mountain lakes in this area contain only resident trout.

Limiting Factors

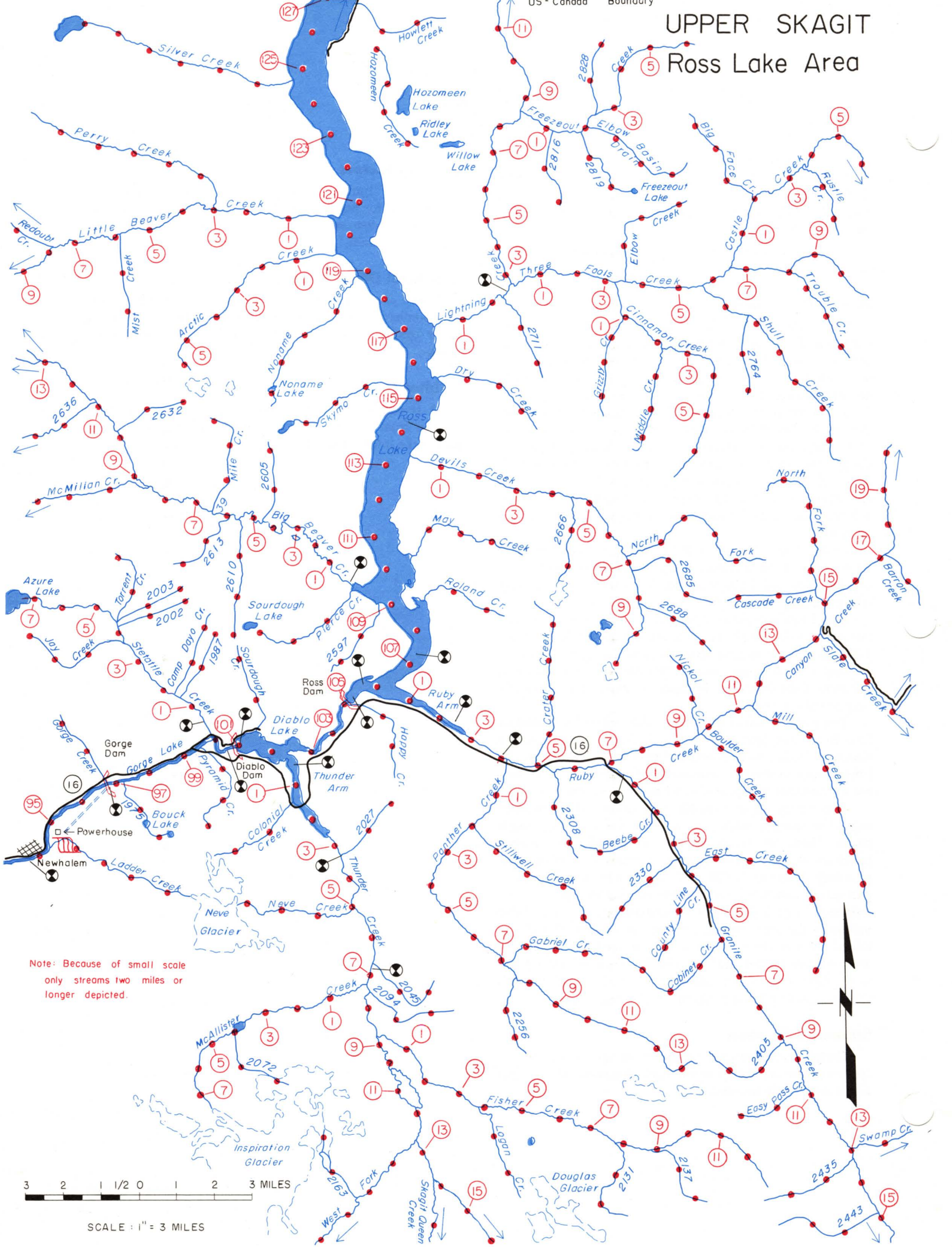
A major limiting factor involves flow releases from Gorge Dam for power production. This affects river height and velocity downstream and causes a serious juvenile entrapment problem.

Beneficial Developments

There are no beneficial developments from these facilities to enhance or increase salmon production in the Skagit River system, except through retention of extreme flood flows.

Habitat Needs

A re-regulating dam to control the fluctuation in flow releases from power peaking would benefit the production area of the lower Skagit River.


US - Canada Boundary
UPPER SKAGIT
Ross Lake Area
Silver Creek
Howlett Creek
Hozomeen Creek
Hozomeen Lake
Ridley Lake
Willow Lake
Perry Creek
Little Beaver Creek
Redoubt Cr.
Mist Creek
Arctic Creek
Noname Creek
Noname Lake
Skymo Cr.
Lightning Creek
Three Fools Creek
Freezeout Creek
Elbow Basin
Freezeout Lake
Elbow Creek
Big Face Cr.
Castle Creek
Rustle Cr.
Trouble Cr.
Shull Creek
Cinnamon Creek
Grizzly Cr.
Middle Cr.
Dry Creek
Ross Lake
Devils Creek
McMillan Cr.
Mile Cr.
Big Beaver Cr.
May Creek
Roland Cr.
Pierce Cr.
Sourdough Creek
Sourdough Lake
Azure Lake
Torrent Cr.
Joy Creek
Stetattle Creek
Camp Dayo Cr.
Ross Dam
Ruby Arm
Diablo Lake
Thunder Arm
Gorge Creek
Gorge Dam
Gorge Lake
Pyramid Cr.
Diablo Dam
Powerhouse
Newhalem
Bouck Lake
Ladder Creek
Colonial Creek
Thunder Creek
Neve Creek
Neve Glacier
Horse Cr.
Crater Creek
Ruby Creek
Panther Creek
Stillwell Creek
Beebe Cr.
Nickol Cr.
Boulder Creek
Mill Creek
Canyon Slide Creek
Cascade Creek
North Fork
Barron Creek
East Creek
County Line Cr.
Granite Creek
Cabinet Cr.
Gabriel Cr.
McAllister Creek
Inspiration Glacier
Fisher Creek
Logan Cr.
Douglas Glacier
Easy Pass Cr.
Swamp Cr.
Skagit Queen Creek
West Fork
2828
2816
2819
2711
2764
2605
2613
2610
2632
2636
2597
1987
2003
2002
2308
2330
2256
2405
2435
2443
2131
2137
2163
2072
2094
2045
2027
1975
Note: Because of small scale only streams two miles or longer depicted.
3 2 1 1/2 0 1 2 3 MILES
SCALE : 1" = 3 MILES

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0176	Skagit River			—	Chin., Coho, Pink, Chum, Sockeye
1975	Unnamed	LB-97.2	2.15	—	None
1976	Unnamed	RB-97.7	1.4	—	None
1978	Unnamed	LB-98.4	1.5	—	None
1979	Pyramid Creek	LB-99.4	3.1	2.41	None
1980	Unnamed	LB-0.05	1.6	—	None
1982	Unnamed	RB-1.5	1.0	—	None
1983	Unnamed	LB-1.8	1.0	—	None
1984	Stetattle Creek	RB-99.8	7.1	—	None
1985	Unnamed	LB-0.9	1.4	—	None
1986	Bucket Creek	LB-1.3	1.6	—	None
1987	Unnamed	LB-1.45	2.1	—	None
1989	Camp Dayo Creek	LB-1.75	2.5	—	None
1993	Unnamed	RB-2.4	1.0	—	None
1996	Unnamed	LB-2.9	1.8	—	None
1997	Jay Creek	RB-3.7	3.0	—	None
1998	Unnamed	RB-0.8	1.2	—	None
1999	Unnamed	RB-1.1	1.1	—	None
2002	Unnamed	LB-4.1	2.1	—	None
2003	Unnamed	LB-4.25	2.0	—	None
2004	Torrent Creek	LB-4.3	2.2	—	None
2008	Unnamed	LB-5.7	1.6	—	None
	Azure Lake	Outlet-7.1	—	—	None
2013	Sourdough Creek	RB-101.4	2.3	—	None
2014	Unnamed	LB-0.5	1.2	—	None
2016	Deer Creek	RB-101.6	1.6	—	None
2017	Thunder Creek	LB-102.2	17.8	—	None
2018	Colonial Creek	LB-1.4	2.5	3.15	None
2022	Rhode Creek	LB-1.7	1.8	—	None
2024	Unnamed	RB-2.25	1.2	—	None
2025	Unnamed	RB-2.4	1.3	—	None
2026	Unnamed	RB-2.8	1.1	—	None
2027	Unnamed	RB-3.25	2.05	—	None
2029	Unnamed	RB-3.6	1.3	—	None
2030	Unnamed	RB-4.55	1.3	—	None
2033	Neve Creek	LB-5.1	3.1	—	None
2040	Unnamed	LB-5.65	1.3	—	None
2042	Unnamed	RB-6.15	1.0	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2044	Unnamed	RB-6.3	1.5	—	None
2045	Unnamed	RB-6.7	2.3	—	None
2047	McAllister Creek	LB-7.3	7.3	22.0	None
2052	Unnamed	RB-1.3	1.8	—	None
2054	Unnamed	LB-1.7	1.6	—	None
2060	Unnamed	RB-2.5	1.5	—	None
2063	Unnamed	LB-2.55	1.8	—	None
2069	Unnamed	RB-3.01	1.2	—	None
2070	Unnamed	LB-3.7	1.2	—	None
2072	Unnamed	RB-3.9	2.45	—	None
2077	Unnamed	LB-4.4	1.1	—	None
2082	Unnamed	LB-6.0	1.3	—	None
2087	Unnamed	RB-6.2	1.2	—	None
2094	Unnamed	RB-7.55	2.6	—	None
2097	Fisher Creek	RB-8.8	12.15	28.6	None
2098	Unnamed	RB-1.2	1.5	—	None
2099	Unnamed	RB-1.35	1.5	—	None
2103	Unnamed	RB-2.95	1.35	—	None
2104	Unnamed	RB-0.25	1.0	—	None
2106	Logan Creek	LB-3.85	2.85	—	None
2111	Unnamed	RB-5.1	1.05	—	None
2115	Unnamed	LB-5.55	1.5	—	None
2118	Unnamed	RB-6.15	1.0	—	None
2123	Unnamed	RB-6.5	1.1	—	None
2125	Unnamed	RB-6.81	1.05	—	None
2126	Unnamed	RB-6.85	1.3	—	None
2129	Unnamed	RB-7.65	1.15	—	None
2131	Unnamed	LB-7.8	2.8	—	None
2132	Unnamed	RB-0.6	1.05	—	None
2134	Unnamed	LB-1.2	1.65	—	None
2135	Unnamed	RB-8.6	1.0	—	None
2137	Unnamed	LB-8.85	2.2	—	None
2138	Unnamed	RB-0.6	1.45	—	None
	Unnamed Lk.	Outlet-0.75	—	—	
2148	Unnamed	LB-9.25	1.1	—	None
2149	Unnamed	LB-9.95	1.1	—	None
2150	Unnamed Side Channel	RB-10.0	1.95	—	None
2151	Unnamed	RB-1.8	1.7	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2154	Unnamed	LB-10.75	1.5	—	None
2155	Unnamed	LB-11.15	1.2	—	None
2157	W. Fk. Thunder Cr.	LB-12.55	5.6	—	None
2161	Unnamed	LB-1.9	1.4	—	None
2163	Unnamed	LB-2.3	2.15	—	None
	Unnamed Lake	Outlet-1.1	—	—	
	Moraine Lake	Outlet-3.7	—	—	
2179	Skagit Queen Creek	LB-13.95	2.7	—	None
2189	Unnamed	LB-103.5	1.0	—	None
2190	Horsetail Creek	LB-104.3	1.9	—	None
	Unnamed Lake	Outlet-1.9	—	—	
2194	Riprap Creek	RB-104.85	1.2	—	None
2195	Happy Creek	LB-105.2	2.9	—	None
2199	Ruby Creek	LB-106.2	23.1	—	None
2201	Hidden Hand Creek	RB-1.6	1.7	—	None
2202	Unnamed	LB-1.95	1.9	—	None
2203	Unnamed	LB-2.2	1.7	—	None
2205	Lone Tree Creek	RB-2.4	1.2	—	None
2210	Unnamed	RB-3.05	1.05	—	None
2214	Panther Creek	LB-4.1	13.4	36.3	None
2215	Unnamed	RB-0.8	1.0	—	None
2217	Unnamed	RB-1.05	1.1	—	None
2218	Unnamed	LB-1.8	1.05	—	None
2219	Stillwell Creek	RB-2.0	4.6	—	None
2231	Unnamed	LB-2.05	1.15	—	None
2232	Unnamed	LB-2.25	1.5	—	None
2234	Unnamed	LB-2.9	1.3	—	None
2236	Unnamed	LB-3.2	1.2	—	None
2241	Unnamed	RB-5.05	1.05	—	None
2242	Unnamed	LB-5.45	1.2	—	None
2243	Unnamed	LB-5.9	1.0	—	None
2244	Unnamed	RB-5.91	1.15	—	None
2246	Unnamed	RB-6.4	1.2	—	None
2248	Unnamed	LB-6.41	1.1	—	None
2249	Unnamed	LB-6.6	1.05	—	None
2250	Gabriel Creek	RB-7.0	3.45	—	None
2256	Unnamed	LB-7.5	2.7	—	None
	Unnamed Lake	Outlet-0.25	—	—	

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2263	Unnamed	RB-9.35	1.1	—	None
2265	Unnamed	LB-9.4	1.35	—	None
	Unnamed	Outlet-0.7	—	—	
	Unnamed Lake	Outlet-1.35	—	—	
2269	Unnamed	LB-10.3	1.2	—	None
2288	Unnamed	LB-4.5	1.1	—	None
2289	Crater Creek	RB-4.9	4.5	—	None
2290	Unnamed	LB-1.15	1.0	—	None
2292	Unnamed	LB-1.65	1.0	—	None
2299	Unnamed	RB-2.85	1.2	—	None
2300	Unnamed	LB-0.2	1.1	—	None
2303	Unnamed	RB-3.15	1.5	—	None
2305	Unnamed	RB-3.3	1.0	—	None
2306	Unnamed	LB-3.6	1.1	—	None
2308	Unnamed	LB-5.4	2.35	—	None
2311	Unnamed	LB-6.55	1.2	—	None
2313	Granite Creek	LB-6.95	16.8	—	None
2314	Unnamed	LB-0.25	1.85	—	None
2321	Unnamed	RB-1.7	1.35	—	None
2322	Beebe Creek	LB-1.9	2.4	—	None
2323	Unnamed	RB-2.3	1.25	—	None
2326	Unnamed	RB-2.7	1.5	—	None
2330	Unnamed	LB-3.4	2.55	—	None
2338	East Creek	RB-3.7	6.05	—	None
2341	Unnamed	RB-1.1	1.05	—	None
2347	Unnamed	RB-2.75	1.0	—	None
2349	Unnamed	RB-2.9	1.05	—	None
2351	Unnamed	RB-2.95	1.0	—	None
2358	Unnamed	LB-4.2	1.05	—	None
2363	County Line Cr.	LB-4.35	2.25	—	None
2365	Unnamed	LB-0.85	1.45	—	None
2367	Unnamed	RB-4.75	1.0	—	None
2369	Unnamed	RB-4.85	1.45	—	None
2370	Unnamed	RB-5.1	1.85	—	None
2376	Cabinet Creek	LB-6.0	3.6	—	None
2387	Unnamed	RB-6.05	1.4	—	None
2390	Unnamed	LB-6.7	1.05	—	None
2391	Unnamed	RB-7.4	1.35	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2393	Unnamed	LB-7.6	1.5	—	None
2395	Unnamed	RB-7.8	1.1	—	None
2398	Unnamed	RB-8.4	1.35	—	None
2399	Unnamed	RB-0.1	1.0	—	None
2401	Unnamed	LB-8.65	1.05	—	None
2402	Unnamed	RB-9.0	1.7	—	None
2403	Unnamed	LB-0.2	1.0	—	None
2405	Unnamed	LB-9.2	2.65	—	None
	Unnamed Lake	Outlet-2.65	—	—	
2412	Unnamed	RB-10.45	1.1	—	None
2413	Unnamed	RB-10.75	1.25	—	None
2414	Easy Pass Creek	LB-10.8	2.05	—	None
2417	Unnamed	LB-11.45	1.45	—	None
2421	Unnamed	RB-11.65	1.5	—	None
2426	Unnamed	RB-12.7	1.25	—	None
2429	Swamp Creek	RB-13.0	4.8	—	None
2430	Unnamed	LB-1.05	1.2	—	None
2435	Unnamed	LB-13.2	2.45	—	None
2437	Unnamed	LB-2.3	1.75	—	None
	Unnamed Lk.	Outlet-0.85	—	—	
	Unnamed Lk.	Outlet-1.25	—	—	
2443	Unnamed	LB-14.8	2.9	—	None
2449	Unnamed	LB-15.4	2.8	—	None
	Lewis Lake	Outlet-2.1	—	—	
2453	Porcupine Creek	RB-15.6	3.2	—	None
2457	Unnamed	RB-16.4	1.7	—	None
2458	Unnamed	RB-7.1	1.05	—	None
2465	Unnamed	RB-8.15	1.0	—	None
2473	Holmes Creek	LB-9.35	1.15	—	None
2476	Nickol Creek	RB-9.64	2.3	—	None
2478	Boulder Creek	LB-9.65	4.2	—	None
2487	Unnamed	RB-1.6	1.0	—	None
2491	Unnamed	RB-1.8	1.15	—	None
2492	Unnamed	RB-1.95	1.2	—	None
2495	Unnamed	RB-2.56	1.0	—	None
2501	Unnamed	RB-10.8	1.0	—	None
2504	Mill Creek	LB-11.3	6.8	—	None
2539	Unnamed	RB-4.55	1.0	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
	Ruby Cr. cont. as Canyon Creek	@ mi. 11.31	—	—	
2549	Friday Creek	RB-12.7	1.5	—	None
2554	Unnamed	LB-13.2	1.15	—	None
2556	Unnamed	LB-13.8	1.0	—	None
2557	Slate Creek	LB-14.1	7.5	—	None
2558	Unnamed	RB-0.8	1.4	—	None
2559	Unnamed	LB-1.2	1.0	—	None
2560	Skeleton Creek	RB-1.3	1.3	—	None
2561	Unnamed	LB-1.6	1.1	—	None
2562	Unnamed	RB-1.85	1.0	—	None
2563	Unnamed	LB-2.24	1.1	—	None
2564	Rockefeller Cr.	RB-2.25	1.0	—	None
2565	Unnamed	LB-2.6	1.3	—	None
2567	S. Fk. Slate Cr.	LB-3.0	4.5	—	None
2569	Unnamed	RB-1.8	1.0	—	None
2570	Unnamed	LB-1.9	1.4	—	None
2571	Unnamed	LB-2.4	1.4	—	None
2575	Dickey Creek	LB-4.1	1.3	—	None
2576	Unnamed	RB-4.8	1.4	—	None
2578	Unnamed	RB-5.2	1.1	—	None
2580	Ninetynine Canyon Creek	LB-6.4	2.1	—	None
2583	North Fork	RB-14.9	4.4	—	None
2584	Cascade Creek	RB-0.5	2.4	—	None
2588	Unnamed	LB-2.8	1.4	—	None
2590	Unnamed	LB-16.2	1.4	—	None
2591	Barron Creek	LB-17.2	2.3	—	None
2594	Unnamed	RB-21.5	1.0	—	None
2595	Roland Creek	LB-108.7	2.4	—	None
2597	Unnamed	RB-109.4	2.5	—	None
2598	Pierce Creek	RB-109.55	3.0	—	None
2599	Big Beaver Creek	RB-109.6	15.0	—	None
2600	Unnamed	RB-0.01	1.7	—	None
2601	Unnamed	RB-0.6	1.7	—	None
2602	Unnamed	RB-1.9	1.5	—	None
2603	Unnamed	RB-2.1	1.3	—	None
2604	Unnamed	LB-3.3	1.9	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2605	Unnamed	LB-4.6	2.2	—	None
2610	Unnamed	RB-5.5	3.1	—	None
2613	Unnamed	RB-5.9	2.2	—	None
2616	Thirtynine Mile Cr.	LB-6.5	3.0	—	None
2618	Unnamed	RB-1.5	1.5	—	None
2619	Unnamed	RB-7.7	1.5	—	None
2620	Unnamed	LB-8.0	1.6	—	None
2621	McMillan Creek	RB-8.4	6.3	14.9	None
2622	Unnamed	RB-1.4	1.6	—	None
2623	Unnamed	RB-2.6	1.0	—	None
2624	Unnamed	LB-3.4	1.2	—	None
2627	Unnamed	RB-3.8	1.0	—	None
2630	Unnamed	RB-4.9	1.0	—	None
2632	Unnamed	LB-10.2	2.0	—	None
2633	Unnamed	LB-10.5	1.8	—	None
2634	Unnamed	RB-0.7	1.0	—	None
2635	Unnamed	LB-10.9	1.8	—	None
2636	Unnamed	RB-11.3	2.6	—	None
2638	Unnamed	LB-11.4	1.1	—	None
2639	Unnamed	LB-11.9	1.7	—	None
2640	Unnamed	RB-12.1	1.0	—	None
2642	Unnamed	LB-13.0	1.5	—	None
2644	Luna Creek	RB-13.1	5.0	—	None
2646	Unnamed	LB-3.7	1.1	—	None
2647	Unnamed	LB-14.3	1.3	—	None
2648	Unnamed	LB-14.7	1.4	—	None
2649	May Creek	LB-110.4	3.8	—	None
2653	Unnamed	RB-113.0	1.5	—	None
2656	Devils Creek	LB-113.7	10.0	—	None
2657	Unnamed	RB-1.8	1.4	—	None
2659	Unnamed	RB-2.1	1.4	—	None
2661	Unnamed	RB-2.8	1.1	—	None
2662	Unnamed	LB-3.0	1.4	—	None
2663	Unnamed	RB-4.0	1.7	—	None
2666	Unnamed	LB-4.5	2.4	—	None
2669	Unnamed	RB-4.8	1.2	—	None
2670	Unnamed	RB-5.0	1.0	—	None
2671	Unnamed	RB-5.1	1.2	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2673	Unnamed	RB-5.2	1.3	—	None
2674	Unnamed	RB-5.8	1.1	—	None
2676	Unnamed	LB-6.4	1.7	—	None
2679	N. Fk., Devils Cr.	RB-6.8	4.8	—	None
2682	Unnamed	RB-2.0	1.3	—	None
2683	Unnamed	RB-2.7	1.0	—	None
2685	Unnamed	RB-7.3	2.9	—	None
2686	Unnamed	RB-1.4	1.3	—	None
2687	Unnamed	LB-7.9	1.0	—	None
2688	Unnamed	RB-8.1	2.3	—	None
2689	Unnamed	RB-0.8	1.3	—	None
2691	Unnamed	LB-9.1	1.3	—	None
2692	Unnamed	RB-114.1	1.0	—	None
2693	Unnamed	RB-114.2	1.0	—	None
2695	Skymo Creek	RB-115.5	3.4	—	None
2696	Unnamed	LB-1.4	1.0	—	None
2697	Unnamed	LB-2.1	1.0	—	None
	Unnamed Lake	Outlet-3.4	—	—	
2700	Dry Creek	LB-115.6	3.5	—	None
2705	Lightning Creek	LB-116.9	19.0	—	None
2710	Unnamed	LB-1.8	1.6	—	None
2711	Unnamed	LB-2.1	2.5	—	None
2712	Three Fools Creek	LB-2.6	10.8	—	None
2713	Unnamed	LB-0.6	1.0	—	None
2716	Unnamed	RB-1.8	1.5	—	None
2718	Unnamed	LB-2.0	1.7	—	None
2719	Unnamed	RB-2.4	1.0	—	None
2720	Cinnamon Creek	LB-3.1	6.8	—	None
2723	Grizzly Cr.	LB-0.8	3.4	—	None
2726	Unnamed	LB-0.9	1.2	—	None
2728	Unnamed	LB-1.3	1.0	—	None
2730	Unnamed	RB-2.1	1.0	—	None
2734	Middle Creek	LB-2.2	3.4	—	None
2748	Unnamed	RB-4.65	1.0	—	None
2751	Unnamed	RB-5.7	1.0	—	None
2753	Elbow Creek	RB-3.3	3.1	—	None
2759	Unnamed	RB-4.9	1.9	—	None
2762	Shull Creek	LB-5.5	6.6	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2764	Unnamed	LB-1.6	2.1	—	None
2767	Unnamed	RB-2.3	1.5	—	None
2769	Unnamed	LB-3.7	1.7	—	None
2772	Unnamed	RB-3.9	1.0	—	None
2773	Unnamed	RB-4.4	1.2	—	None
2775	Castle Creek	RB-6.5	6.7	—	None
2776	Unnamed	RB-0.4	1.3	—	None
2777	Unnamed	RB-1.2	1.4	—	None
2778	Unnamed	RB-1.7	1.1	—	None
2779	Big Face Cr.	RB-1.9	3.5	—	None
2781	Unnamed	RB-1.0	1.2	—	None
2785	Unnamed	LB-2.7	1.5	—	None
2786	Rustle Creek	LB-3.5	2.3	—	None
2794	Trouble Creek	LB-8.0	3.3	—	None
2802	Unnamed	RB-3.9	1.1	—	None
2803	Unnamed	RB-4.0	1.3	—	None
2804	Unnamed	LB-4.4	1.1	—	None
2805	Unnamed	RB-4.6	1.3	—	None
2806	Unnamed	LB-4.8	1.5	—	None
2808	Unnamed	LB-5.6	1.6	—	None
2810	Unnamed	RB-6.0	1.1	—	None
2811	Unnamed	RB-7.3	1.0	—	None
2812	Unnamed	LB-0.4	1.3	—	None
2813	Unnamed	LB-0.8	1.4	—	None
	Willow Lake	Outlet-1.0	—	—	
2814	Unnamed	RB-7.7	1.7	—	None
2815	Freezeout Creek	LB-8.6	6.1	15.6	None
2816	Unnamed	LB-1.1	2.1	—	None
2819	Unnamed	LB-1.8	2.4	—	None
2820	Unnamed	LB-0.7	1.9	—	None
	Freezeout Lk.	Outlet-2.4	—	—	
2823	Unnamed	LB-2.0	3.4	—	None
2824	Unnamed	RB-1.3	1.0	—	None
2825	Unnamed	RB-1.6	1.0	—	None
2828	Unnamed	RB-2.4	2.0	—	None
2829	Unnamed	LB-3.1	1.6	—	None
2830	Unnamed	RB-0.5	1.0	—	None
2831	Unnamed	LB-3.9	1.3	—	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2833	Unnamed	LB-9.1	1.1	—	None
2834	Unnamed	LB-9.4	1.1	—	None
2835	Unnamed	RB-9.45	1.0	—	None
2836	Unnamed	LB-9.5	1.3	—	None
2839	Unnamed	LB-10.2	1.0	—	None
2841	Unnamed	RB-10.25	1.0	—	None
2844	Unnamed	RB-10.8	1.2	—	None
2847	Unnamed	RB-117.7	1.0	—	None
2848	Unnamed	LB-118.3	1.5	—	None
2850	Noname Creek	RB-119.1	4.3	—	None
2855	Unnamed	LB-2.8	1.0	—	None
	Noname Lake	Outlet-3.85	—	—	
2856	Arctic Creek	RB-119.4	6.1	—	None
2857	Unnamed	RB-0.6	1.3	—	None
2858	Unnamed	RB-1.3	1.0	—	None
2859	Unnamed	RB-1.4	1.0	—	None
2863	Unnamed	LB-3.4	1.1	—	None
2864	Unnamed	LB-3.7	1.5	—	None
2865	Unnamed	RB-4.1	1.9	—	None
2866	Unnamed	LB-0.7	1.1	—	None
2867	Unnamed	LB-4.85	1.0	—	None
2868	Unnnamed	LB-4.9	1.1	—	None
2869	Little Beaver Creek	RB-120.4	14.8	—	None
2870	Unnamed	LB-0.8	1.2	—	None
2871	Unnamed	LB-1.2	1.0	—	None
2872	Unnamed	RB-2.3	1.2	—	None
2873	Perry Creek	LB-3.1	5.9	—	None
2874	Unnamed	LB-0.7	1.0	—	None
2879	Unnamed	LB-4.2	1.1	—	None
2880	Unnamed	LB-5.2	1.0	—	None
2882	Unnamed	RB-3.5	1.3	—	None
2883	Unnamed	LB-4.1	1.0	—	None
2884	Unnamed	RB-4.2	1.3	—	None
2886	Unnamed	LB-5.5	1.0	—	None
2887	Mist Creek	RB-5.9	2.7	—	None
2890	Unnamed	LB-6.6	1.2	—	None
2892	Unnamed	LB-7.6	1.4	—	None
2893	Redoubt Creek	LB-7.9	4.3	7.12	None

UPPER SKAGIT — ROSS LAKE AREA
Skagit Basin — WRIA 03 & 04

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
2894	Unnamed	LB-0.5	1.5	—	None
2895	Unnamed	RB-1.1	1.4	—	None
2897	Unnamed	LB-1.9	1.0	—	None
2909	Unnamed	RB-10.2	1.6	—	None
2911	Pass Creek	LB-11.3	2.5	—	None
	Unnamed Lake	Outlet-2.5	—	—	
2914	Unnamed	RB-12.6	1.0	—	None
2915	Unnamed	LB-12.7	1.2	—	None
2917	Unnamed	LB-13.7	1.1	—	None
2921	Unnamed	RB-112.5	1.3	—	None
2922	Unnamed	LB-123.6	1.2	—	None
2923	Unnamed	LB-123.9	1.9	—	None
2924	Silver Creek	RB-124.8	6.1	—	None
2925	Unnamed	RB-0.3	1.8	—	None
2926	Unnamed	RB-1.4	1.8	—	None
2928	Unnamed	LB-2.1	1.1	—	None
2929	Unnamed	LB-2.2	1.0	—	None
2930	Unnamed	RB-2.25	1.7	—	None
2931	Unnamed	LB-2.8	1.2	—	None
2933	Unnamed	RB-3.0	1.6	—	None
2934	Unnamed	RB-3.7	1.5	—	None
2935	Unnamed	LB-3.8	1.5	—	None
2937	Unnamed	LB-4.2	1.2	—	None
2938	Unnamed	RB-4.21	1.3	—	None
2940	Unnamed	LB-4.8	1.0	—	None
	Unnamed Lake	Outlet-6.1	—	—	
2941	Unnamed	RB-125.4	1.2	—	None
2942	Unnamed	RB-125.6	1.4	—	None
2943	Unnamed	RB-125.8	1.2	—	None
2944	Unnamed	LB-0.1	1.4	—	None
2945	Hozomeen Creek	LB-126.0	4.2	—	None
2946	Unnamed	RB-1.9	0.65	—	None
2947	Unnamed	RB-0.4	1.3	—	None
	Hozomeen Lake	Outlet-0.65	—	—	
2948	Howlitt Creek	LB-126.8	2.8	—	None