NOOKSACK BASIN

Water Resource Inventory Area 01

The Nooksack River system has three principal forks, each originating in the high slopes of the Cascade Mountains. Flowing westward through mostly steep, heavily forested terrain, the North and Middle forks converge on a relatively broad valley floor about 5 miles upstream from the community of Deming, forming the mainstem Nooksack River. Much of the South Fork drainage is through mountainous and moderately forested terrain; however, in its lower reaches the stream flows through a broad, gently sloping valley to its confluence with the mainstem Nooksack about 1.5 miles above Deming. Below this point the mainstem meanders northwest, west, and then south where it enters Bellingham Bay about 4 miles northwest of Bellingham. There are 654 rivers and streams in the Nooksack drainage which provide 1,325 linear miles of stream in the independent drainages, mainstem Nooksack, and its tributaries.

Three of the basin's smaller independent drainages are located north of the Nooksack River system. The major portions of Dakota, California, and Terrell creeks flow in a northwest direction through very gently sloping farmland. The headwaters of Dakota and California creeks are formed by springs and surface run-off from moderately sloped, partially timbered hillsides, while Terrell Creek has its origin in Lake Terrell and in the spring of Fingalson Creek. Both Dakota and California creeks drain into Drayton Harbor at Blaine, Washington, while Terrell Creek enters Birch Bay at the community of Birch Bay.

Five relatively small drainages flow directly into Bellingham Bay. From north to south these include Silver, Squalicum, Whatcom, Padden, and Chuckanut creeks, all flowing in a generally westerly direction. Silver and Chuckanut are predominantly surface runoff streams, while Squalicum, Whatcom, and Padden have their headwaters in lakes. Each of these streams have slight to moderate gradients and each travels some distance through semi-residential or residential areas. Squalicum, Whatcom, and Padden creeks enter the bay after passing through industrial areas within the city limits of Bellingham.

Oyster Creek, the southernmost of the basin's smaller drainages, originates in Lost Lake on Chuckanut Mountain. It flows generally west over steep, moderately timbered slopes, entering Samish Bay just south of Pigeon Point. The marine shorelines and estuaries so vital to the production of marine fish, shellfish, and anadromous fish populations in the Nooksack basin include Drayton Harbor, Birch Bay, Lummi Bay, Bellingham Bay, and Samish Bay. These protected waters provide the essential fresh-salt water conversion zones and feeding grounds for juveniles produced within the basin as well as from the more southern river systems.

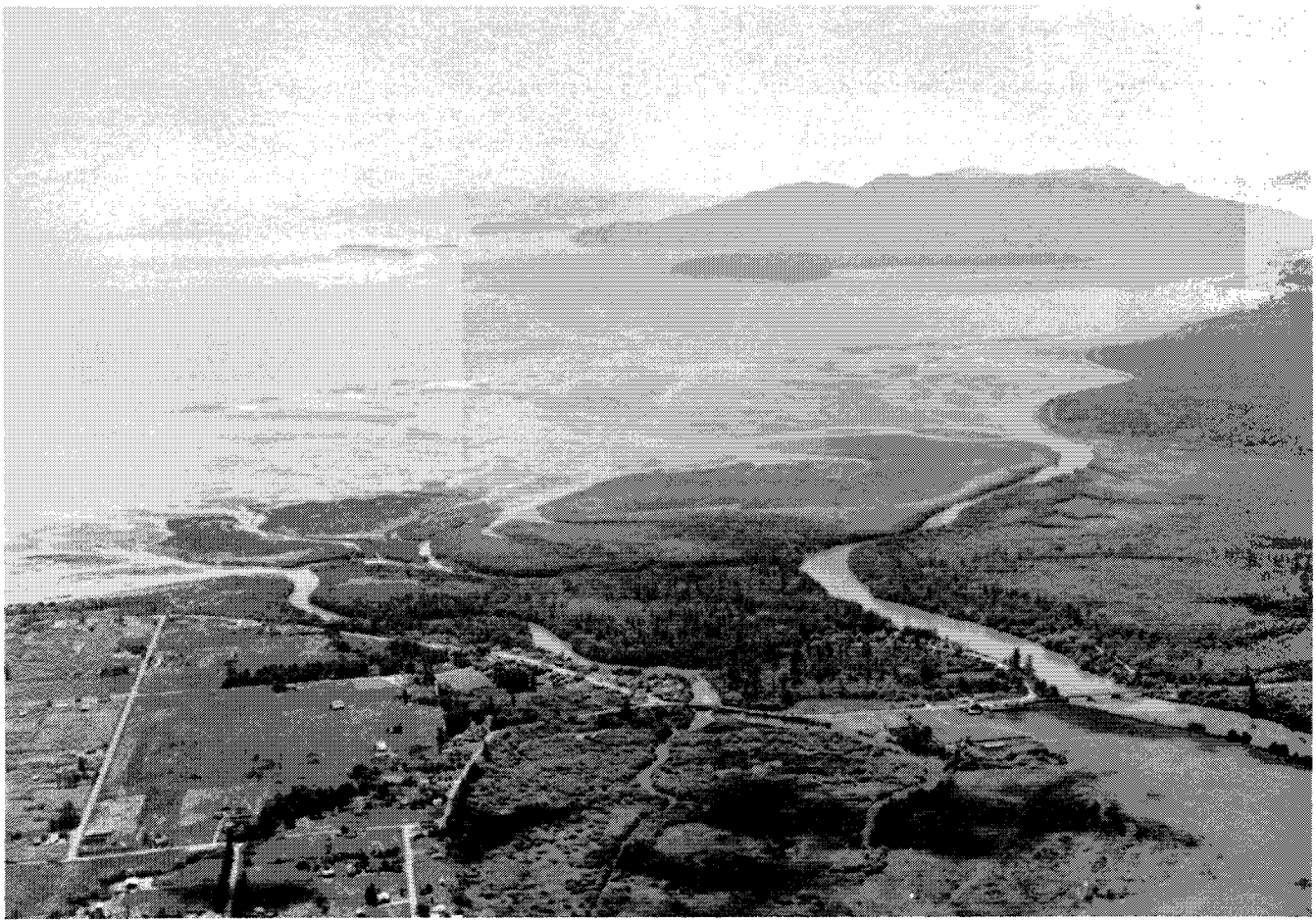


PHOTO 01-1. Mouth of the Nooksack River, with Lummi Island and the San Juan Islands in the background.

Fish Inventory and Distribution

The Nooksack River is inhabited by all five species of Pacific salmon and each of the anadromous game fish species. These fish migrate, spawn, and rear in some 108 miles of the river including portions of the North, Middle and South forks. In addition, some 210 miles of accessible tributaries are available to these fish. For the salmon species, only the coho and chum inhabit the smaller independent basin drainages while all of these streams support spawning runs of the anadromous game fish. These streams are open to migration for distances of from 100 yards to 5 miles. The total accessible area provided by these independent drainages is approximately 85 miles.

Chinook Salmon — Chinook salmon populating the Nooksack River can be generally separated into three segments of races; spring, summer, and fall.

Various sections throughout the accessible length of the North, Middle and South forks, and portions of the mainstem Nooksack, are utilized by spawning chinook salmon. In the North Fork, chinook have been observed spawning on riffles and in side channels from the Excelsior powerhouse downstream to the Middle Fork confluence, a distance of about 23 miles. Approximately 7 miles of the Middle Fork, below the city of Bellingham diversion dam, are used by chinook spawners. In the South Fork some 23 miles of mainstem river is available below a natural barrier and the entire stretch receives relatively good numbers of summer and fall chinook. The upper 10 miles of this stretch is the principal area used by spring chinook salmon. In the mainstem Nooksack, below the North and Middle fork confluence, chinook have been observed spawning downstream to within 1 mile of Bellingham Bay.

Nooksack River tributaries inhabited by chinook spawners include Glacier, Cornell, Canyon, Maple, Kendall, and Racehorse creeks on the North Fork; Canyon and Porter creeks on the Middle Fork; Hutchinson and Skookum creeks on the South Fork; and Bertrand and Fishtrap creeks on the lower mainstem river.

The occurrence of chinook spawning in the Nooksack basin drainages, other than in the Nooksack River system, is minimal since each of these streams exhibits very low flows during the adult migration period.

Adult spring chinook salmon begin entering the Nooksack River in March with the run continuing into August (Table 01-1). These fish begin moving onto the spawning riffles the latter part of August. The summer and fall chinook enter the river starting in July, with spawning occurring in mid-September and October. Chinook spawning is usually completed in November.

After emerging from the gravel, the juvenile spring chinook characteristically remain in the river for more than a year, migrating to salt water the second spring following hatching. The progeny from summer and fall chinook spawning generally rear in the system for about 3 months after emergence, with the major out-migration occurring during the first spring run-off, from mid-April to early July.

Coho Salmon — Virtually all accessible streams and tributaries draining the Nooksack basin are utilized by coho. Tributary streams to the Nooksack River system serve as the basin's principal coho spawning grounds. In addition, coho spawning occurs in the mainstem Nooksack River and in each of its forks, particularly in areas where channel splitting creates smaller courses containing more suitable spawning conditions. Such areas are present throughout much of the North Fork, along most of the lower Middle Fork, and in intermittent sections of the lower South Fork and upper mainstem Nooksack.

PHOTO 01-2. Lower Thompson Creek provides excellent habitat for coho, pink, and chum salmon.

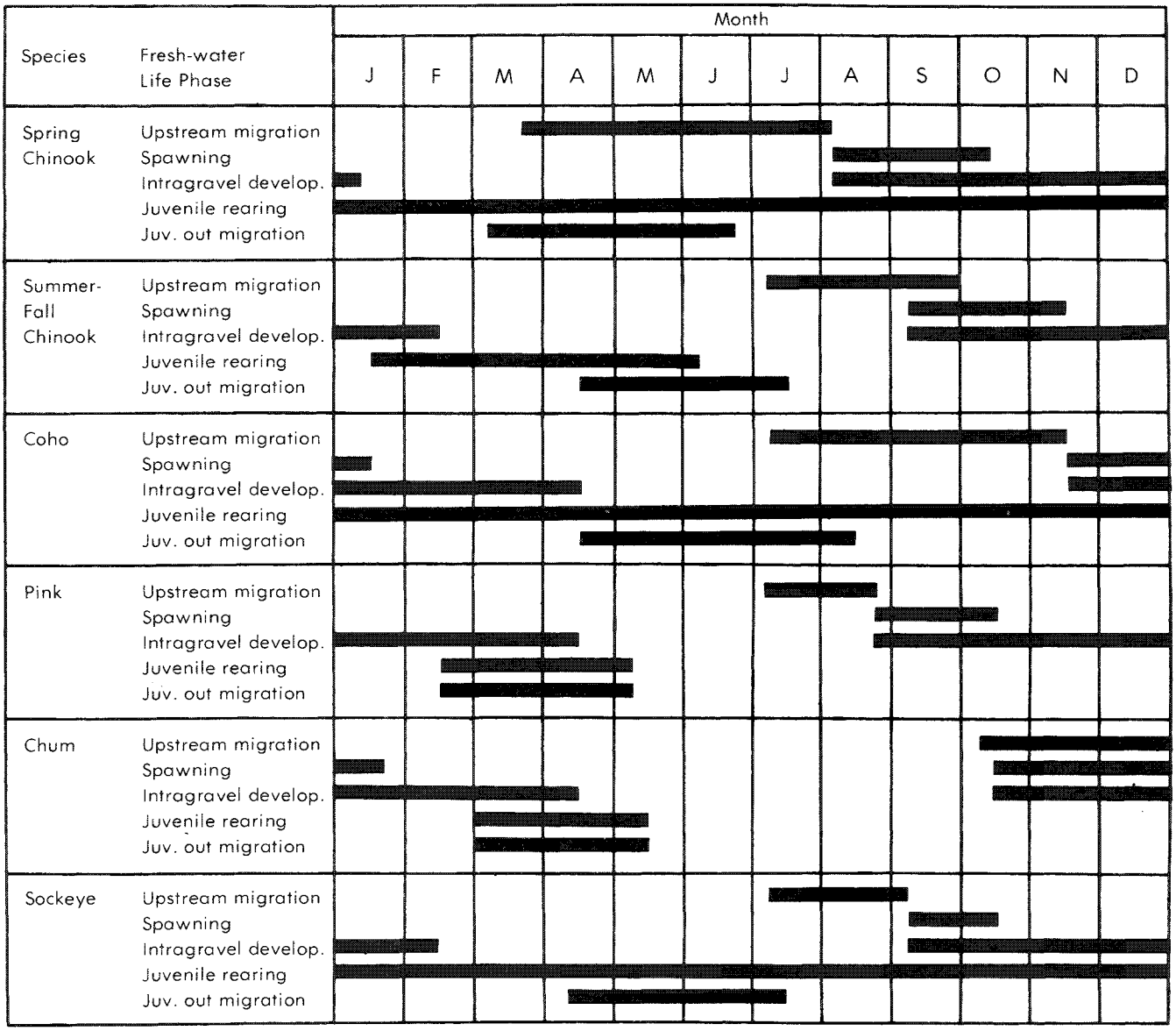
Juvenile coho rear throughout the accessible length of the Nooksack River system and in each of the other basin drainages utilized by spawning adults.

Adult coho salmon have been recorded in the Nooksack as early as mid-July. Spawning commences in mid-November and continues well into January. Following emergence, the juvenile coho remain in the system for more than a year, migrating out early in their second year of life. This migration coincides with the increased river flows experienced during the annual spring run-off. The same general timing pattern occurs in the outer subregion drainages. Dakota Creek, however, contains an additional relatively small coho run entering and spawning during the spring months.

Chum Salmon — In the Nooksack River system chum salmon utilize the mainstem river and each of the three forks, plus tributary streams as far up as Cornell Creek on the North Fork, Porter Creek on the Middle Fork, and Hutchinson Creek on the South Fork. The majority of spawning takes place on riffles and in side channels of the North, Middle, and South forks and in the mainstem river downstream to within 1 mile of Bellingham Bay.

Other basin drainages annually receive small to moderate chum escapements. In Dakota Creek the upper reaches of tributary streams serve as the principal spawning area. In California, Terrell, Squalicum, Whatcom and Padden creeks only limited intermittent stream sections are suitable for use, while both Chuckanut and Oyster creeks have moderate amounts of relatively good chum salmon spawning area throughout their accessible length.

Timing of salmon fresh-water life phases in Nooksack-Sumas Basins WRIA 01



Adult chum salmon begin entering Nooksack basin drainages about mid-September. Spawning commences in mid-November and continues until mid-January. Soon after emergence, the juvenile chum begin seaward migration, completing their early fresh water life phase in May.

Pink Salmon — Within the Nooksack basin, pink salmon spawning occurs almost exclusively in the Nooksack River system. Nearly every accessible tributary receives some use, with those streams entering the upper North Fork having the heaviest spawning concentrations. Pink salmon also spawn on the riffles and in side channels of the mainstem river. Some of the more important pink spawning tributaries include Deadhorse, Cascade, Thompson, Gallop, Cornell, Canyon, Wildcat, Maple, and Kendall creeks on the North Fork, and Hutchinson Creek on the South Fork. Small numbers of spawning pink salmon are occasionally observed in basin drainages other than the Nooksack River; however, no established runs are known to exist.

Adult pink salmon enter the Nooksack beginning about mid-July. Spawning begins in some of the upper North Fork tributaries in late August and continues until mid-October in many areas. Soon after fry emergence, the juveniles begin their seaward movement, with out-migration usually completed by the end of March.

Sockeye Salmon — At least one section of the Nooksack River system is known to support a small run of sockeye salmon. This section consists of a half mile side channel of the North Fork located about 3.5 miles above the town of Glacier.

Adult sockeye have been recorded in the Nooksack in early July, with spawning occurring from early September to early October. Following fry emergence, it is believed that the juveniles remain in the system more than a year, migrating to the sea during the second spring following emergence.

Salmon Production

The natural production from the native stocks of salmon in the Nooksack basin provides over 330,000 salmon annually to various sport and commercial fisheries. In an average year approximately 55,000 adult salmon return to spawn in the Nooksack drainage of which over 50,000 spawn naturally and about 3,200 coho and chinook provide the artificial brood stock.

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.

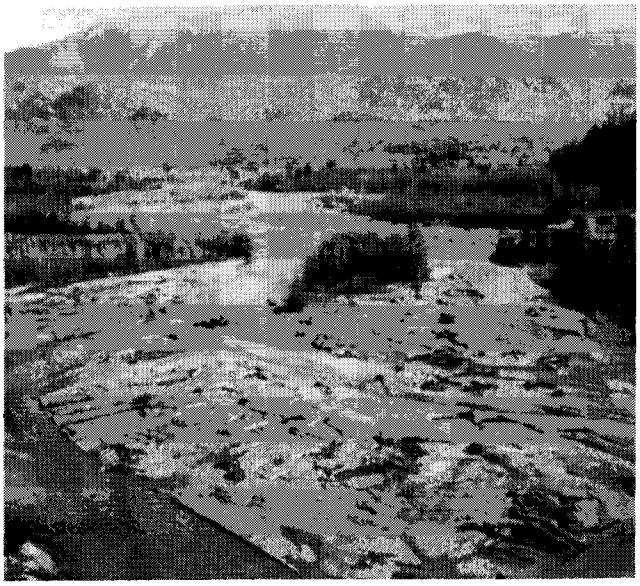


PHOTO 01-3. Glacial waters and frequent channel shifting limits salmon production in the mainstem Nooksack River.

TABLE 01-2. Salmon Escapement Level for the Nooksack River Basin WRIA 01.

	1966-1971 Escapements [1]	
Species	*Range*	*Average*
Chinook	2,200— 6,500	4,250
Coho	2,400— 7,300	5,200
Pink	15,000—40,000	25,000
Chum	7,400—32,400	21,000

Natural Escapement Potential	
Chinook	4,000
Coho	5,000
Pink	60,000
Chum	30,000

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

The Washington Department of Fisheries maintains the Nooksack Salmon Hatchery on Kendall Creek, a North Fork tributary. This creek, plus supplemental ground water, serves the twelve standard pond equivalent[2] station. The hatching capacity is 3,700,000 fry, and present rearing capacity is approximately 600,000 yearling and 1,800,000 fingerling salmon. The station handles principally fall chinook and coho with virtually all juveniles planted in Nooksack basin drainages. Additional plantings of chinook and coho are often supplied from facilities located in the Skagit basin. For the period 1966 to 1971 annual salmon plants in the sub-region averaged 3,080,000 chinook and 1,341,000 coho. Plants in 1971 included 4,854,000 chinook (24,400 lbs.) and 2,061,000 coho (67,800 lbs.).[3]

Adult chinook returns to the Kendall Creek station during this 6-year period ranged from 598 to 1,849 spawners averaging 1,061 annually. Coho returns ranged from 683 to 4,035 adults averaging 2,110 annually.

Harvest

Salmon produced or reared in Nooksack basin waters contribute to U.S. and Canadian, Pacific Ocean commercial and sport fisheries. They also contribute to commercial and sport fisheries existing through the Strait of Juan de Fuca and upper Puget Sound into the Nooksack River. The estimated annual total contribution (all species) to these fisheries has in recent years ranged from 53,600 to 161,000 salmon.

The basin's marine waters support a very heavy commercial fishery for salmon. Gill netters and purse seiners ply the waters all the way from Point Roberts near the Canadian border south to Samish Bay. In addition, reef netters operate their gear in the Lummi Island vicinity. Areas favored by the commercial fishermen include Point Roberts, Gulf of Georgia, Birch Point, Cherry Point, Alden Banks, Hale Passage, Bellingham Bay, Lummi Island, and Samish Bay.

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 Lummi Indians intensively fish the lower Nooksack River and the marine waters immediately adjacent to the river mouth. On the upper Nooksack River near the confluence of the South Fork, the Nooksack Indians operate a limited but very effective gill net fishery.

Specific sport fishing locations considered popular at this time include Point Roberts, near the Canadian border, the waters surrounding Lummi Island, William Point near Samish Bay, and the inter-island channels existing immediately north and west of Anacortes. It is anticipated that with new access areas and development of public facilities, sport fishing activity within these marine waters will increase at a tremendous rate.

[2] *One standard pond is equivalent to about 2400 cu. ft. of rearing space.*

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

Fresh-water salmon angling in the basin is permitted only in the mainstem Nooksack River. This river is open all year to salmon angling from the upstream boundary of the Lummi Indian Reservation to the confluence of the North and South forks, a distance of 32 miles. Adult and jack salmon may be taken. [4]

Limiting Factors

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

Stream flow — For many streams in the Nooksack River system, steep sloped drainage basins create fast run-off conditions causing intensive early winter and spring flooding, followed by low summer flows and partially dried up conditions. Heavy logging in the upper watersheds of all three forks is aggravating these run-off patterns.

Physical barriers — The falls on the North and South forks of the Nooksack and the falls on Maple Creek eliminate 25 miles of mainstem river and 11 miles of good quality salmon streams. Less suitable production area is found above the barriers imposed by the Middle Fork diversion dam and the falls-cascade sections of Glacier, Canyon (North Fork), and Skookum creeks. The precipitous nature of the glacier-fed streams in the upper watershed curtails both spawning and rearing.

The City of Bellingham maintains a major diversion on the Middle Fork at river mile 7. Water is removed from the river at that point and piped to Lake Whatcom for municipal and industrial purposes, leaving greatly reduced flows for the lower middle Fork which result in critical conditions during summer months.

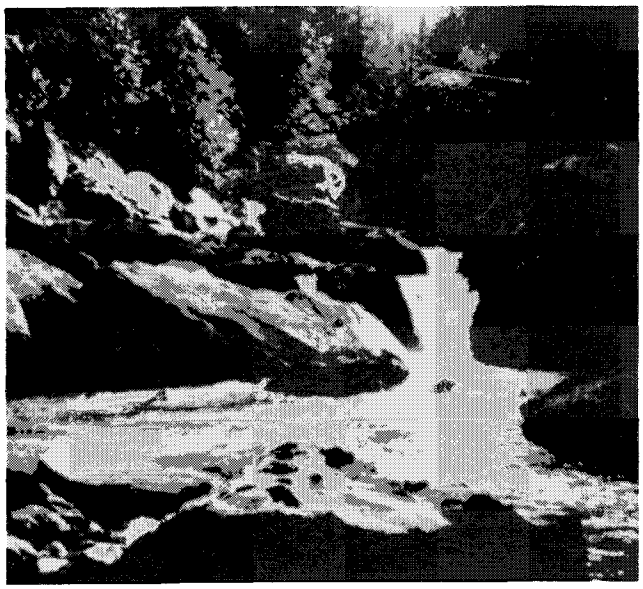


PHOTO 01-4. Water falls create barriers on many streams in the Nooksack basin (Skookum Creek on the South Fork Nooksack).

[4] *Notless than 10 inches nor more than 20 inches in length.*

Water quality — Increased temperatures during summer low flow periods along with questionable water quality are prevalent in all the lowland drainages, particularly the lower mainstem Nooksack, its tributaries, and the independent streams. Industrial discharges in the estuarial waters of Bellingham Bay are extremely damaging to juvenile salmon and aquatic food organisms.

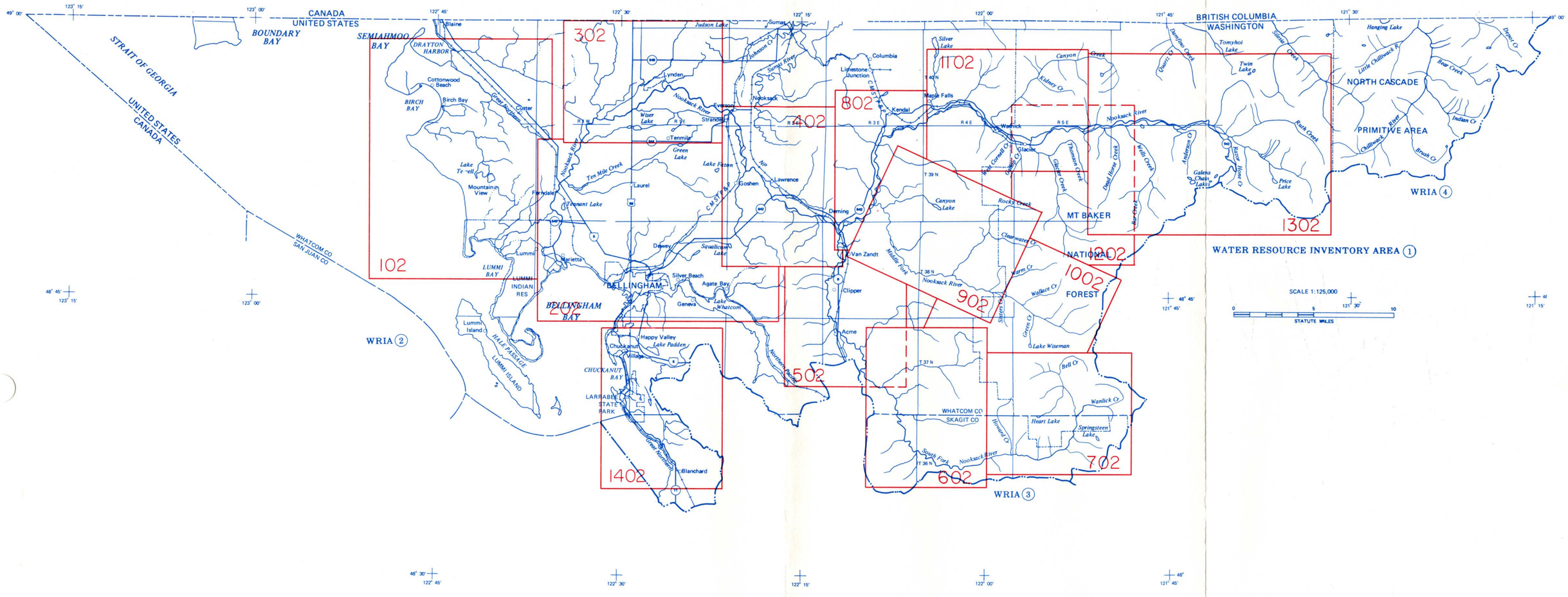
PHOTO 01-5. Channelization destroys the natural fish production habitat (Boulder Creek on the North Fork Nooksack).

Limited spawning and rearing area — Due to seasonal flash run-offs in the upper watersheds, there is extensive streambed shifting. Much of the suitable spawning substrate has washed downstream leaving heavy boulder and rubble in areas of moderate gradients. Silt and mud deposits are extensive in many stretches of the slower, flat gradient, deeper waters of the mainstem Nooksack below the community of Everson. The small independent streams of the basin, such as California, Squalicum, and Whatcom creeks, suffer from low summer flows and warm water temperatures above the tolerance of juvenile salmon.

Watershed development — Expansion of urban and rural residential and commercial areas are developing along the streams on the outskirts of Bellingham. The development of river-front property for summer or permanent homes is now actively underway in the upper basin. It is anticipated that this will cause increased demands for streambed channelizing and diking. Extensive agricultural activities in the northern part of the basin draw heavily on stream flows through irrigation withdrawals. Levee construction, revetments and other flood control measures alter the natural stream environment throughout the system.

No new salmon propagation facilities are proposed for the subregion at this time, although some new developments are planned for the present hatchery to increase production capacity. Many sites do exist in the subregion that would provide adequate area and suitable water source for future production facilities.

NOOKSACK BASIN WRIA 01
Index to Key Map



NOOKSACK RIVER BASIN

WRIA - 01

STRAIT OF GEORGIA
Independent Drainages

This section includes about 14 independent tributaries plus a number of drainage ditch systems entering the Strait of Georgia from Lummi Bay, west of Bellingham, then north to Blaine in northwest Whatcom County. Altogether there are nearly 185 miles of water course within this area. Access is via numerous county roads west of Interstate 5. The Lummi Indian Reservation encompasses the Lummi Bay vicinity.

Stream Description

The principal drainages include Dakota and California creeks entering Drayton Harbor near Blaine, Terrell Creek entering Birch Bay, and the Lummi River at Lummi Bay. These are typical lowland streams coursing over mostly flat or gently rolling terrain. Their lower 1-2 mile reaches are generally under tidal influence. Most of the adjacent land area is cleared for pasture or agricultural use. Local industry includes an oil refinery near Cherry Point, fish processing and boat facilities at Blaine, and resort facilities at Birch Bay.

Dakota Creek winds its way from the vicinity of Badger approximately 11 miles northwest to Blaine. It presents mainly pool-riffle stream character, with a number of slower moving, fairly deep glides. The channel is generally quite stable, with winter widths ranging 2-6 yards. The bottom is mainly gravel and sand, with a few gravel-rubble stretches. Through much of the lower drainage the water takes on a darker, rust-tone appearance. Stream -side cover ranges from sparse to moderate, consisting of intermittent strips or thickets of deciduous trees and underbrush separated by expanses of cleared land. Its tributaries, including the North Fork (R.M. 5.3), exhibit similar habitat features.

California Creek heads near Holman Hill north of Ferndale and travels over 7 miles northwest to Drayton Harbor. Much of its course is slough-like, with dark colored water displayed in the numerous pools and slow, deep glides. Winter widths range generally 2-5 yards within a largely confined channel. The bottom is mostly sand, with a few patch gravel areas. Cover is sparse over much of the upper drainage with low brush or overhanging grasses, and some deciduous thickets along the lower stream course. Most tributaries are very small, intermittent flowing drainages.

Terrell Creek, from its Lake Terrell source west of Ferndale, travels generally northwest some 7 miles, then parallels the Birch Bay shoreline north for nearly two miles before entering the bay. All but the lower 1.5 miles present good pool-riffle stream character with the confined channel ranging 2-6 yards in width during winter flows. The bottom is mainly small gravel, with considerable sand in many areas and a few gravel-rubble stretches. Cover ranges from sparse to moderate, consisting of intermittent stjnds or strips of deciduous growth, and low brush or overhanging grass along cleared land sections. The smaller tributaries, usually intermittent flowing streams, present similar features.

The Lummi River is a high water overflow channel diverging from the Nooksack River (R.M. 4.5) south of Ferndale. It travels southwest over 5 miles to Lummi Bay. At low river flows it maintains little water above R.M. 3.0, and is generally slough-like below. This lower area is under tidal influence and exhibits a number of channel splits and delta formations. Cover is generally sparse with occasional deciduous strips or thickets bordering the upper reaches. Much of the bank area has been diked.

Salmon Utilization

Dakota and Terrell creeks maintain fair to good populations of coho, plus some chum utilization. California Creek historically produced coho with chum reported in the lower stretches; however, more recent information indicates a lack of salmon use. The Lummi River has received coho plants, making use of the available rearing potential; however, these waters are not considered a natural production area. Little is known regarding salmon use in the other small independent tributaries entering marine waters in this section. It is possible that some chum salmon utilization occurs, with some coho use in those streams that are not intermittent-flowing.

Limiting Factors

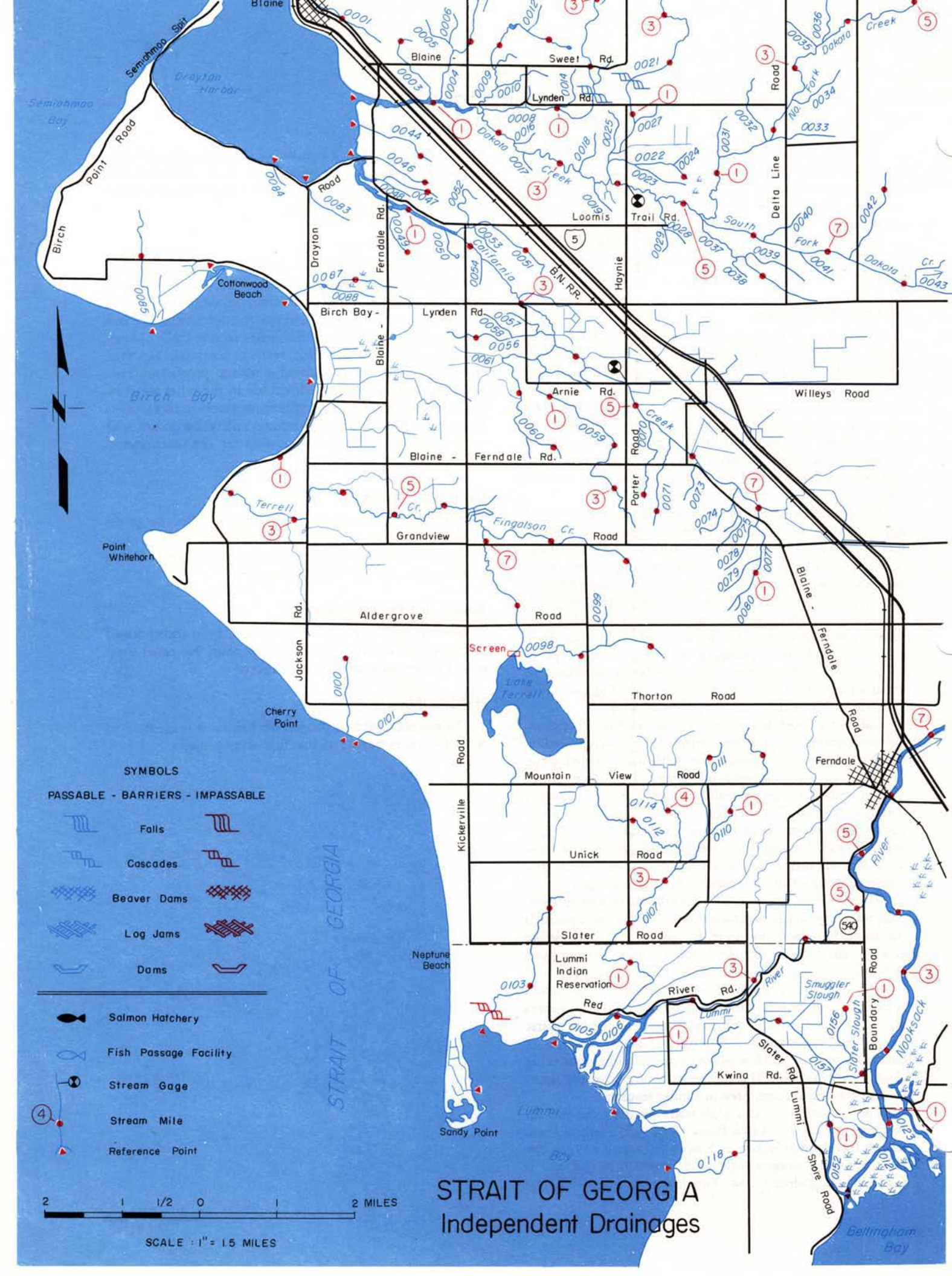
Naturally occurring low flows, compounded by pump irrigation from the streams, is believed to be a principal limiting factor. There is also occasional debris buildup in the streams, plus extensive channelization.

Beneficial Developments

Salmon rearing impoundments have been incorporated as part of the Lummi aquaculture program. No other projects or programs have been undertaken.

Habitat Needs

To maintain salmon production habitat it is essential to control water removal and channelization projects.



STRAIT OF GEORGIA
Independent Drainages

STRAIT OF GEORGIA — INDEPENDENT DRAINAGES
Nooksack Basin — WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0001	Unnamed	Sec36,T41N,R1W	1.6	—	
0002	Dakota Creek	Sec7,T40N,R1E	11.05	29.0 [1]	Coho, Chum
0003	Unnamed	RB-0.9	1.2	—	Unknown
0004	Unnamed	RB-1.1	1.95	—	Unknown
0008	Unnamed	RB-1.6	3.3	—	Coho
0009	Unnamed	RB-0.01	2.3	—	Unknown
	Blaine Res.	Outlet-1.3	—	—	
	Unnamed Lake	Outlet-2.3	—	—	
	Unnamed Lake	Outlet-3.3	—	—	
0021	Unnamed	RB-3.9	3.4	—	Coho
0022	Unnamed	LB-0.2	1.1	—	Unknown
0026	Drainage Ditch	LB-0.4	~ 1.3	—	
0030	No. Fk. Dakota Creek	RB-5.3	5.0	7.92 [1]	Coho
	Dakota Cr. cont. as S.F. Dakota Cr.	@ mi. 5.3	—	8.25	Coho
0037	Unnamed	LB-5.35	1.8	—	Unknown
0042	Unnamed	RB-7.3	1.2	—	Unknown
0044	Unnamed	Sec7,T40N,R1E	1.2	—	Unknown
0045	California Creek	Sec18,T40N,R1E	7.25	22.9	Coho, Chum
0046	Unnamed	RB-0.05	1.1	—	Unknown
0047	Unnamed	RB-0.25	1.15	—	Unknown
0049	Unnamed	LB-0.95	1.0	—	Unknown
0051	Unnamed	RB-1.75	1.4	—	Unknown
0055	Drainage Ditch	RB-2.9	~ 3.0	—	Unknown
0056	Unnamed	LB-3.6	1.4	—	Unknown
0059	Unnamed	LB-3.7	3.6	—	Unknown
0060	Unnamed	LB-0.3	2.2	—	Unknown
0062	Drainage Ditch	LB-0.5	~ 1.1	—	Unknown
0066	Drainage Ditch	RB-4.1	~ 4.0	—	Unknown
0068	Drainage Ditch	RB-4.85	~ 4.0	—	Unknown
0069	Drainage Ditch	RB-5.0	~ 2.5	—	Unknown
0070	Unnamed	LB-5.3	1.1	—	Unknown
0071	Unnamed	LB-5.65	1.3	—	Unknown
0072	Drainage Ditch	RB-6.0	~ 1.5	—	Unknown
0077	Unnamed	LB-7.0	1.8	—	Unknown
0081	Drainage Ditch	RB-7.24	~ 2.0	—	Unknown
0082	California Cr. cont. as Drainage Ditch	@ mi. 7.25	~ 2.7	—	Unknown

[1] *Includes 0.41 square miles in Canada.*

STRAIT OF GEORGIA—INDEPENDENT DRAINAGES
Nooksack Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0085	Unnamed	Sec26,T40N,R1W	1.55	—	Unknown
0086	Drainage Ditch	Sec23,T40N,R1W	~ 2.0	—	Unknown
0087	Unnamed	Sec24,T40N,R1W	1.6	—	Unknown
0089	Terrell Creek	Sec line between Sec30,31,T40N,R1E	8.7	—	Coho, Chum
0090	Drainage Ditch	RB-0.05	~ 4.0	—	
0091	Drainage Ditch	RB-0.5	~ 2.0	—	
0092	Drainage Ditch	LB-2.95	~ 1.5	—	
0093	Drainage Ditch	LB-3.16	~ 1.5	—	
0094	Drainage Ditch	RB-3.8	~ 1.4	—	
0097	Fingalson Creek	RB-6.8	2.4	1.62	Coho, Chum
0098	Unnamed	RB-8.6	2.1	—	Unknown
	Terrell Lake (Res.)	Outlet-8.7	—	—	
0100	Unnamed	Sec19,T39N,R1E	1.0	—	Unknown
0101	Unnamed	Sec19,T39N,R1E	1.0	—	Unknown
0102	Drainage Ditch	Sec9,T38N,R1E	~ 2.0	—	Unknown
0103	Unnamed	Sec9,T38N,R1E	2.3	—	Unknown
0104	Lummi River	Sec15,T38N,R1E	5.25	—	Coho, Chum
0105	Unnamed Slough	Sec10,T38N,R1E	1.4	—	Unknown
0106	Slough & Ditch	LB-0.4	~ 4.0	—	Unknown
0107	Unnamed	RB-1.0	4.4	—	
0108	Drainage Ditch	LB-0.1	~ 1.0	—	
0109	Drainage Ditch	LB-0.6	~ 4.0	—	
0110	Unnamed	LB-3.1	2.5	—	Unknown
0111	Unnamed	RB-0.6	1.5	—	Unknown
0112	Unnamed	RB-3.4	1.8	—	Unknown
0113	Unnamed cont. as Drainage Ditch	@ mi. 1.8	~ 1.5	—	
0115	Unnamed cont. as Drainage Ditch	@ mi. 4.4	~ 1.9	—	
0116	Drainage Ditch	RB-3.15	~ 5.0	—	
0117	Drainage Ditch	RB-3.6	~ 1.8	—	
0118	Unnamed	Sec14,T38N,R1E	1.0	—	Unknown

LOWER NOOKSACK
Bellingham Area

This section covers the Nooksack River's lower 10 miles, northwest of Bellingham, plus two tributaries and many side sloughs and drainage ditches that add more than 100 miles of water course. Also included are a number of independent drainages to Bellingham Bay providing more than 200 additional stream miles. Principal access is via highways or county roads out of Bellingham. The lower portion of the main Nooksack drainage is within the Lummi Indian Reservation.

Stream Description

This area's terrain ranges from flat and broad river valley floor north and west of Bellingham to low rolling hills and low mountain topography around Lake Whatcom southeast of Bellingham. Land use is principally agriculture with scattered rural residences over the valley floor, while the hillsides contain increasing residential developments among the timbered sections. Bellingham is the largest town with considerable commercial and industrial activity. Ferndale is a major food processing center, while Marietta is the principal residential community on the Lummi Indian Reservation. The main Nooksack River tributaries are Tenmile and Silver creeks. Bellingham Bay's larger independent streams include Squalicum and Whatcom creeks.

The lower 10 miles of mainstem Nooksack winds southerly past Ferndale to Bellingham Bay. It maintains a generally shallow gradient with predominantly slow riffle and glide character and a few pools. The confined channel, downstream to the lower 1-2 miles, averages 35-45 yards in width during fall months with narrower, braided channels and delta configuration over the lower reaches near the mouth. Some relatively good pool-riffle stretches appear over a 2.5 mile stretch below Ferndale. The river's bottom is mainly rubble and gravel, with considerable sand deposits above R.M. 3, mostly small gravel and sand below. Much of the lower 3 miles is under tidal influence. The stream banks consist of sharp natural earth cuts or fairly steep-sloped dikes that are artificially contoured or riprapped. The confined river course meanders with exposed gravel-rubble side beaches. Stream bank cover consists of occasional thickets of deciduous trees and underbrush providing limited shade to the river.

Tenmile and Silver creek drainages flow over predominantly flatland terrain. Their narrowly confined channels possess slow glides and pools with only occasional riffle stretches. Their bottoms consist of fine material and some patch gravel areas. Stream-side cover is fair to good, consisting mainly of low-growing brush or overhanging grasses.

Squallicum Creek flows west and southwest from Squalicum Lake for nearly 10 miles to Bellingham Bay. It presents considerable area of good quality pool-riffle stream. The channel is fairly stable with winter widths ranging generally 3-7 yards over the lower reaches. The bottom is predominantly gravel and rubble. Cover ranges from moderate to dense over the upper 5-6 miles and generally sparse below, consisting mainly of deciduous trees and underbrush.

Whatcom Creek winds generally west some 4 miles from Lake Whatcom to Bellingham Bay. It contains a fairly steep gradient for the first two miles then shallowing somewhat over the lower reaches. Most of this lower area is a fast riffle stream with few pools and the bottom is mainly rubble and gravel with some boulder stretches. Above R.M. 2.0 increasing cascades and small falls are encountered and the bottom changes to rubble and boulder with some bedrock areas. Cover ranges from sparse to moderate growths of deciduous trees and underbrush.

Salmon Utilization

The lower mainstem Nooksack serves as the principal transportation reach for all salmon utilizing the upper drainage. Some chinook, chum, and pink spawning also occurs within this section, as well as juvenile salmon rearing. Squalicum Creek receives good numbers of adult coho, with some pink and chum utilization. Some chinook and coho use the lower reaches of Whatcom Creek.

Limiting Factors

Water quality problems occasionally occur in the lower mainstem Nooksack and in the estuary and shoreline areas of Bellingham Bay. Other limiting factors in the area include low summer flows, pumped irrigation, stream channelization, and stream-side development. These occur mainly in the tributaries.

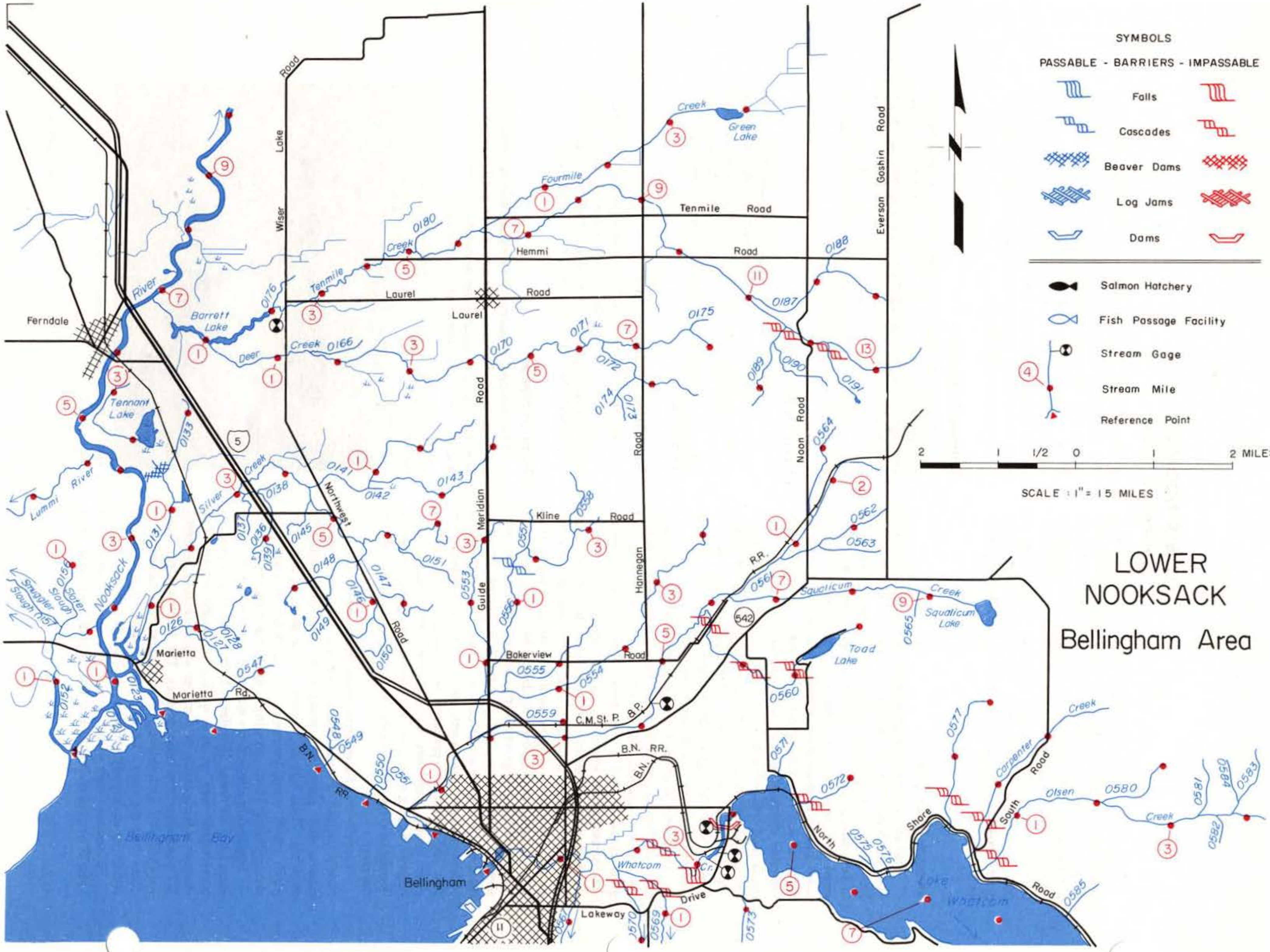
Beneficial Developments

Rearing impoundments for juvenile salmon have been incorporated as part of the Lummi Indian aquaculture program. No other projects or programs have been developed to specifically benefit salmon production in this area.

Habitat Needs

The principal requirement to sustain salmon production levels in this area is to maintain water quality standards. Stream cover and stream and streambed conditions should also be preserved in their near natural states.

PHOTO 01-6. Lower Nooksack River is mainly transportation and rearing water.


LOWER NOOKSACK
Bellingham Area
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
Ferndale
Marietta
Bellingham
Laurel
Bellingham Bay
Nooksack River
Lummi River
Barrett Lake
Tennant Lake
Deer Creek
Tenmile Creek
Fourmile Creek
Green Lake
Silver Creek
Smuggler Slough
Slater Slough
Squalicum Creek
Squalicum Lake
Toad Lake
Whatcom Cr.
Lake Whatcom
Carpenter Creek
Olsen Creek
Wiser Lake Road
Hemmi Road
Laurel Road
Tenmile Road
Everson Goshin Road
Noon Road
Meridian Road
Guide Meridian
Northwest Road
Kline Road
Hannegan Road
Bakerview Road
Marietta Rd.
Lakeway Drive
North Shore Road
South Road
B.N. RR.
C.M. St. P. & P.
R.R.
5
542
11

LOWER NOOKSACK—BELLINGHAM AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River	Sec19,T38N,R2E	80.2	826.0 [1]	Chin., Coho, Pink, Chum, Sockeye
0123	Unnamed Slough	LB-1.1	0.9	—	(Chin.), Coho, (Pink), Chum
0124	Silver Creek	LB-0.7	7.5	—	Coho,(Pink),Chum
0125	Drainage Ditch	RB-0.1	~ 1.0	—	Unknown
0126	Unnamed	LB-0.15	1.8	—	(Coho) (Chum)
	Unnamed Lake	Outlet-1.8	—	—	
0131	Unnamed	RB-1.65	3.2	—	(Coho) (Chum)
0132	Drainage Ditch	LB-1.05	~ 1.35	—	Unknown
0133	Unnamed	LB-1.3	1.1	—	Unknown
	Tennant Lake	Outlet-1.8	—	—	
0136	Unnamed	LB-3.0	1.5	—	Unknown
0140	Drainage Ditch	RB-3.8	~ 1.2	—	Unknown
0141	Unnamed	RB-4.45	2.9	—	Coho
0143	Unnamed	LB-0.9	2.1	—	Unknown
0146	Unnamed	LB-5.5	1.75	—	Unknown
0147	Unnamed	RB-0.3	1.6	—	Unknown
0148	Unnamed	LB-0.32	1.3	—	Unknown
	Unnamed Lake	Outlet-1.3	—	—	
0152	Unnamed Slough	Sec6,T38N,R2E	2.15	—	Unknown
0155	Drainage Ditch	RB-1.3	~ 8.0	—	Unknown
0156	Slater Slough	RB-1.65	1.0	—	Unknown
0157	Smuggler Slough	RB-0.05	1.8	—	Unknown
0160	Drainage Ditch	LB-0.65	~ 1.0	—	Unknown
0161	Drainage Ditch	LB-1.2	~ 1.0	—	Unknown
0163	Tenmile Creek	LB-6.9	13.6	—	Coho, Chum
	Barrett Lake	Outlet-0.4	—	—	
0165	Deer Creek	LB-1.1	8.0	—	Coho, Chum
0167	Drainage Ditch	LB-2.1	~ 1.5	—	(Coho)
0172	Unnamed	LB-6.5	1.6	—	Coho, (Chum)
0179	Drainage Ditch	RB-4.6	~ 1.5	—	(Coho)
0181	Fourmile Creek	RB-6.4	3.9	—	Coho, Chum
	Green Lake	Outlet-3.6	—	—	
0183	Fourmile Cr. cont. as Drainage Ditch	@ mi. 3.9	~ 3.2	—	Unknown
0184	Drainage Ditch	LB-6.8	~ 1.4	—	(Coho)
0185	Drainage Ditch	LB-7.0	~ 1.2	—	(Coho)

[1] *Includes that of Lummi River and 48.9 sq. miles in Canada.*

LOWER NOOKSACK—BELLINGHAM AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0186	Drainage Ditch	LB-9.9	~ 1.1	—	(Coho)
0187	Unnamed	RB-11.0	2.1	—	Coho
0189	Unnamed	LB-11.6	1.2	—	(Coho)
0192	Drainage Ditch	RB-7.8	~ 3.4	—	Unknown
0193	Drainage Ditch	LB-7.9	~ 2.1	—	Unknown
	(Cont. Nooksack 303)				
0547	Unnamed	Sec16,T38N,R2E	1.3	—	Unknown
0552	Squalicum Creek	Sec25,T38N,R2E	9.7	22.0	Coho, Chum
0553	Unnamed	RB-1.7	3.3	—	Coho, Chum
0554	Unnamed	LB-0.65	4.2	—	Coho
0555	Unnamed	RB-0.2	1.7	—	Coho
0556	Unnamed	LB-0.9	3.4	—	Coho
0559	Unnamed	RB-1.9	1.1	—	Unknown
0560	Unnamed	LB-5.8	3.0	—	Coho
	Toad Lake	Outlet-2.15	—	—	
0561	Unnamed	RB-6.3	2.9	—	Coho
0562	Unnamed	LB-0.8	1.4	—	Unknown
0564	Unnamed	RB-1.5	1.3	—	Unknown
	Squalicum Lake	Outlet-9.7	—	—	
0566	Whatcom Creek	Sec30,T38N,R3E	16.25	—	Coho, Chum
0567	Unnamed	LB-1.4	2.4	—	Coho
0568	Drainage Ditch	RB-1.45	~ 1.2	—	Unknown
0569	Unnamed	LB-1.75	2.7	—	Coho
0570	Unnamed	LB-0.2	1.4	—	Unknown
	Lake Whatcom	Outlet-3.8	—	—	
0572	Unnamed	RS-4.6	1.0	—	None
0573	Unnamed	LS-4.61	1.6	—	None
0577	Unnamed	RS-7.0	2.0	—	None
0578	Carpenter Creek	RS-7.3	2.8	—	None
0579	Olson Creek	RS-7.45	4.3	—	None
0580	Unnamed	RB-2.1	1.0	—	None
0586	Smith Creek	RS-9.6	3.5	—	None
0588	Unnamed	RB-0.7	1.6	—	None
0590	Unnamed	LB-1.65	1.4	—	None
0597	Austin Creek	LS-9.8	4.3	—	None
0598	Beaver Creek	LB-1.35	3.1	—	None
0599	Unnamed	RB-0.8	1.0	—	None
0600	Unnamed	LB-1.35	2.6	—	None

LOWER NOOKSACK—BELLINGHAM AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0603	Unnamed	RB-1.7	1.0	—	None
0605	Unnamed	LB-2.9	1.3	—	None
0610	Unnamed	RS-10.5	1.3	—	None
0612	Unnamed	RS-11.25	1.5	—	None
0613	Unnamed	LS-11.35	1.1	—	None
0616	Unnamed	LS-12.55	1.0	—	None
0617	Unnamed	RS-13.35	1.5	—	None
0618	Unnamed	RS-13.6	1.6	—	None
0619	Brannian Creek	LS-14.0	2.3	—	None
0621	Mirror Lake Creek	RS-14.2	2.3	—	None
	Whatcom Cr. cont. as Fir Creek	@ mi. 14.26	—	—	

NOOKSACK RIVER
Lynden Area

This section covers nearly 14 miles of mainstem Nooksack River north of Bellingham near Lynden in northwestern Whatcom County. Eight tributaries plus numerous drainage ditches add almost 100 linear miles of water course. Access is via the Guide Meridian Road or Hannegan Road.

Stream Description

From the vicinity of Everson the Nooksack winds its way northwest a little more than 5 miles to Lynden, then turns generally southwest for nearly 9 miles through the remainder of this section, to a point just below Wiser Lake Creek (R.M. 10.2). Other principal tributaries include Bertrand and Fishtrap creeks.

The valley floor is broad and flat throughout this reach. Adjacent land has been developed principally to agriculture, with numerous large dairy farms predominating. Scattered rural residences exist throughout the area, with the town of Lynden being the major community development.

The Nooksack contains a moderate gradient through most of this reach, with a few gentle gradient stretches over the lower 5-6 miles. Extensive channel splitting and braiding occurs over the upper 4-5 miles, while the river is generally confined to a single channel below Lynden. The predominantly riffle-glide river ranges from 15 to over 45 yards in width during the early fall months. The bottom is mainly gravel and rubble, with numerous areas having extensive sand deposits that increase over the lower 7-8 miles. Stream banks over the upper 5 miles are formed by broad, gently sloping gravel-rubble side beaches extending back to relatively low earth-cut slopes. Downstream from Lynden the stream banks are mostly low, fairly sharp, earth-cut slopes, with only a few relatively narrow gravel-rubble side beaches. Stream-side cover is sparse along the entire reach, consisting of occasional strips of thickets of deciduous trees and underbrush which afford only limited shade to the main river.

Most tributaries arise and flow over flatland terrain, and their narrowly confined channels produce mainly pool and glide stream character. Their bottoms are primarily sand and small gravel material with occasional gravel-rubble riffles. Stream-side cover is generally moderate, consisting of low-growing brush or overhanging grasses. The upper reaches of both Bertrand and Fishtrap creeks present considerable good quality pool-riffle stream character with stream bottoms of gravel and rubble and only occasional sand deposits. The banks are generally stable, low earth cuts or gently sloping gravel side beaches. Cover here is relatively dense, consisting of deciduous trees and underbrush.

Salmon Utilization

This Nooksack River section serves mainly as a transportation zone for all salmon species utilizing the upper drainage. Some spawning occurs within this reach, principally above Lynden, with a few chinook, pink, and chum using the increasing number of riffle areas. Coho, plus some chum and pink, utilize the tributaries entering along this stretch of river. Coho are the predominant species in Bertrand and Fishtrap creeks. Juvenile salmon rearing occurs throughout the accessible stream reaches, with coho having year-round habitation.

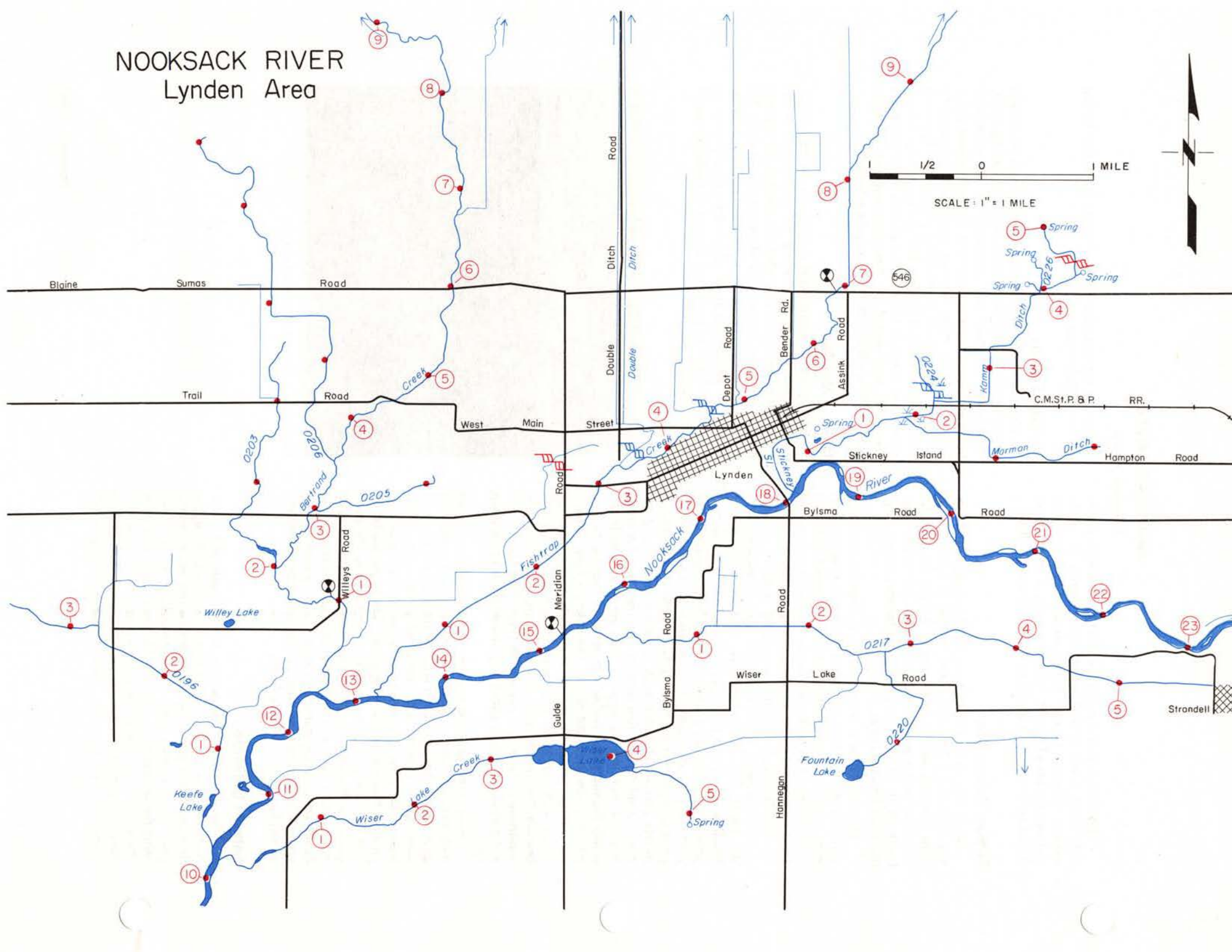
Limiting Factors

The principal factors tending to limit salmon production in this section include fairly extensive gravel mining operations within the river bed, channelization and subsequent constriction of the usable river area, and agricultural pollution. In addition, some tributary sections are impacted by extensive dredging and channelizing projects, and by stream-side residential developments that clear away the natural stream-side cover to beautify the stream. Some tributaries also suffer from natural low flow conditions that are compounded by water diversion or pumping activities.

Habitat Needs

The principal requirements to maintain the fish production potential of this area include the preservation of existing stream-side cover and, wherever possible, the replacement of cover that has been lost along tributary streams. No further degradation of natural stream and streambed conditions from gravel operations within the main river or its tributaries should be permitted. Sources of pollution should also be identified and controlled.

PHOTO 01-7. Fishtrap creek near Lynden.


NOOKSACK RIVER
Lynden Area
1/2
0
1 MILE
SCALE : 1" = 1 MILE
Blaine
Sumas
Road
Trail
Road
West
Main
Street
Double
Ditch
Double
Ditch
Depot
Road
Bender
Rd.
Assink
Road
546
Creek
Creek
0203
0206
Bertrand
0205
Road
Lynden
Stickney
Ditch
Stickney
Istand
Spring
Spring
Spring
Spring
0226
Ditch
Komm
0224
C.M.St.P. & P.
RR.
Mormon
Ditch
Hampton
Road
River
Bylsma
Road
Road
Nooksack
Fishtrap
Willeys
Road
Willey Lake
Meridian
Road
Bylsma
Road
Wiser
Lake
Road
0217
Strandell
0196
Gulde
Keefe
Lake
Wiser
Lake
Creek
Wiser
Lake
Spring
Hannegan
Fountain
Lake
0220

NOOKSACK RIVER—LYNDEN AREA
Nooksack Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Pink, Chum, Sockeye
0194	Wiser Lake Creek	LB-10.2	5.1	—	Coho
	Wiser Lake	Outlet-3.3			
0195	Drainage Ditch	RB-4.19	~ 1.7	—	(Coho)
0196	Unnamed	RB-10.3	3.5	—	(Coho)
	Keefe Lake	Outlet-0.3	—	—	
0199	Drainage Ditch	LB-2.75	~ 1.8	—	Unknown
0200	Drainage Ditch	LB-11.1	~ 2.0	—	Unknown
0201	Bertrand Creek	RB-12.6	9.8 [1]	42.5 [2]	Coho,(Pink),Chum
0202	Drainage Ditch	LB-0.6	~ 4.8	—	Unknown
0203	Unnamed	RB-2.0	2.5	—	(Coho)
	Unnamed Lake	Outlet-0.1	—	—	
0204	Drainage Ditch	RB-2.1	~ 1.5	—	Unknown
0205	Unnamed	LB-3.0	1.2	—	(Coho)
0206	Unnamed	RB-3.6	4.1	—	Coho
0207	Drainage Ditch	LB-6.7	~		Unknown
0208	Unnamed	RB-9.65	1.4	—	Unknown
0210	Fishtrap Creek	RB-13.2	10.1 [1]	36.8 [3]	Coho, Chum
0211	Double Ditch Drain	RB-3.4	~10.5 [1]	—	(Coho)
0212	Drainage Ditch	RB-4.6	~ 2.5	—	(Coho)
0213	Drainage Ditch	RB-4.91	~ 4.3 [1]	4.03 [4]	(Coho)
0214	Drainage Ditch	RB-5.71	~ 4.0	—	(Coho)
0215	Drainage Ditch	RB-8.1	~ 1.8	—	Unknown
0216	Drainage Ditch	LB-14.7	~ 1.1	—	Unknown
0217	Unnamed	LB-15.5	5.8	—	Unknown
0218	Drainage Ditch	RB-1.2	~ 1.2	—	Unknown
0219	Drainage Ditch	LB-2.5	~ 1.0	—	Unknown
0220	Unnamed	LB-2.75	1.4	—	Unknown
0221	Drainage Ditch	LB-0.9	~ 1.6	—	Unknown
	Fountain Lake	Outlet-1.4	—	—	
0222	Stickney Slough	RB-18.1	5.0	8.01	Unknown
0223	Mormon Ditch	LB-1.9	2.0	—	Unknown
	Stickney Sl. cont. as Kamm Ditch	@ mi. 2.21	—	—	
	(Cont. Nooksack 403)				

[1] *Does not include portion of stream in Canada.*
[2] *Includes 22.3 square miles in Canada.*
[3] *Includes 21.6 square miles in Canada.*
[4] *Includes 0.96 square miles in Canada.*

NOOKSACK RIVER
Deming Area

This section covers 13 miles of mainstem Nooksack River from the Everson vicinity upstream to the South Fork Nooksack confluence southeast of Deming. Five tributaries entering this stretch provide over 40 linear stream miles of drainage. Access is via the Mt. Baker Highway and by Highway 9 out of Everson.

Stream Description

From the South Fork confluence (R.M. 36.6) the Nooksack winds its way northwest past Deming for approximately 13 miles to the vicinity of Everson. The principal tributaries entering this reach are Smith Creek (R.M. 29.3) and Anderson Creek (R.M. 28.2).

The valley floor is quite narrow at the South Fork confluence, becoming increasingly wider below. Downstream from the Mt. Baker Highway (R.M. 30.9) the valley becomes very broad and flat. Bottomland along the reach is mostly cleared with occasional strips or thickets of mainly deciduous trees and underbrush. The steeper side slopes, away from the valley, are thickly forested with mixed conifer and deciduous trees. Most of the lowlands are developed to agriculture with considerable logging on the upper slopes. Scattered rural and limited residential development predominates around the small communities of Deming, Everson, Strandell, Lawrence, and Goshen. Some land area, with few dwellings, in the Deming vicinity is under Nooksack Indian tribal jurisdiction. Considerable recreation activity occurs along this entire stretch of Nooksack River.

Over the upper 6 miles the relatively confined Nooksack channel exhibits a mostly moderate gradient offering mainly pool-riffle stream character with a few rapid stretches. During the early fall, stream widths range generally from 15 to over 35 yards. The relatively stable streambed contains predominantly rubble material, with a number of gravel-rubble riffles and a few boulder-strewn sections. The stream banks along this upper section from high steep clay bank faces to relatively low sharp earth cuts, with a number of fairly broad, gently sloping rubble-boulder side beaches. Strips or thickets of deciduous trees and underbrush provide moderately dense stream-side cover.

Over the lower 7-8 miles of this section the channel becomes less stable or confined, providing numerous channel splits and braiding. The gradient remains mostly moderate and the stream exhibits mainly fast riffle character over the floodway. Channel widths during the fall months would range from 10 to well over 40 yards. Although the bottom along this lower stretch is predominantly rubble and gravel, a number of more gentle gradient pool-glide stretches hold considerable sand deposits. Stream banks are generally long, broad rubble-gravel beaches sloping gently back to the low earth cut banks. Cover is generally sparse consisting of strips or thickets of deciduous trees and underbrush, providing little shade to the main river.

Anderson and Smith creeks contain considerable shallow to moderate gradient stream course with their relatively narrow channels exhibiting good pool-riffle conditions. Their bottoms are predominantly gravel with some mixed gravel-rubble stretches, and considerable sandy areas along their lower reaches. Cover is sparse along lower stretches and moderate to dense over the upper drainage. Other smaller tributaries are mostly steep gradient streams offering only limited access with intermittent flow patterns.

Salmon Utilization

This Nooksack River segment provides transportation, spawning, and rearing habitat for chinook, coho, pink, and chum. Coho are principally tributary spawners, while other species use the main river. Juveniles of each species rear for a period of time within the immediate waters while coho have year-round habitation.

Limiting Factors

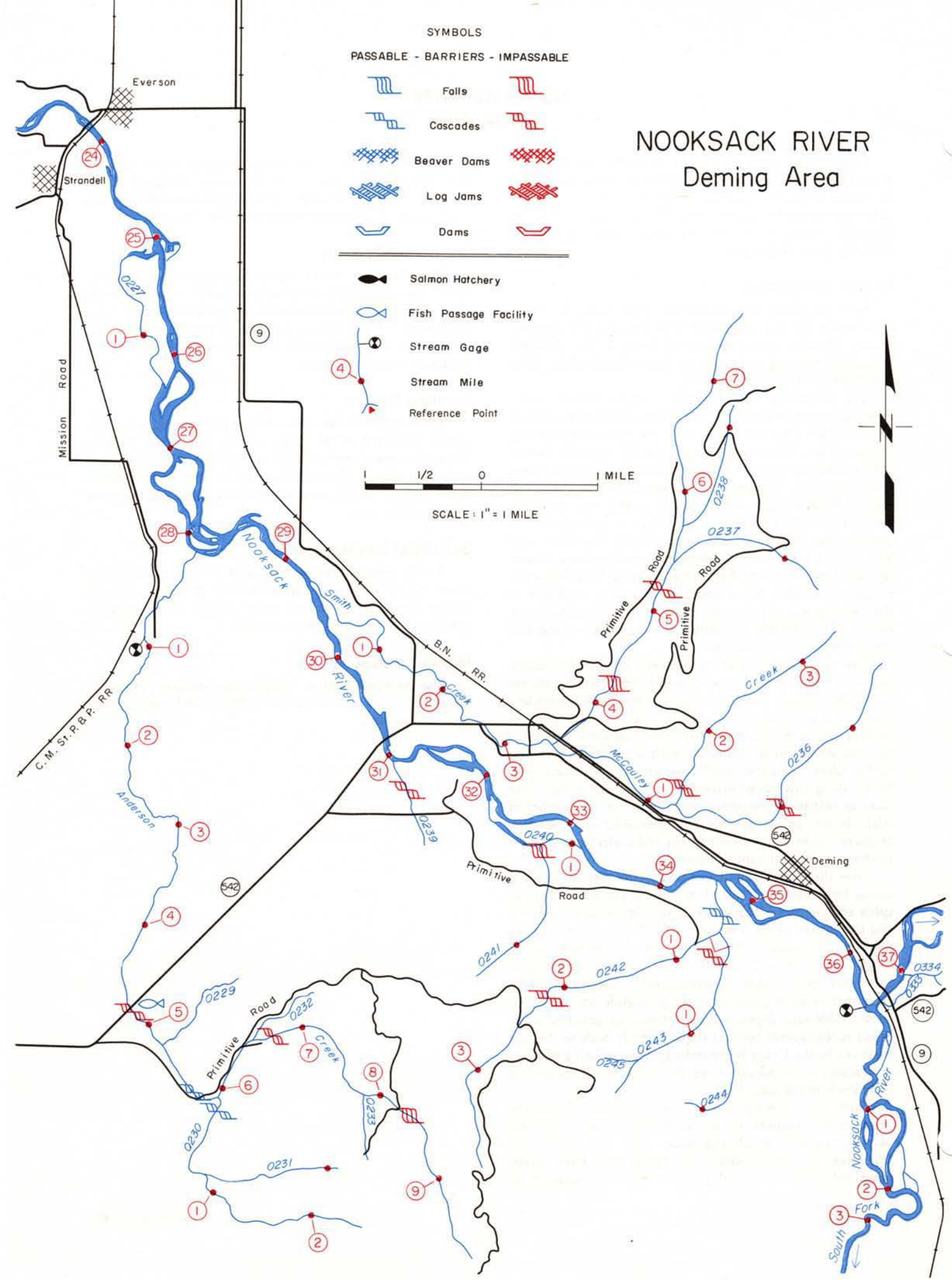
Some degree of natural limitation is imposed by the cold glacial character of the river, and by streambed shifting. Streambed gravel removal has also disturbed or eliminated spawning habitat. On the tributaries, the removal of stream-side cover, channelization, and encroachment are the principal problem areas.

Beneficial Developments

A fish passage facility has been placed in Anderson Creek at R.M. 4.8 to ensure utilization of upper drainage waters. There have been no other projects or programs to specifically benefit salmon production.

Habitat Needs

The principal habitat requirements include preserving stream-side cover and maintaining streambed conditions in their natural state.


NOOKSACK RIVER
Deming Area
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
Everson
Strandell
Mission Road
C. M. St. P. & P. RR
B.N. RR.
Nooksack River
Smith Creek
Anderson Creek
McCoulley Creek
Primitive Road
Deming
South Fork
0221
0229
0230
0231
0232
0233
0236
0237
0238
0239
0240
0241
0242
0243
0244
0245
0333
0334
542
9

NOOKSACK RIVER—DEMMING AREA
Nooksack Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Pink Chum, Sockeye
0227	Unnamed Side Channel	LB-25.1	1.5	—	(Coho) (Chum)
0228	Anderson Creek	LB-28.2	9.8	—	Coho, Chum
0230	Unnamed	LB-5.95	2.4	—	Coho
0231	Unnamed	RB-0.8	1.0	—	Unknown
0234	Smith Creek	RB-29.3	7.7	—	Coho, Chum
0235	McCauley Creek	LB-3.5	3.4	—	Coho, Chum
0236	Unnamed	LB-1.3	2.6	—	Coho
0237	Unnamed	LB-5.4	1.4	—	None
0238	Unnamed	LB-5.7	1.2	—	None
0240	Unnamed Side Channel	LB-32.25	1.1	—	(Coho), (Chum)
0241	Unnamed	LB-0.7	1.4	—	Unknown
0242	Unnamed	LB-34.6	3.9	—	Coho
0243	Unnamed	RB-0.45	1.8	—	None
0244	Unnamed	RB-0.7	1.2	—	None
0246	So. Fk. Nooksack River	LB-36.6	39.6	—	Chinook, Coho, Pink, Chum

(See Nooksack 503)

(Cont. Nooksack 403)

SOUTH FORK NOOKSACK
Deming Area

This section covers the lower 13 miles of South Fork Nooksack River plus 16 tributaries that enter this reach adding nearly 60 linear stream miles. The area is located about 15 miles east of Bellingham in west-central Whatcom County. Access is via the Mt. Baker Highway and the Valley Highway between Deming and Wickersham.

Stream Description

From Saxon Road bridge northeast of Wickersham the South Fork winds northwest 6 miles to just below the small community of Acme, then north about 7 miles to its confluence with the mainstem Nooksack (R.M. 36.6). Principal tributaries include Saxon, Hutchinson, Jones, McCarty and Black Slough creeks.

The river valley is quite narrow at the Saxon Bridge; however, it opens abruptly into relatively broad, flat bottomland downstream with the sidehills rising sharply from the valley floor. Steeper mountain side slopes moderate considerably moving down the valley, maintaining mostly dense conifer forest with increasing mixed deciduous timber and underbrush at lower elevations. The valley floor is cleared and developed mostly to agriculture, with scattered rural residences and the small communities of Saxon, Acme, Clipper, and VanZandt. Some land along the lower river is under Nooksack Indian tribal jurisdiction. Logging is evident along the adjacent hillsides. The area supports light to moderate recreation activity, principally hunting and fishing.

Over the upper 5 miles of this stretch the river exhibits a moderate gradient character, with the confined channel producing good to excellent pool-riffle stream character. Fall stream widths range generally from 15 to 25 yards. The bottom is predominantly mixed rubble and gravel with a few scattered boulder sections. Banks are mostly stable, moderately high, natural earth cuts with a number of narrow, gently sloping rubble side beaches. Stream-side cover along this stretch consists of moderately dense deciduous strips or small stands of conifer timber.

The South Fork's lower 8 miles contain alternating moderate and gentle gradient conditions. The stable channel broadens considerably through this stretch, producing a meandering stream course with occasional broad channel splitting. Fall stream widths range from 20 to nearly 40 yards. A good to excellent pool-riffle balance prevails over most of this stretch; however, pools and lengthy glides predominate in the gentle gradient sections. The bottom is predominantly gravel and rubble with extensive long and broad gravel riffles. Banks are mostly low natural earth cuts or broad, gently sloping gravel-rubble side beaches. Stream-side cover is sparse, consisting of occasional strips or small thickets of deciduous trees and underbrush, separated by cleared farmland.

Hutchinson Creek, the largest tributary in this reach, exhibits moderate gradient over much of its length. Except for a steeper cascade stretch below R.M. 2.0, it offers good to excellent pool-riffle conditions nearly to its headwaters. The bottom is predominantly gravel with occasional rubble stretches. It has dense deciduous trees and underbrush along its banks that provide excellent cover. Other smaller tributaries provide short stretches of moderate gradient along their lower reaches. Their upper drainages are over steep mountain terrain where numerous cascades, rapids and large rock bottom materials are prevalent.

Salmon Utilization

This river section provides transportation, spawning, and rearing habitat, and is utilized by chinook, pink, chum, and coho. Coho spawn principally in the accessible tributaries along with some pink and chum. These species also utilize sections of the mainstem river. The upper 5 miles of this stretch receives the most intense spawning use, particularly by chinook. Rearing occurs throughout the accessible waters, with coho and some spring chinook having year around habitation.

Limiting Factors

The principal factors affecting salmon production include stream bank clearing and channel alterations along the tributaries, and gravel removal from the mainstem river. A relatively intense Indian gill net fishery near the mouth also impacts some spawning populations. Low stream flows, particularly in the tributaries, often present additional limitations.

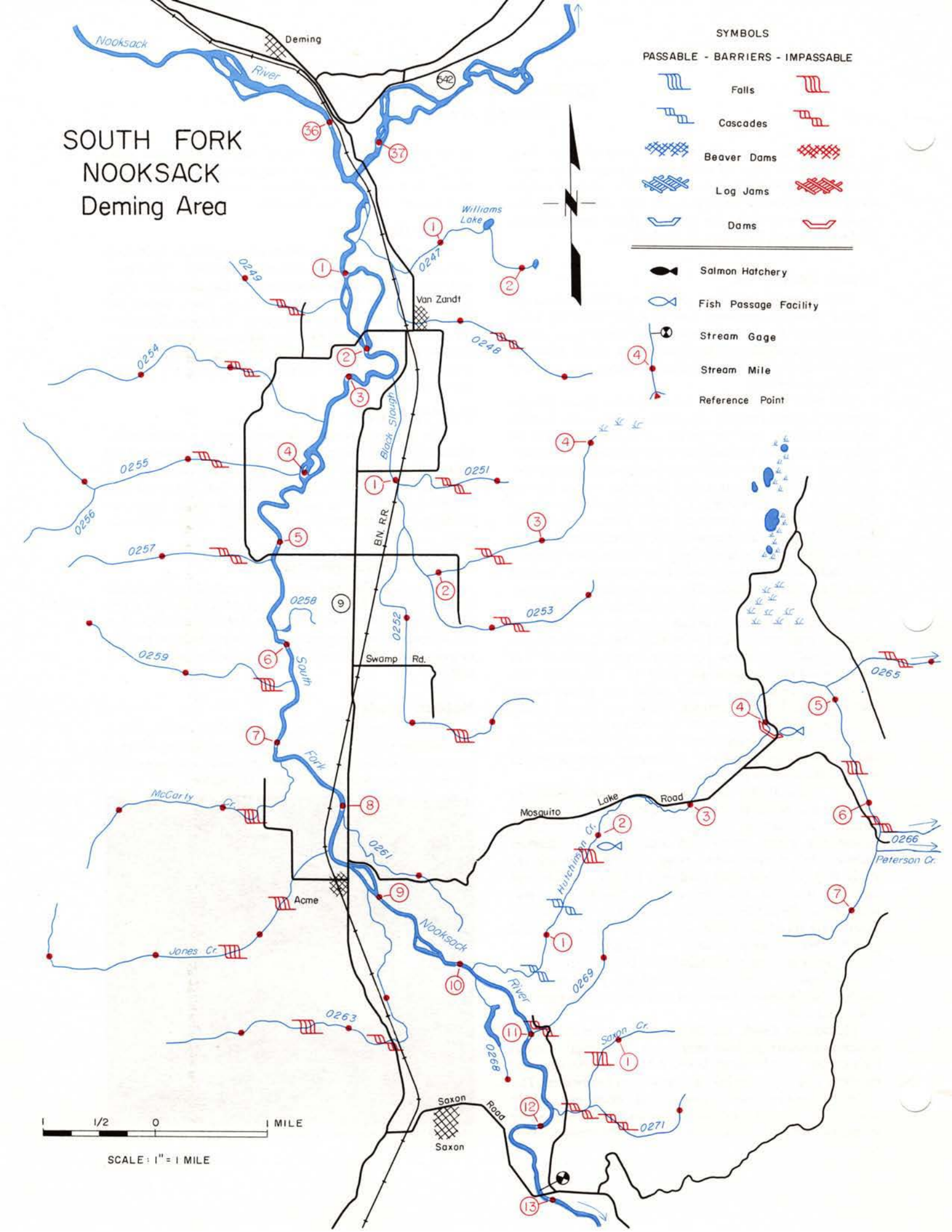
Beneficial Developments

Fish passage facilities have been installed in the cascade section of lower Hutchinson Creek (R.M. 1.9), as well as at a small private dam upstream (R.M. 3.9). Other than occasional juvenile salmon plantings there have been no projects or programs designed specifically to benefit salmon production.

Habitat Needs

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

PHOTO 01-8. Hutchinson Creek falls.


SOUTH FORK
NOOKSACK
Deming Area
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
Nooksack River
Deming
542
Williams Lake
Van Zandt
Black Slough
B.N. RR
Swamp Rd.
South Fork
McCarty Cr.
Acme
Jones Cr.
Nooksack River
Saxon
Saxon Road
Mosquito Lake Road
Hutchinson Cr.
Peterson Cr.
Saxon Cr.
0247
0248
0249
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0255
0256
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0271
1 1/2 0 1 MILE
SCALE: 1" = 1 MILE

SOUTH FORK NOOKSACK—DEMMING AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Pink Chum, Sockeye
0246	So. Fk. Nooksack River	LB-36.6	39.6	—	Chin., Coho, Pink, Chum
0247	Unnamed	RB-0.65	2.15	—	Coho, Chum
0248	Unnamed	LB-0.41	2.4	—	Unknown
	Williams Lake	Outlet-1.4	—	—	
	Unnamed Lake	Outlet-2.15	—	—	
0249	Unnamed	LB-1.4	1.2	—	(Coho)
0250	Black Slough	RB-2.5	4.1	—	Coho, Chum
0251	Unnamed	RB-1.01	1.1	—	(Coho)
0252	Unnamed	LB-1.4	3.5	—	Coho, (Chum)
0253	Unnamed	LB-1.9	2.2	—	Coho, (Chum)
0254	Unnamed	LB-3.5	2.9	—	Coho, Chum
0255	Unnamed	LB-4.0	2.7	—	Coho
0257	Unnamed	LB-5.2	1.8	—	Coho
0259	Unnamed	LB-6.3	2.0	—	Coho
0260	McCarty Creek	LB-7.2	2.6	—	Coho, Chum
0261	Unnamed	RB-8.1	1.7	—	Coho, Chum
0262	Jones Creek	LB-8.4	3.5	—	Coho, Chum
0263	Unnamed	LB-8.9	3.6	—	Coho, Chum
0264	Hutchinson Creek	RB-10.1	7.6	14.8	Chin., Coho, Pink, Chum
0265	Unnamed	RB-4.9	2.9	—	Coho
0266	Unnamed	RB-6.35	2.2	—	None
0267	Peterson Creek	RB-6.45	2.4	—	None
0268	Unnamed	LB-10.2	1.0	—	(Coho)
0269	Unnamed	RB-11.0	1.9	—	Coho, Chum
0270	Saxon Creek	RB-11.8	1.5	—	Coho, Chum
0271	Unnamed	LB-0.3	1.1	—	None
	(Cont. Nooksack 603)				

SOUTH FORK NOOKSACK
Saxon Area

This section covers the 12 miles of middle South Fork Nooksack drainage from the Saxon Road bridge crossing, northeast of Wickersham in southwest Whatcom County, upstream to above a private logging road crossing northeast of Lyman Pass in northwest Skagit County. Sixteen tributaries enter along this stretch adding more than 69 linear stream miles. Access is via the Deming-Wickersham Highway, or private logging roads over Lyman Pass. Most of the area is private land with only the headwaters of Skookum Creek within National Forest.

Stream Description

From approximately R.M. 25.0 the South Fork flows generally west for 3 miles, then northwest 9 miles to the Saxon Road bridge. Principal tributaries include Roaring, Cavanaugh, and Skookum creeks.

The South Fork cuts through a very narrow valley throughout this reach with only occasional slightly broader, terraced sections. Sharply rising side slopes prevail with occasional ravine-canyon stretches. The valley floor maintains relatively dense deciduous and mixed coniferous cover, giving way to thick conifer forest over the steeper sidehills. Extensive logging has occurred over much of this area, with various stages of reforestation evident. Principal activities are timber harvest and recreation, with some limited agricultural development along the lowermost reaches.

Over the upper 4 miles the river has a moderately steep gradient with the narrowly confined channel revealing mostly fast riffle character, a number of rapids, and few cascades and falls. The largest falls is located at approximately R.M. 25.0, where a 20-50 foot drop occurs within a narrow canyon. Fall stream widths along this upper stretch range from about 10 to 20 yards. The bottom is comprised mainly of boulder and rubble material with occasional gravel-riffle and patch gravel strips. Banks are mainly sharp-sloped earth or rock cuts. A few narrow, moderately-sloped, boulder-rubble side beaches occur here. Stream-side cover is moderate to dense with deciduous trees and underbrush, and some mixed conifer timber.

Through the lower 8 miles the river contains a moderate gradient with only a few slightly steeper sections. The channel remains confined with a few channel split stretches occurring during higher water periods when overflow chjnnels receive flow. There are relatively good pool-riffle conditions along this lower stretch with only a few rapid areas and a number of long, slower moving glides. The bottom is largely rubble and gravel with a few boulder-strewn sections. The banks are mostly steep-sloped earth or rock cuts progressively broadening downstream with more gently sloped rubble side beaches. Stream-side cover remains moderate to dense deciduous trees and underbrush with some mixed conifer timber which provides good to excellent shade.

All tributaries along this reach exhibit steep mountain characteristics with numerous cascades and falls and predominantly large rock bottom material. Their channels are narrowly confined and the banks maintain mixed dense deciduous and conifer cover. Generally the larger tributaries offer some short, moderate gradient sections immediately above their confluence with the South Fork. Here they contain fair to good pool-riffle conditions and their bottoms are comprised mainly of rubble and gravel materials.

Salmon Utilization

This stretch of South Fork provides transportation, spawning, and rearing habitat for chinook, coho, pink, and some chum. It is the principal spawning area for spring chinook within this system. Heaviest spawning concentrations are found below R.M. 21. Juvenile salmon rear throughout these accessible waters, with coho and spring chinook having year around habitation.

Limiting Factors

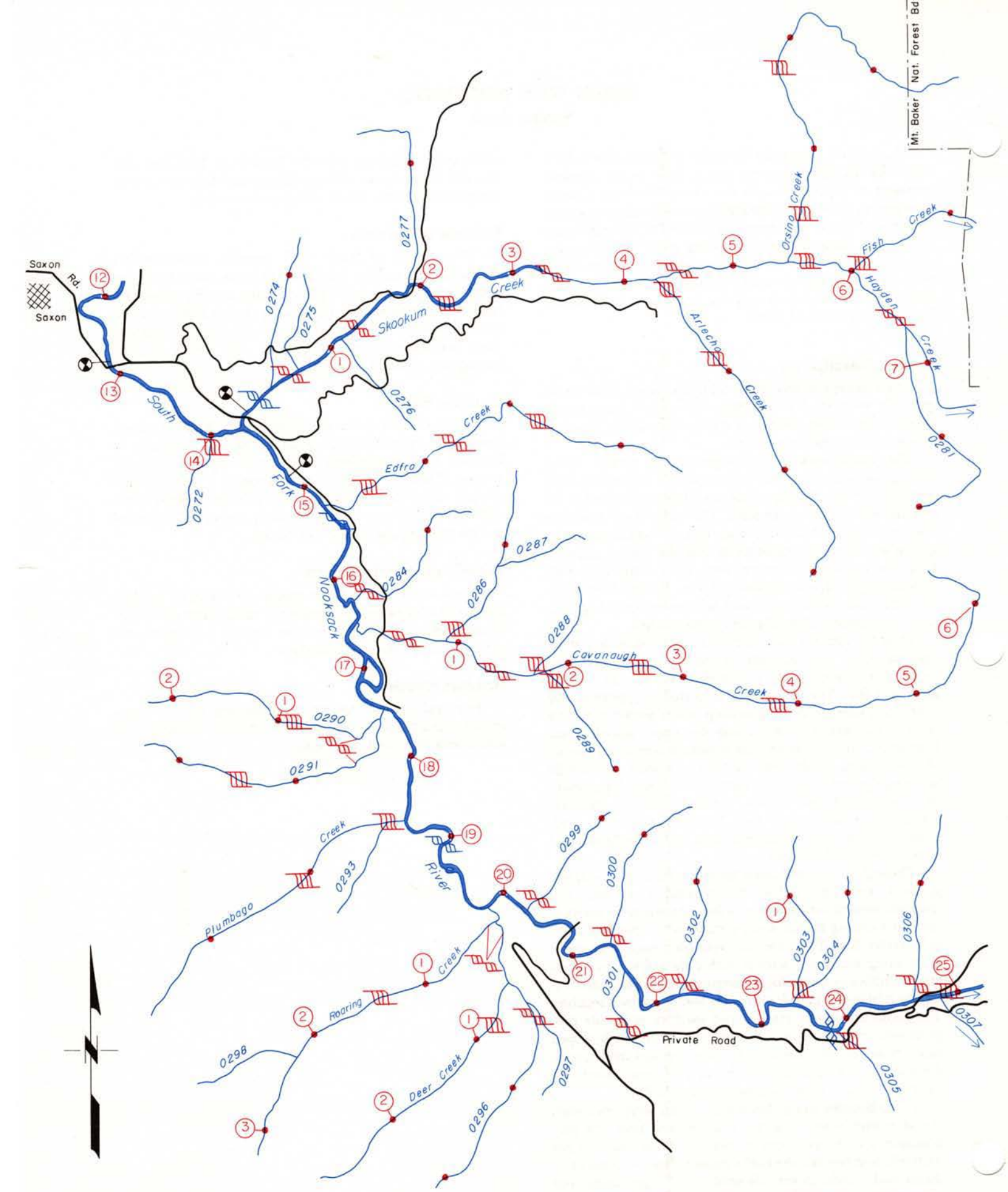
A falls-cascade series at approximately R.M. 25 terminates adult salmon access. Another natural limitation is imposed by the relatively short access up the tributary streams. Poaching of salmon is occasionally a problem, particularly along the upper sections of this reach. Some tributary watersheds have been extensively logged, contributing to flash flooding and siltation problems.

Beneficial Developments

The Lummi Indian Tribe operates an artificial production facility for salmon at Skookum Creek. Other than occasional salmon plantings there have been no projects or programs to benefit salmon production.

Habitat Needs

Principal salmon habitat requirements include preserving stream-side cover and maintaining streams and streambeds in natural conditions.



SOUTH FORK NOOKSACK
Saxon Area

SOUTH FORK NOOKSACK—SAXON AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				
0246	So. Fk. Nooksack River				Chin., Coho, Pink, Chum
0273	Skookum Creek	RB-14.3	9.1	—	Chin., Coho, Pink, Chum
0274	Unnamed	RB-0.4	1.3	—	None
0277	Unnamed	RB-1.9	1.6	—	None
0278	Arlecho Creek	LB-4.3	3.0	—	None
0279	Orsino Creek	RB-5.45	3.8	—	None
0280	Fish Creek	RB-6.0	1.5	—	None
	Skookum Cr. cont. as Hayden Cr.	@ mi. 6.01	—	—	
0281	Unnamed	LB-6.6	2.0	—	None
0283	Edfro Creek	RB-15.2	3.5	—	Coho,(Pink),Chum
0284	Unnamed	RB-16.3	1.5	—	Coho,(Pink),Chum
0285	Cavanaugh Creek	RB-16.5	6.6	—	Coho, Pink, Chum
0286	Unnamed	RB-0.85	1.6	—	None
0289	Unnamed	LB-1.8	1.0	—	None
0290	Unnamed	LB-17.5	2.2	—	Coho,Pink,(Chum)
0291	Unnamed	RB-0.1	2.3	—	Unknown
0292	Plumbago Creek	LB-18.5	2.8	—	Coho, Pink
0294	Roaring Creek	LB-19.8	3.2	—	Chin., Coho, Pink
0295	Deer Creek	RB-0.2	2.9	—	Chin., Coho, Pink
0296	Unnamed	RB-0.6	2.1	—	Unknown
0299	Unnamed	RB-20.3	1.1	—	(Coho)
0300	Unnamed	RB-21.3	1.4	—	(Coho)
0302	Unnamed	RB-22.2	1.1	—	(Coho)
0303	Unnamed	RB-23.4	1.5	—	(Coho)
0304	Unnamed	LB-0.1	1.1	—	None
0306	Unnamed	RB-24.69	1.6	—	(Coho)
	(Cont. Nooksack 703)				

SOUTH FORK NOOKSACK
Headwaters

This section covers the upper 14.6 miles of the South Fork Nooksack River drainage plus 18 tributaries that enter this reach, adding about 45 linear stream miles. The area is located north of the Skagit County town of Hamilton, with headwaters in southern Whatcom County. Access is via private logging roads north out of the town of Lyman. The river and tributaries above R.M. 33.0 are within national forest boundary.

Stream Description

From the eastern snowfield slopes of the Twin Sisters mountain range the South Fork curves generally south then southwest for nearly 15 miles. Principal tributaries include Bell, Wanlick, and Howard creeks.

The river's upper 2 miles fall over steep mountain terrain, through a generally shallow valley maintaining relatively sparse alpine cover. The valley deepens below and remains quite narrow with steep mountain side slopes rising sharply away from the bottomland. The river's terraced benches contain moderate to dense stands of deciduous trees and underbrush with considerable mixed coniferous timber. On the steeper hillside slopes, away from the river, there is mostly conifer, with extensive logged-off areas in various stages of reforestation. There is virtually no development within this remote area where the principal land uses are logging, limited mining, and recreation.

Over the upper 2 miles the South Fork gradient is predominantly steep with the narrow channel exhibiting numerous cascades and falls. The bottom is primarily of large rock material. Stream-side cover is sparse, low growing conifers.

Below R.M. 37.3 the river gradient begins to decrease, containing alternately moderate to moderately steep conditions which continue downstream for nearly 8 miles. The largely confined channel presents very good pool-riffle character along a number of stretches. Below Wanlick Creek (R.M. 34.1) the stream ranges 7-15 yards in width during fall months. The bottom is predominantly rubble with a number of relatively good gravel-rubble riffles with some scattered boulder sections. Banks are mostly low earth or rock cuts and a few narrow, gently sloped rubble side beaches. Cover is moderate to dense coniferous timber and mixed deciduous trees.

Over the lower 5 miles of this reach the river's gradient again increases, becoming a moderately steep stream course. The channel is strictly confined, ranging from about 8 to 14 yards in width. It contains fast riffles and rapids with numerous cascades and falls to more than 6 feet. One large cascade-falls is located at the lower end of this reach, dropping the river 20-25 feet in a very short distance. The bottom is predominantly large rock, boulder, and rubble with only a few patch gravel areas. Stream banks are fairly high, sharp sloping earth or rock cuts, with practically no beach area. Cover ranges from sparse to moderate and is comprised of low growing conifers and patches of deciduous trees and underbrush.

The smaller tributaries entering this reach exhibit steep mountain stream character over most of their length. They are comprised of cascades and falls with substrate of large rock material. Wanlick Creek offers a little less than a mile of moderate gradient stream course where relatively good pool-riffle conditions exist. Its bottom contains gravel and rubble. The upper reaches exhibit steep mountain stream character. Most tributajies have moderate to dense cover, mainly coniferous timber.

Salmon Utilization

There is no natural salmon utilization within this reach. Juvenile chinook and coho salmon are occasionally planted into the upper watershed to make use of its rearing potential.

Limiting Factors

Salmon are prevented from ascending to this area by a sharp cascade-falls located at about R.M. 25.0. Steep gradient conditions over the reach's lower 5 miles could impose additional transportation problems. Steep gradient tributaries further limit potential salmon use of the areas. Extensive logging along some stretches has eliminated stream-side cover.

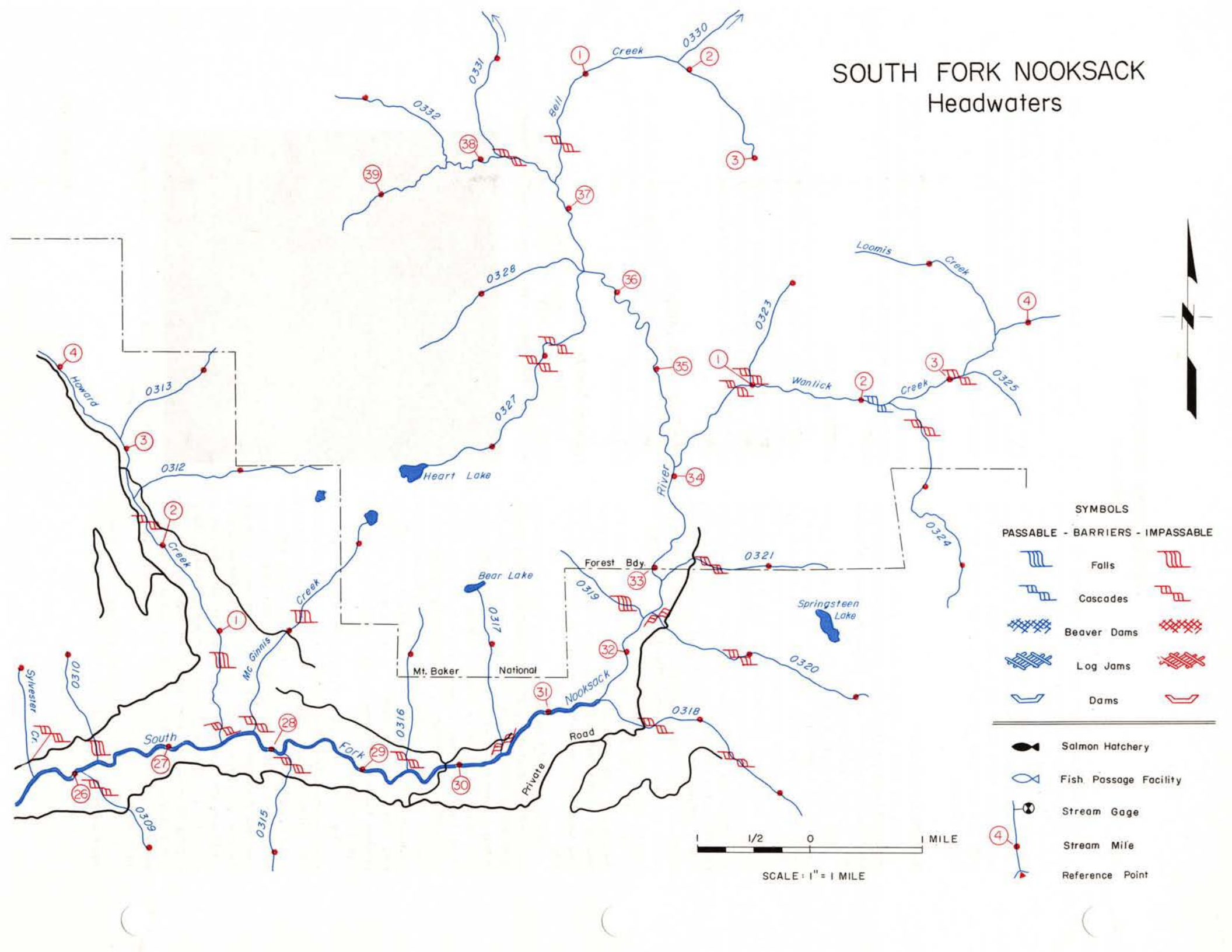
Beneficial Developments

Other than juvenile salmon plantings there have been no projects or programs to specifically benefit salmon production in this reach.

Habitat Needs

Principal salmon habitat requirements include preserving stream-side cover and maintaining stream and streambed conditions in as near a natural state as possible.

PHOTO 01-9. South Fork Nooksack River, downstream from Scott Paper Company bridge.


SOUTH FORK NOOKSACK
Headwaters
0331
0330
Bell Creek
0332
38
39
37
0328
36
0323
Loomis Creek
4
35
1
Wanlick
2
Creek
3
0325
0327
Heart Lake
River
34
4
Howard
0313
3
0312
2
Creek
Forest Bdy.
33
0321
0324
Bear Lake
0319
Springsteen Lake
Creek
1
Mc Ginnis
0317
32
0320
Mt. Baker National
Nooksack
31
0318
Sylvester Cr.
0310
South
Fork
28
29
0316
27
30
Road
Private
26
0309
0315
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point
1/2
0
1 MILE
SCALE: 1" = 1 MILE

SOUTH FORK NOOKSACK—HEADWATERS
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				
0246	So. Fk. Nooksack River				Artificial Chinook, Coho
0308	Sylvester Creek	RB-25.6	1.0	—	None
0309	Unnamed	LB-26.1	1.0	—	None
0310	Unnamed	RB-26.3	1.1	—	None
0311	Howard Creek	RB-27.5	4.2	7.62	None
0312	Unnamed	LB-2.5	1.7	—	None
0313	Unnamed	LB-3.1	1.2	—	None
0314	McGinnis Creek	RB-27.8	2.3	—	None
0315	Unnamed	LB-28.1	1.1	—	None
0316	Unnamed	RB-29.5	1.5	—	None
0317	Unnamed	RB-30.4	1.5	—	None
	Bear Lake	Outlet-1.5	—	—	
0318	Unnamed	LB-31.5	2.3	—	None
0320	Unnamed	LB-32.5	2.1	—	None
0321	Unnamed	LB-32.85	1.5	—	None
0322	Wanlick Creek	LB-34.1	4.3	9.81	Artificial Chin., Coho
0323	Unnamed	RB-1.0	1.0	—	None
0324	Unnamed	LB-2.3	2.4	—	None
0326	Loomis Creek	RB-3.7	1.6	—	None
0327	Unnamed	RB-36.4	2.6	—	None
	Heart Lake	Outlet-2.6	—	—	
0328	Unnamed	RB-36.41	1.7	—	None
0329	Bell Creek	LB-37.3	3.0	—	None
0330	Unnamed	RB-1.9	1.2	—	None
0331	Unnamed	LB-37.8	1.75	—	None
	Lake Doreen	Outlet-1.6	—	—	
	Elbow Lake	Outlet-1.75	—	—	
0332	Unnamed	LB-38.3	1.2	—	None

NOOKSACK RIVER
Maple Falls Area

This section covers nearly 13 miles of mainstem North Fork Nooksack River, from the South Fork's confluence southeast of Deming, upstream to the Maple Falls vicinity. Ten tributaries enter along this stretch, adding more than 53 linear stream miles. The area is located about 15 miles northeast of Bellingham in central Whatcom County. Access is via the Mt. Baker Highway, paralleling the river northwest of Deming.

Stream Description

From just below Maple Creek, the Nooksack winds southwest about 4 miles to Kendall Creek (R.M. 45.9), and south more than 5 miles to the Middle Fork (R.M. 40.5), then southwest again about 4 miles to the South Fork (R.M. 36.6). In addition to the streams named, other principal tributaries include Coal, Rajors, Kenny, and Bells creeks.

Over the reach's upper 6 miles the valley floor remains quite narrow, constricting considerably between R.M. 43.3 to 44.4. Below this it begins to broaden and flatten with increasing cleared land downstream to the lower 1-2 miles, where the valley narrows once again. The bottomland holds mixed deciduous and conifer cover, which gives way to thick coniferous forest over the sharply rising mountain-side slopes. Surrounding land use is principally forestry with some limited agriculture development. There are scattered rural residences and the small communities of Maple Falls, Kendall, and Deming. Increased recreational home developments are occurring along some stretches of the river. Extensive clear-cut logging is evident over some of the higher slopes, with various stages of reforestation occurring.

The Nooksack contains a moderate to moderately steep gradient over the reach's upper 8-9 miles, with mostly moderate gradient conditions along the lower 4-5 miles. Much of the channel has unstable conditions contributing to numerous channel splits and braiding. Some lengthy side channels tend to increase the total amount of available stream area. The river is predominantly a fast riffle type stream through this stretch, with few rapids and cascades and a limited number of pools or glides. Stream widths during fall months range from 12 to over 30 yards. The stream bottom is predominantly rubble and gravel; however, there are a number of large rock and boulder stretches, particularly between R.M. 43.0 and 45.0. There are a few broad rubble-gravel riffles, mainly along the lower 4-5 miles. Suitable spawning material exists only as patches or strips within larger rock streambed areas. Stream banks are generally very low natural earth or rock cuts with numerous broad, gently sloped rubble side beaches. Stream-side cover ranges from sparse to moderately dense growth of deciduous and conifer thickets that offer relatively little shade to the main river.

Tributary streams contain moderate characteristics over their lower reaches, producing relatively good pool-riffle balance with predominantly rubble stream bottoms. Kendall Creek maintains a moderate to gentle gradient character throughout most of its length while the others exhibit steeper mountain stream characteristics over much of their upper drainages exhibiting mostly falls, cascades, and rapid stream conditions. Cover is generally thick deciduous trees and underbrush, some mixed conifer along these feeder streams.

Salmon Utilization

This Nooksack reach provides transportation, spawning, and rearing habitat, and is utilized by chinook, coho, pink, and chum. Chinook, along with some pink and chum, utilize the main river and lower reaches of large tributaries. Coho spawners utilize tributary branches. Juvenile coho and chinook rearing occurs throughout the accessible waters.

Limiting Factors

The principal factor limiting salmon production within this area is the unstable channel conditions, allowing extensive streambed shifting during high river flows. The total glacial character of the river, plus relatively short access on most tributaries, present additional natural limitations. Some tributary watersheds have experienced extensive clear-cut logging which contributes to flash flooding and siltation. Some gravel removal operations are also evident along the river course.

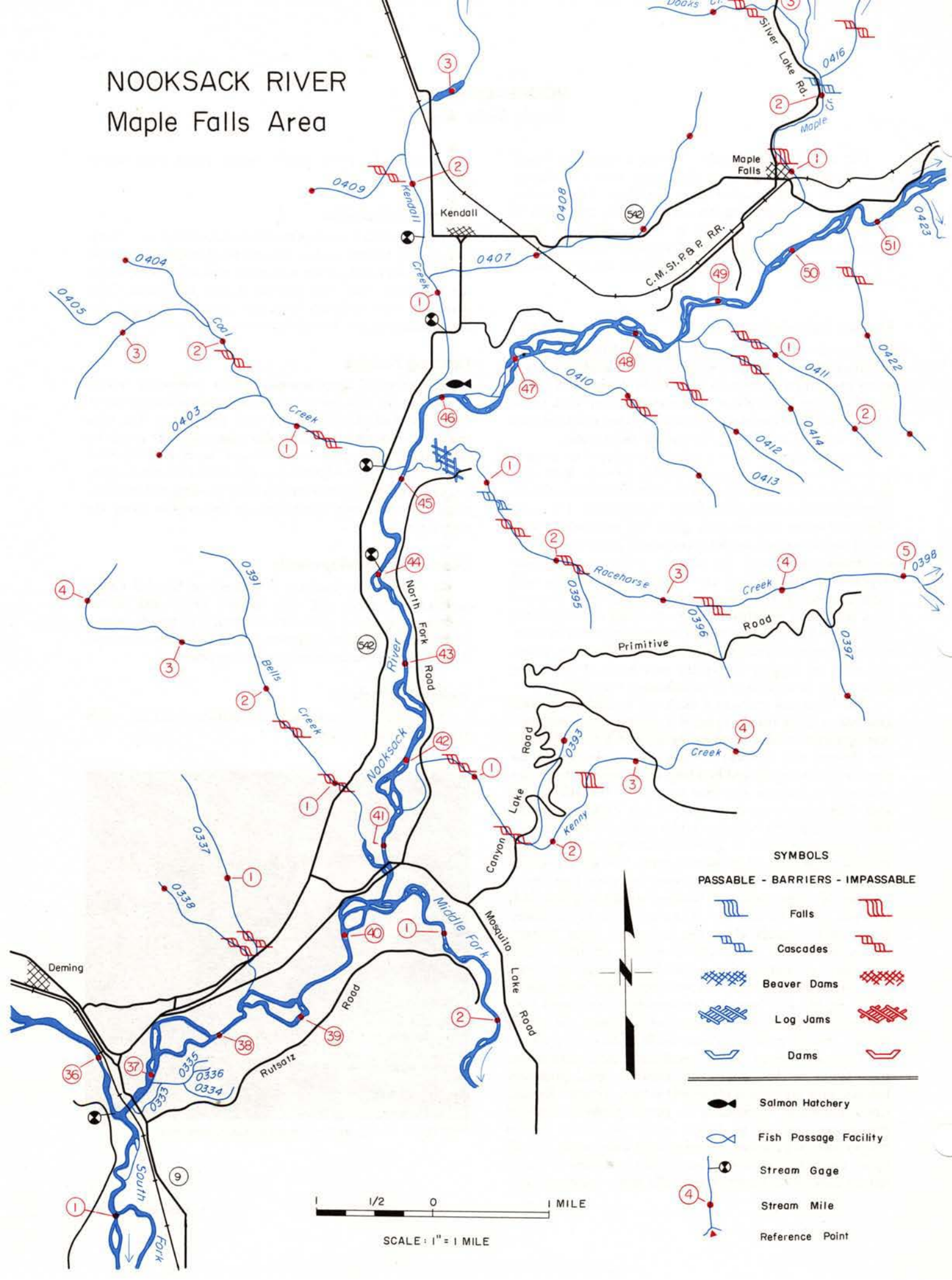
Beneficial Developments

A state salmon hatchery is located on Kendall Creek, producing chinook and coho salmon. Occasional salmon plantings have been made into tributaries to benefit salmon production. No other programs or projects have been conducted in this area to increase salmon production.

Habitat Needs

Some form of streambed stabilization could be highly beneficial within this reach.

PHOTO 01-10. Baptist Camp pond looking downstream.


NOOKSACK RIVER
Maple Falls Area
Maple Falls
Kendall
Deming
Silver Lake Rd.
C.M.St.P.&P. R.R.
North Fork Road
Primitive Road
Canyon Lake Road
Mosquito Lake Road
Rutsatz Road
Nooksack River
Middle Fork
South Fork
Bells Creek
Racehorse Creek
Kendall Creek
Coal Creek
Maple Creek
Kenny Creek
0391
0393
0395
0396
0397
0398
0403
0404
0405
0407
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0409
0410
0411
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0413
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0416
0422
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0333
0334
0335
0336
0337
0338
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

NOOKSACK RIVER—MAPLE FALLS AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Pink Chum, Sockeye
0337	Unnamed	RB-38.4	1.9	—	(Coho, (Chum)
0338	Unnamed	RB-0.25	1.1	—	Unknown
0339	Middle Fk. Nooksack R.	LB-40.5	19.9	—	Chin., Coho, Pink, Chum
0390	Bells Creek	RB-40.81	4.55	—	Chin., Coho, Pink, Chum
0392	Kenny Creek	LB-41.3	4.3	3.09	Coho, Pink, Chum
0393	Unnamed	RB-1.8	1.2	—	None
0394	Racehorse Creek	LB-45.1	7.7	10.8	Chin., Coho, Pink, Chum
0397	Unnamed	LB-4.4	1.2	—	None
0398	Unnamed	RB-5.2	1.1	—	None
0402	Coal Creek	RB-45.15	3.8	—	Coho, (Chum)
0403	Unnamed	RB-1.4	1.0	—	None
0404	Unnamed	LB-2.2	1.0	—	None
0406	Kendall Creek	RB-45.9	4.1	—	Chin., Coho, Pink, Chum
0407	Unnamed	LB-1.1	3.3	—	Coho
0409	Unnamed	RB-2.2	1.0	—	Coho
	Unnamed Lake	Outlet-2.81	—	—	
0410	Unnamed	LB-47.1	2.3	—	Coho, Pink, Chum
0411	Unnamed	LB-48.45	2.3	—	Coho, Pink, Chum
0412	Unnamed	LB-0.01	1.7	—	Coho,(Pink),Chum
0414	Unnamed	LB-0.2	1.7	—	Coho,(Pink),Chum
	(Cont. Nooksack 1103)				

MIDDLE FORK NOOKSACK
Kulshan Area

This section covers the lower 10 miles of Middle Fork Nooksack River, from its confluence with the mainstem Nooksack (R.M. 40.5) upstream to about 1 mile above Clearwater Creek (R.M. 9.1). The area is located northeast of Deming in west-central Whatcom County. Access is via the Mosquito Lake Road off of the Mt. Baker Highway.

Stream Description

The Middle Fork winds its way west-northwest throughout this lower section to its confluence with the mainstem Nooksack. Principal tributaries along this reach include Clearwater, Porter, and Canyon creeks.

The reach's upper 4-5 miles is through fairly steep mountainous terrain where the stream is contained intermittently within a very narrow ravine-type valley, with occasional steep-walled canyon stretches. The river breaks out of this narrow confinement just above the Mosquito Lake Road bridge (R.M. 5.0) where the valley floor becomes increasingly broad with side-valley slopes ranging from moderately steep to steep. Bottomland cover is predominantly deciduous trees and underbrush thickets with some mixed conifer. The lower slopes of the valley sidehills contain mixed deciduous and conifer growth, while thick conifer forests cover the higher elevations. Progressively more cleared land occurs on down the valley. Principal developments include the water supply diversion dam (R.M. 7.2), scattered rural residences over the lower 6 miles, and the small community of Kulshan located near the Middle Fork mouth. The major land uses are forestry, some agriculture over the lower sections, and limited recreation activity. The drainage area above the diversion dam (R.M. 7.2) serves as a water supply for the City of Bellingham, shunting water from the Middle Fork to the upper end of Lake Whatcom near that city.

The stream gradient is mostly steep above R.M. 6.0 with the confined channel exhibiting numerous rapids, some cascades, small falls, and minor pool-riffle sections. Stream widths range from 6 to 15 yards. The bottom consists mainly of boulders and rubble, with a few scattered patch gravel areas and short gravel riffles. Stream banks are stable rock or earth cuts with only a few narrow, moderately steep, rubble-boulder side beaches. Stream-side cover ranges from moderate to dense mixed deciduous trees and underbrush with some coniferous timber. Considerable shading is provided by the steep forested side terrain.

Gradient is mostly moderate over the lower 6 miles, with only a few slightly steeper stretches. It is predominantly a meandering, riffle-type stream with relatively few pools. There is considerable channel splitting and braiding along some stretches, with fall stream widths ranging from 10 to over 25 yards. The bottom is predominantly rubble and gravel with a few boulder-strewn sections. A number of relatively long and broad gravel-riffles exist through this stretch. Most banks are relatively low and somewhat unstable earth or gravel-rubble cuts. Cover is generally sparse, consisting of deciduous strips or thickets in between cleared farmland areas.

Tributaries above the Mosquito Lake road exhibit moderately steep to steep gradients over virtually their entire lengths. They present mainly mountainous stream conditions with numerous cascades and falls, and few pool-riffle stretches. Their bottoms are predominantly large rock material. The tributaries below R.M. 5.0 have more gentle gradient conditions over much of their lower reaches and present generally good pool-riffle conditions with gravel-rubble bottoms. Upper portions of these streams encounter steep mountain character. Cover is generally dense over most tributary reaches, consisting of deciduous trees and underbrush with some mixed conifer at higher elevations. The headwaters of Clearwater Creek lie within the Mt. Baker National Forest.

Salmon Utilization

This section provides transportation, spawning, and rearing habitat for chinook, coho, pink, and chum. Coho spawn principally in the tributaries while the other species spawn mainly in the river and larger side streams, particularly Canyon and Porter creeks. Juvenile salmon rear throughout the accessible streams with coho having year around habitation.

Limiting Factors

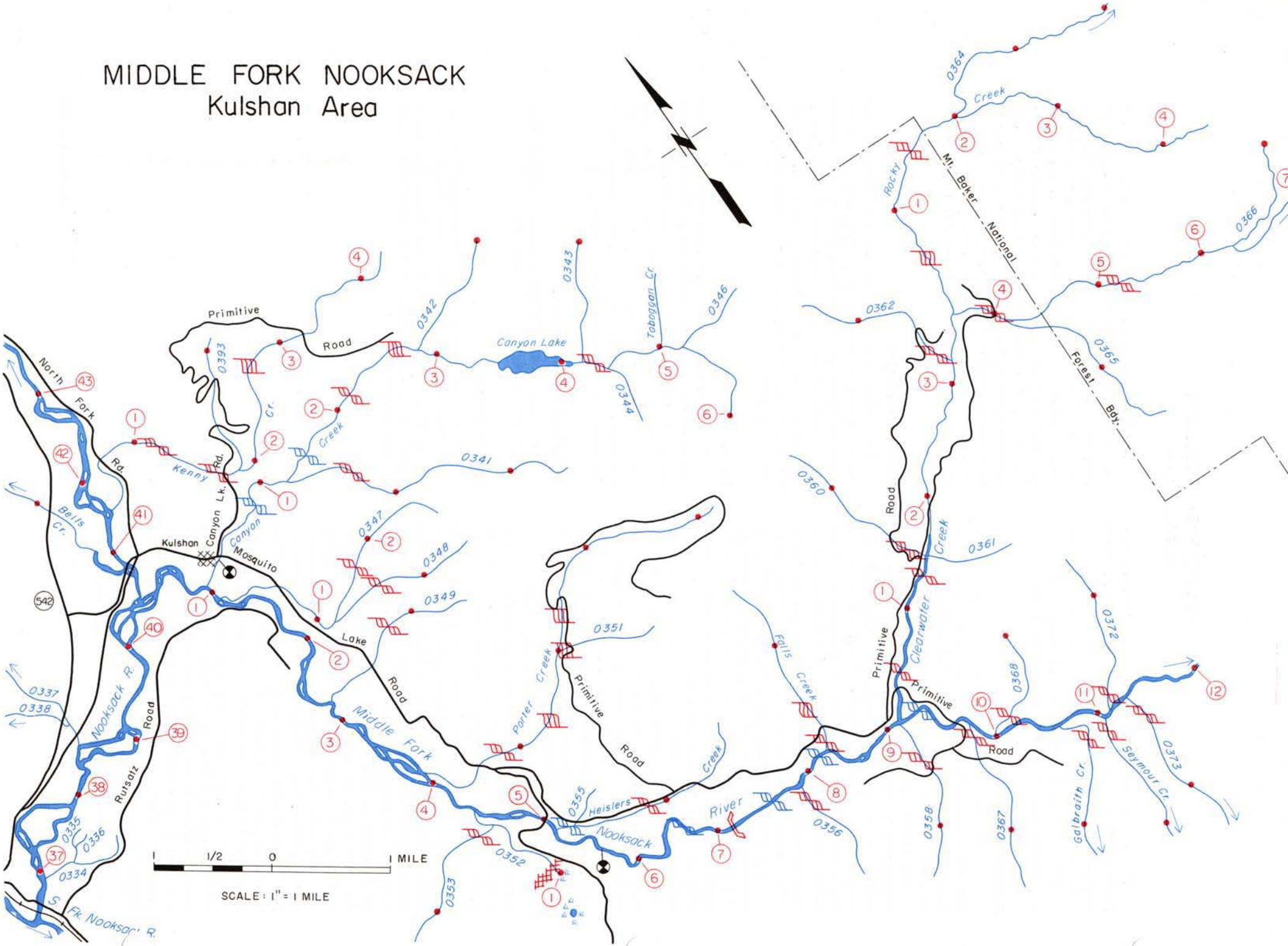
The principal factors limiting salmon production in this section include the diversion dam which blocks upstream migration, and low summer flow conditions throughout the lower river. Occasional channel shifting associated with very high stream flows over the broader channel split areas also contributes to some limitation. Occasional gravel removal operations occur within this lower river section.

Beneficial Developments

There have been no projects or programs to specifically benefit salmon production within this section.

Habitat Needs

The principal requirements to maintain salmon production habitat include preserving stream-side cover, and maintaining stream flow and streambed conditions in as near a natural state as possible. Some low flow augmentation would be highly beneficial.


MIDDLE FORK NOOKSACK
Kulshan Area
Primitive Road
North Fork Rd.
Kenny Lk.
Canyon Lk.
Canyon Cr.
Mosquito Creek
Kulshan
Bells Cr.
542
Nooksack R.
Ruksatz Road
S. Fk. Nooksack R.
Lake Road
Middle Fork
Porter Creek
Primitive Road
Falls Creek
Heisler Creek
Nooksack River
Canyon Lake
Tobaggan Cr.
Rocky Creek
Mt. Baker National Forest Bdy.
Clearwater Creek
Primitive Road
Road
Galbraith Cr.
Seymour Cr.
0337
0338
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MIDDLE FORK NOOKSACK—KULSHAN AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				
0339	Middle Fk. Nooksack R.	LB-40.5	19.9	102.0	Chin., Coho, Pink, Chum
0340	Canyon Creek	RB-0.9	6.0	—	Chin., Coho, Pink, Chum
0341	Unnamed	LB-1.2	2.5	—	Coho
0342	Unnamed	RB-2.8	1.0	—	None
	Canyon Lake	Outlet-3.5	—	—	
0343	Unnamed	RB-4.2	1.0	—	None
0347	Unnamed	RB-1.05	2.7	—	Coho, Pink, Chum
0348	Unnamed	LB-1.2	1.4	—	Coho
0349	Unnamed	RB-2.8	1.6	—	Coho, Chum
0350	Porter Creek	RB-3.9	4.2	—	Chin.), Coho, Pink, Chum
0352	Unnamed	LB-4.4	1.0	—	Coho
0353	Unnamed	LB-0.3	1.3	—	Unknown
0354	Heislers Creek	RB-5.1	1.9	1.93	Coho
0357	Falls Creek	RB-8.3	1.6	—	None
0358	Unnamed	LB-9.09	1.4	—	None
0359	Clearwater Creek	RB-9.1	7.7	21.1	None
0360	Unnamed	RB-1.45	1.5	—	None
0362	Unnamed	RB-3.2	1.5	—	None
0363	Rocky Creek	RB-3.6	4.4	—	None
0364	Unnamed	RB-2.0	2.4	—	None
0365	Unnamed	LB-4.1	1.7	—	None
0366	Unnamed	RB-6.3	1.0	—	None
	(Cont. Nooksack 1003)				

MIDDLE FORK NOOKSACK
Headwaters

This section covers the upper Middle Fork Nooksack River drainage from R.M. 10.0 above Clearwater Creek upstream to its Mt. Baker headwaters, approximately 10 stream miles. Thirteen tributaries enter in this reach providing more than 39 linear stream miles. The area commences some 10 miles southeast of Deming in south-central Whatcom County. Access is available to only the lower reaches via private logging roads, with mountain trails extending above. The river and its tributaries above R.M. 14.0 are within Mt. Baker National Forest.

Stream Description

From perennial snowfields on the southwest slopes of Mt. Baker, just below Deming Glacier, the Middle Fork flows in a southwesterly direction for nearly 3 miles to Ridley Creek (R.M. 17.4), then west-northwest about 7 miles through the remainder of the reach. Principal tributaries include Green, Wallace, Warm, and Galbraith creeks.

This headwater section of the Middle Fork cuts through rugged, highly mountainous terrain and is confined in a very narrow ravine-like valley. Except where clear-cut logging has occurred, most of the bottomland holds coniferous and mixed deciduous timber, while the upper slopes contain thick coniferous cover. The drainage's upper 2-3 miles is characteristically alpine in nature maintaining sparse, low growing cover which gives way to barren snowfields at the higher elevations. Virtually no development has occurred within this area and the principal land use is forestry with some limited recreation activity. This drainage section serves as a water supply for the City of Bellingham, with a diversion dam located downstream from this reach.

The gradient is very steep in the mainstem above Ridley Creek. The relatively narrow channel displays numerous cascades and small falls, with many channel splits and braided stretches. Stream widths range generally 2-6 yards. The bottom is mostly boulders and rubble with only occasional patch gravel areas. Both the streambed and the relatively low banks appear somewhat unstable with evidence of considerable erosion during high flows. Stream-side cover ranges from sparse to moderate with low growing coniferous or mixed deciduous trees and underbrush.

Below Ridley Creek the Middle Fork's gradient moderates somewhat; however, it remains mostly steep through the remainder of the reach. The confined channel exhibits mostly rapid and extensive riffle conditions with some cascades and few pools. The stream width, during fall-months flows, ranges from 4 to 12 yards and averages 9 yards. The bottom is mainly rubble and boulders with some very large rocks and a few short gravel riffles and patch gravel strips. The stream remains highly colored throughout much of the year, primarily from melting snow and high water scouring in the upper watershed. Stream-side cover along this lower stretch ranges from moderate to dense mixed deciduous and coniferous trees.

Virtually all tributaries in this upper drainage exhibit steep mountainous characteristics over most of their lengths. Their narrow channels contain mainly fast riffles and cascades with a few falls. Their bottoms are boulder and rubble material. Generally, they have moderate to dense cover, primarily coniferous timber, except where clear-cut logging has occurred.

Salmon Utilization

There is no salmon utilization within this drainage area as fish are blocked by the diversion dam located below this section. The potential for producing salmon within these headwaters is extremely limited due mainly to the steepness of the gradient and relatively limited access.

Limiting Factors

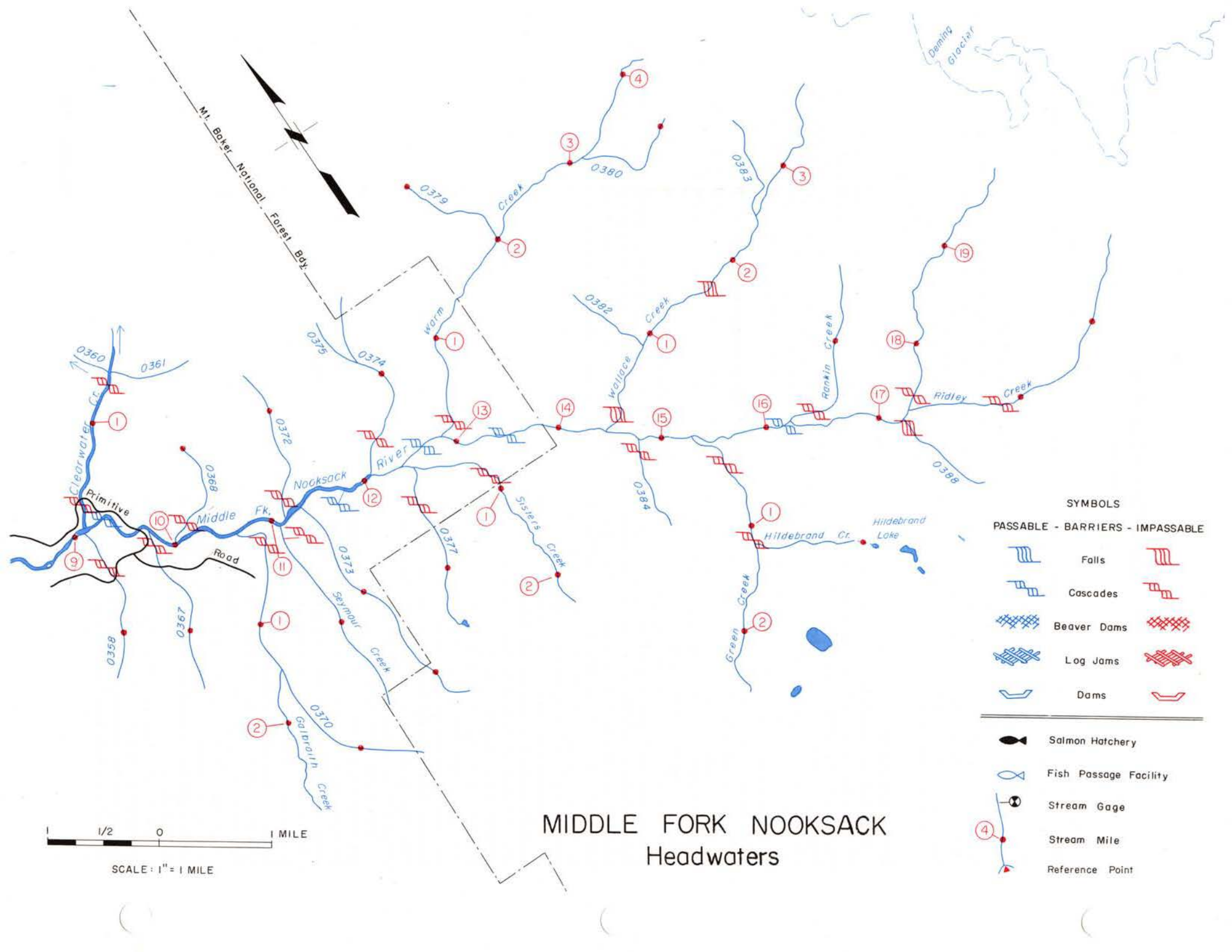
A series of partial barriers, plus the diversion dam located below this reach, prohibit salmon from ascending to this area. The cold character of the water, and steep gradient conditions reduce the productive potential for salmon. Extensive clear-cut logging, particularly along some tributary drainages, increases the flash flood and siltation possibilities.

Beneficial Developments

There have been no projects or programs performed in this area to specifically benefit salmon production.

Habitat Needs

In order to maintain quality production habitat in the lower Middle Fork Nooksack, stream-side cover and stream and streambed conditions in this upper area must be maintained in as near a natural state as possible.



MIDDLE FORK NOOKSACK
Headwaters

MIDDLE FORK NOOKSACK—HEADWATERS
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				
0339	Middle Fk. Nooksack R.				Chin., Coho, Pink, Chum
0367	Unnamed	LB-9.8	1.5	—	None
0368	Unnamed	RB-10.0	1.0	—	None
0369	Galbraith Creek	LB-10.7	2.9	—	None
0370	Unnamed	RB-1.5	1.6	—	None
0371	Seymour Creek	LB-11.1	1.9	—	None
0372	Unnamed	RB-11.2	1.4	—	None
0373	Unnamed	LB-11.35	2.4	—	None
0374	Unnamed	RB-12.1	1.9	—	None
0376	Sisters Creek	LB-12.4	2.3	—	None
0377	Unnamed	LB-0.1	1.5	—	None
	Unnamed Lake	Outlet-1.5	—	—	
0378	Warn Creek	RB-12.9	4.2	—	None
0379	Unnamed	RB-2.0	1.0	—	None
0380	Unnamed	LB-3.15	1.1	—	None
0381	Wallace Creek	RB-14.5	3.9	—	None
0385	Green Creek	LB-15.3	2.6	—	None
0386	Hildebrand Creek	RB-1.2	1.1	—	None
	Lake Hildebrand	Outlet-1.1	—	—	
0387	Rankin Creek	RB-16.2	1.7	—	None
0389	Ridley Creek	LB-17.4	2.8	—	None

NOOKSACK RIVER
Glacier Area

This section covers approximately 13 miles of mainstem North Fork Nooksack River from R.M. 50.0 south of Maple Falls upstream to approximately 5 miles above Glacier Creek (R.M. 63.0). Nineteen tributaries, excluding Glacier Creek (Nooksack 1201), and more than 103 total stream miles. The area is located north of Mt. Baker in north-central Whatcom County. Access is via the Mt. Baker Highway east of Bellingham. The river and tributaries above Cornell Creek (R.M. 56.2), as well as upper Canyon Creek drainage are within Mt. Baker National Forest.

Stream Description

The mainstem Nooksack winds generally west throughout this section. Principal tributaries are Glacier, Gallop, Cornell, Canyon, Boulder, and Maple creeks.

Through the upper 5 miles the Nooksack cuts through a very narrow valley with steep mountain side slopes rising in places to over 6,000 feet. Below Glacier Creek the valley broadens somewhat then alternately narrows and widens through the remaining 8 miles. These hillsides remain mostly steep. The bottomland holds dense, mixed deciduous and coniferous growth with increasing cleared land along the lower stretches. Valley side slopes maintain thick coniferous cover, except where clear-cut logging has occurred. These areas are in various stages of reforestation. Development is quite limited with scattered rural residences located between the small communities of Glacier, located near the mouth of Glacier Creek, and Maple Falls on Maple Creek. Increasing recreational home development is occurring along some river stretches, particularly upstream from Glacier. Principal land use is forestry, some limited agriculture and considerable recreation.

Above Glacier the river has mostly steep gradient characteristics where the relatively narrow channel produces mainly fast riffles and rapid stretches with numerous cascades and few pools. Fall stream widths range from 8 to over 20 yards. The bottom has considerable large rock that dissipates the energy of the flow velocities. Boulders and rubble predominate with some short gravel riffles and patch gravel areas. Banks are quite stable and composed of sharp-faced rock or earth cuts with a few narrow rubble-boulder side beaches. Stream-side cover is mostly dense coniferous and mixed deciduous growth providing good to excellent shading. One side channel just below Lookout Creek (R.M. 62.4) offers moderate gradient conditions with good pool-riffle character containing mostly gravel-rubble bottom.

Below Glacier the gradient moderates slightly over the remaining 8 miles. The channel becomes less confined and exhibits major splits and some braiding. During periods of extreme high water or flooding, major channel changes occur in some stream sections. Stream widths through this lower portion range from 12 to nearly 30 yards during early fall months. The stream is largely fast flowing with a few cascades and some relatively good pool-riffle and glide stretches. The bottom is composed of rubble, scattered boulder areas, some broad gravel riffles, and numerous patch gravel strips. Except for a few stretches, banks are mostly stable and are composed of natural earth or rock cuts with some broad, sloping rubble beaches. Stream-side cover is dense deciduous and coniferous trees with progressively more cleared land in downstream sections.

Most tributaries above Glacier present steep mountain stream character over much of their length, consisting of small falls and cascades within narrowly confined channels. Their bottoms are mainly boulder and rubble. Below Glacier many have moderate gradient conditions in their lower stretches with relatively good pool-riffle balance and gravel-rubble bottoms. Cover is generally thick along most tributaries consisting of mixed deciduous and coniferous trees. Some cleared land occurs along their lower reaches.

Salmon Utilization

This mainstem reach provides transportation, spawning, and rearing habitat for chinook, coho, pink, and some chum. A large portion of the pink production originates from this area. Chinook spawn in the mainstem channel and larger tributaries, while pink and some chum use both the river and lower sections of the accessible tributaries. Coho are principally tributary spawners. Some Sockeye have been observed utilizing the Nooksack side channel below Lookout Creek. Juvenile salmon rear throughout the accessible waters, with coho and some chinook having year around habitation.

Limiting Factors

The cold glacial nature of the river plus the steep gradients and areas of unstable channel conditions provide natural limitations to salmon production. Some tributaries suffer from periodic flash flooding, especially where logging has removed most of the upper watershed cover.

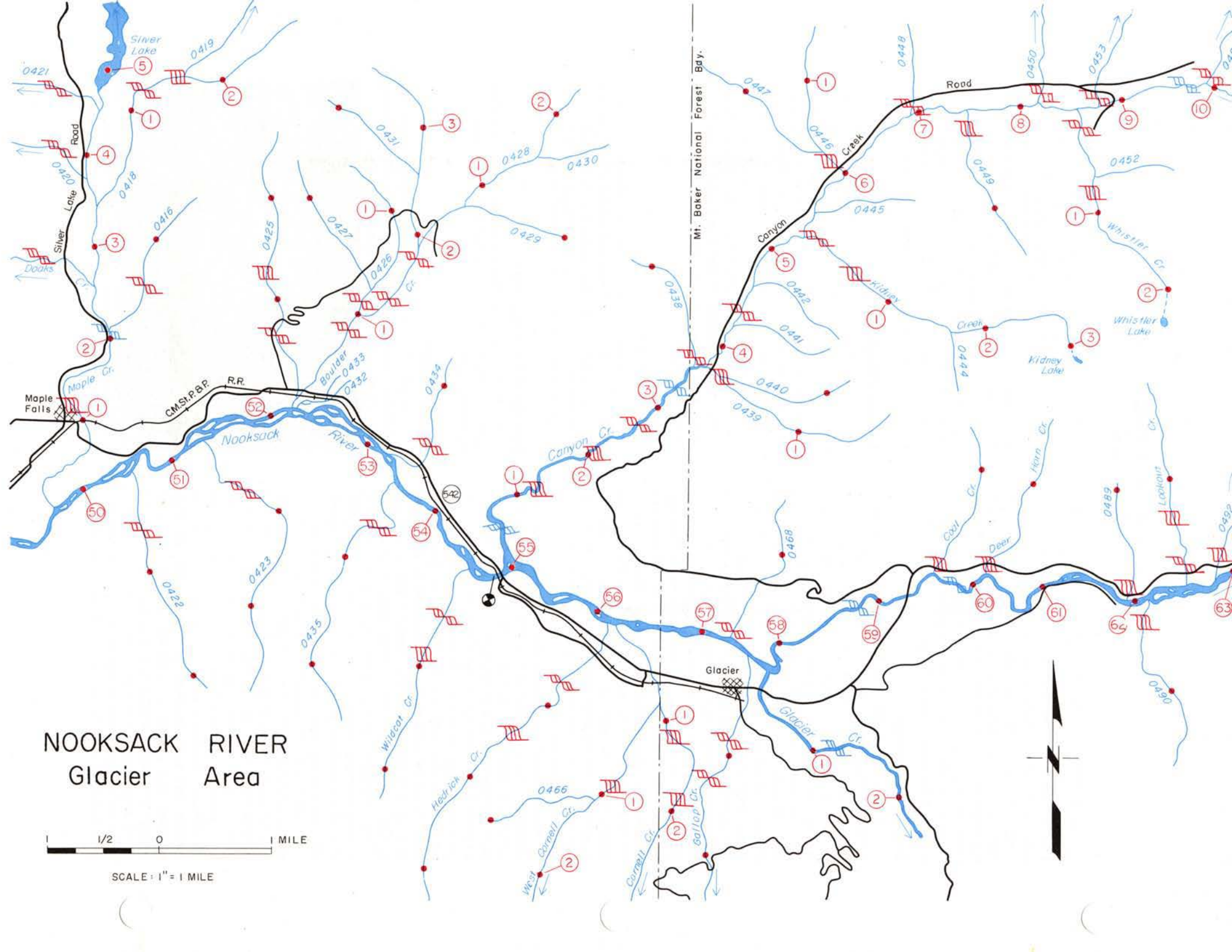
Beneficial Developments

The only project performed in this area to benefit salmon production has been a stream bank and channel stabilization project on Cornell Creek.

Habitat Needs

Principal habitat requirements include preserving stream-side cover and maintaining stream and streambed conditions in as near their natural state as possible.

PHOTO 01-11. Heavy rubble and patch gravel predominate the North Fork tributaries.


NOOKSACK RIVER
Glacier Area
Silver Lake
Silver Lake Road
Maple Falls
Maple Cr.
C.M.St.P.&P. R.R.
Nooksack River
Boulder Cr.
Canyon Cr.
Mt. Baker National Forest Bdy.
Canyon Creek Road
Kidney Creek
Whistler Cr.
Whistler Lake
Kidney Lake
Coal Cr.
Horn Cr.
Deer Cr.
Lookout Cr.
Glacier
Glacier Cr.
Wildcat Cr.
Hedrick Cr.
Cornell Cr.
West Cornell Cr.
Gallop Cr.
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SCALE: 1" = 1 MILE

NOOKSACK RIVER—GLACIER AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Pink, Chum, Sockeye
0415	Maple Creek	RB-49.7	6.7	—	Chin., Coho, Pink, Chum
0416	Unnamed	LB-2.1	1.5	—	Artificial-Coho
0417	Doaks Creek	RB-2.6	1.6	—	Artificial-Coho
0418	Unnamed	LB-3.5	2.9	—	Artificial-Coho
0419	Unnamed	RB-1.65	1.2	—	None
0420	Unnamed	RB-3.75	2.0	—	Artificial-Coho
0421	Unnamed	RB-4.6	1.2	—	Artificial-Coho
	Silver Lake	Outlet-4.8	—	—	
0422	Unnamed	LB-50.5	2.2	—	Coho, Pink, Chum
0423	Unnamed	LB-51.3	2.8	—	Coho, Pink, Chum
0424	Boulder Creek	RB-52.2	3.8	—	Chin., Coho, Pink, Chum
0425	Unnamed	RB-0.1	2.7	—	Coho, Pink, Chum
0426	Unnamed	RB-1.0	1.6	—	None
0427	Unnamed	RB-0.3	1.4	—	None
0428	Unnamed	LB-1.9	2.3	—	None
0429	Unnamed	LB-0.7	1.0	—	None
0431	Unnamed	RB-2.6	1.1	—	None
0434	Unnamed	RB-53.2	1.2	—	Coho, Pink, Chum
0435	Unnamed	LB-53.45	2.6	—	Coho, Pink, Chum
0436	Wildcat Creek	LB-54.7	2.3	—	Coho, Pink, Chum
0437	Canyon Creek	RB-55.0	15.1	31.1	Chin., Coho, Pink, Chum
0438	Unnamed	RB-3.65	1.2	—	None
0439	Unnamed	LB-3.75	1.8	—	None
0440	Unnamed	RB-0.15	1.2	—	None
0443	Kidney Creek	LB-5.3	3.1	—	None
	Kidney Lake	Outlet-3.1	—	—	
0446	Unnamed	RB-6.0	1.5	—	None
0447	Unnamed	RB-0.3	1.5	—	None
0449	Unnamed	LB-7.5	1.5	—	None
0450	Unnamed	RB-8.2	1.2	—	None
0451	Whistler Creek	LB-8.6	2.3	—	None
	Whistler Lake	Outlet-2.3	—	—	
0453	Unnamed	RB-8.8	1.3	—	None
0458	Unnamed	LB-12.25	1.3	—	None

NOOKSACK RIVER—GLACIER AREA
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0459	Unnamed	RB-12.5	1.6	—	None
0460	Unnamed	RB-12.8	1.5	—	None
0463	Hedrick Creek	LB-56.1	3.3	—	Coho, Pink
0464	Cornell Creek	LB-56.2	4.1	—	Chin., Coho, Pink, Chum
0465	West Cornell Cr.	LB-0.9	3.9	—	Chin., Coho, Pink, Chum
0466	Unnamed	LB-1.1	1.0	—	None
0467	Unnamed	RB-57.2	1.5	—	Unknown
0468	Gallop Creek	LB-57.4	4.5	—	Coho, Pink, Chum
0469	Glacier Creek	LB-57.6	9.2	—	Chin., Coho, Pink, Chum
	(See Nooksack 1203)				
0487	Coal Creek	RB-59.6	1.4	—	None
0488	Deer Horn Creek	RB-60.15	1.6	—	None
0489	Unnamed	RB-61.8	1.1	—	None
0490	Unnamed	LB-62.1	1.7	—	Coho, Pink
0491	Lookout Creek	RB-62.45	1.9	—	Coho, Pink, Sockeye
0492	Unnamed	RB-62.85	1.4	—	Coho, Pink
	(Cont. Nooksack 1303)				

GLACIER CREEK DRAINAGE

This section encompasses the entire Glacier Creek drainage from its confluence with the North Fork Nooksack (R.M. 57.6) upstream more than 9 stream miles to its Roosevelt Glacier headwaters. Eleven tributaries enter in this stretch and provide about 27 linear stream miles. The area is located south of the community of Glacier in central Whatcom County, with access via Forest Service roads off the Mt. Baker Highway. Virtually the entire area is within Mt. Baker National Forest.

Stream Description

From the steep glacial snowfields on the northwest slopes of Mt. Baker, Glacier Creek winds its way northwest to its confluence with the Nooksack. It receives runoff from three major glaciers and a number of perennial snowfields that maintain glacial color most of the year. Principal tributaries include Grouse and Thompson creeks.

Glacier Creek flows through rugged, highly mountainous terrain where the channel is confined to a narrow, very steep -sloped valley covered with dense coniferous forest and some mixed deciduous growth along the creek bottom. Little development has occurred other than the small community of Glacier near the stream mouth. Principal land use is forestry with large clear-cut sections over much of the upper slopes. Many areas are in various stages of reforestation. Recreation activity is prominent in the area.

The upper 1-2 miles of Glacier Creek to the vicinity of Grouse Creek (R.M. 6.8) courses through mostly alpine terrain. Its relatively narrow channel shows some splitting and braiding over a generally steep gradient while still containing fast riffles or rapids and a number of sharp cascades. The bottom is predominantly rubble and boulder. Banks are mainly low, rock or earth cuts with some narrow, large rock side beaches. Cover is sparse, low growing conifers and alpine brush.

Below Grouse Creek for more than 3 miles to the Forest Service road (R.M. 3.6) the channel becomes confined. The moderately steep gradient produces a series of falls and sharp cascades which are intermittently separated by relatively short rapid stretches or occasional deeper pools. Stream widths range from 4 to 9 yards. The substrate contains some very large rocks, a large proportion of boulders and rubble, with only a few short gravel-riffle or patch gravel areas. Cover is mostly dense coniferous timber with some mixed deciduous trees and underbrush.

Below the Forest Service bridge the moderately steep gradient continues downstream to near Thompson Creek (R.M. 1.8). Stream character changes slightly, becoming mostly fast riffles with few cascades. The bottom contains mostly boulder and rubble material with some relatively large gravel riffles. Some broadening of the valley floor below Thompson Creek has allowed channel splitting and unstable streambed conditions. Thehgradient alternates from moderate to moderately steep, producing mostly fast riffles, some rapids and a few small cascades. Stream widths range from 6 to over 20 yards during early fall months. The bottom is mostly boulder and rubble with some small gravel-riffles and patch gravel areas. Cover is dense coniferous timber with increasing deciduous trees and underbrush.

Tributaries exhibit steep mountain stream character over most of their lengths. Their narrow channels contain numerous small falls and cascades with predominantly boulder and rubble stream bottoms. Some provide moderate gradient over their lowermost reaches. Thompson Creek offers more than 1.5 miles of moderate gradient stream with prime salmon habitat characteristics. Except where recent logging has occurred, usually over upper slopes, most tributaries are well shaded with dense conifer and deciduous growth.

Salmon Utilization

Glacier Creek receives runs of pink and coho which prefer the lower tributaries. Some chinook have been observed in the main stream. Pink spawning is especially heavy in Thompson Creek. Most pink and chinook juveniles move out in the spring with coho habitation year round.

Limiting Factors

The series of cascades and small falls beginning near the Forest Service bridge are believed to block access to the upper area for most anadromous fish. The unstable channel over the lower 2-3 miles along with considerable channel shifting tends to limit production. Poaching of adult salmon is frequently a problem in Thompson Creek.

Beneficial Developments

Some channel clearance has been performed in Thompson Creek. No other projects or programs have been undertaken to benefit salmon production.

Habitat Needs

Principal salmon habitat requirements include preserving existing stream-side cover, and maintaining stream and streambed in natural condition.

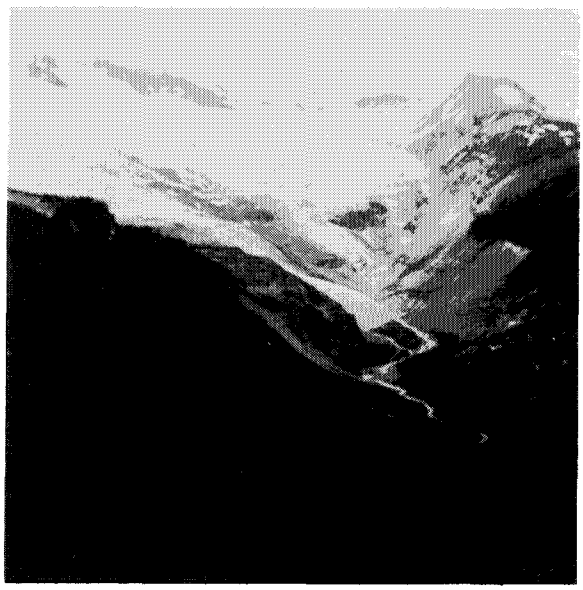
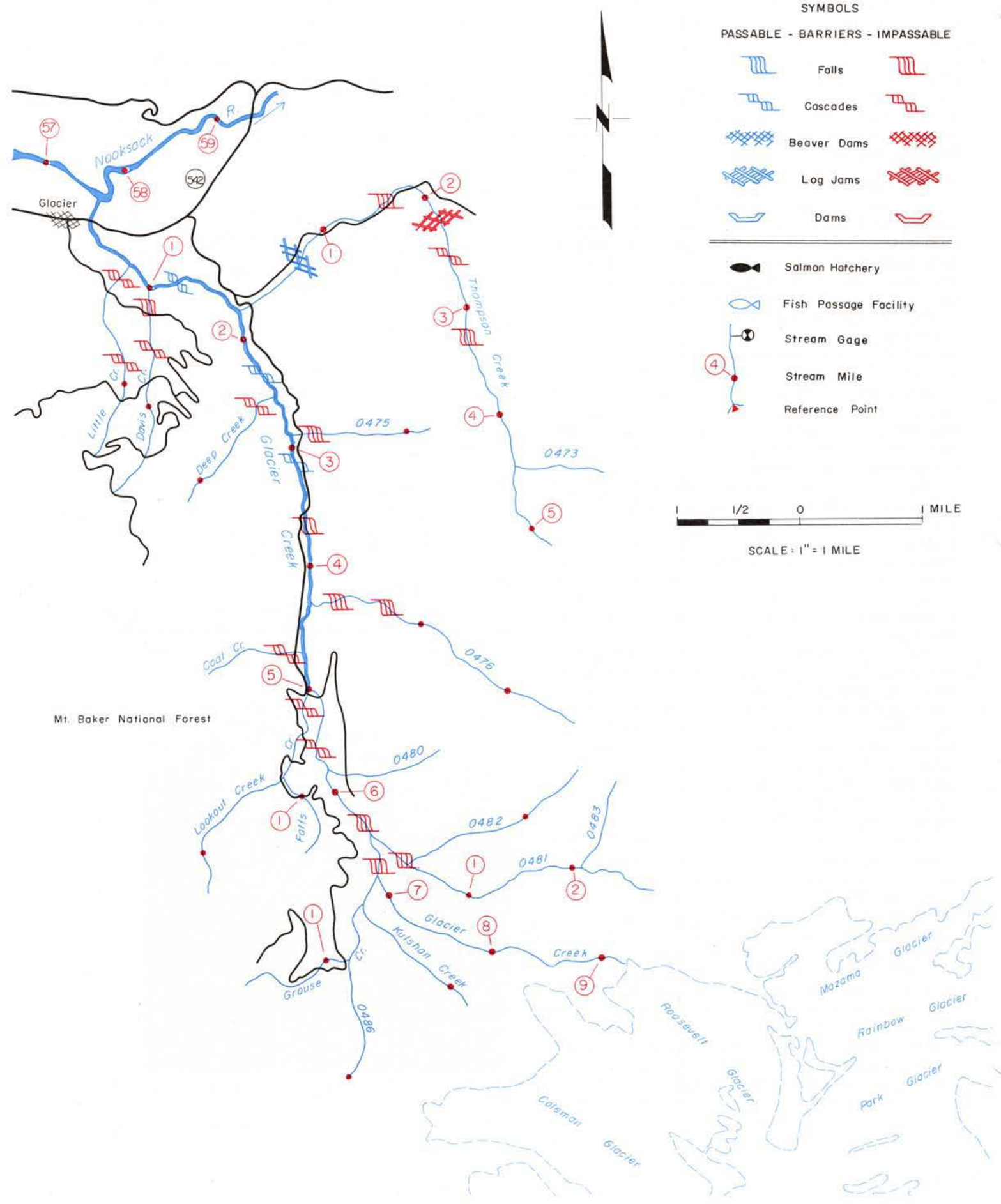


PHOTO 01-12. Glacial snowfields provide headwaters for the North Fork Nooksack River.

GLACIER CREEK DRAINAGE



GLACIER CREEK DRAINAGE
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Chum Pink, Sockeye
0469	Glacier Creek	LB-57.6	9.2	31.8	Chin., Coho, Pink
0470	Little Creek	LB-0.7	1.7	—	Coho, Pink
0471	Davis Creek	LB-1.0	1.8	—	Coho, Pink
0472	Thompson Creek	RB-1.8	5.2	—	Coho, Pink
0474	Deep Creek	LB-2.55	1.2	—	Unknown
0475	Unnamed	RB-2.9	1.2	—	Unknown
0476	Unnamed	RB-4.3	2.6	—	None
0478	Falls Creek	LB-5.0	1.6	—	None
0479	Lookout Creek	LB-0.8	1.3	—	None
0481	Unnamed	RB-6.45	2.7	—	None
0482	Unnamed	RB-0.4	1.7	—	None
0484	Grouse Creek	LB-6.8	1.7	—	None
0485	Kulshan Creek	RB-0.3	1.2	—	None
0486	Unnamed	RB-0.8	1.0	—	None

NOOKSACK RIVER
Headwaters

This section covers the upper 17 miles of mainstem Nooksack River with 22 tributaries adding nearly 100 linear stream miles. The area is located a few miles east of Glacier in north-central Whatcom County, with access via the Mt. Baker Highway. The entire area is within national forest land.

Stream Description

From Mt. Shuksan's northern slopes the Nooksack flows northwest nearly 9 miles, then generally west 8 miles to Bridge Camp crossing. The stream is characteristically glacial, being fed by 4 major glaciers plus numerous smaller glaciers and perennial snowfields. Principal tributaries include Ruth, Swamp, Wells, and Deadhorse creeks.

In this reach the Nooksack courses through rugged, highly mountainous terrain with a narrow valley floor and steep side slopes rising sharply to over 7,000 feet. Dense conifer cover with some deciduous growth prevails on the bottomlands while the mountain slopes retain thick conifers except for very high elevations where alpine habitat occurs. Land development is limited with the principal use being forestry and recreation. Puget Sound Power and Light operates a small power plant below Nooksack Falls.

In the 2-3 miles below the East Nooksack Glacier the river descends over very steep gradients within a confined channel displaying numerous cascades and falls, with boulder and rubble substrate. The gradient diminishes slightly over the next 3 miles to White Salmon Creek (R.M. 74.2) with the channel remaining mostly confined and containing predominantly rubble-boulder stream bottom with some patch gravel sections. Stream widths range 5 to 8 yards. The banks are mostly stable earth or rock cuts maintaining sparse to moderate growth of mostly low growing conifers.

Over the next 5 miles to Anderson Creek (R.M. 69.0), the stream meanders across a somewhat broader valley floor where the gradient is moderate with only a few steeper stretches. There are numerous channel splits and minor braiding in the vicinity of Ruth and Swamp creeks. Stream widths range from 5 to 12 yards. A good pool-riffle balance prevails with the bottom of rubble and gravel and a few scattered boulders. Banks are stable, low earth or rock cuts with a few gently sloped gravel beaches. Stream-side cover is mostly dense coniferous timber.

In the lower 6 miles, downstream to R.M. 63.0, the mainstem has a moderately steep gradient with fast riffles, a few cascades and occasional pools. Stream widths range from 7 to over 15 yards, with the substrate comprised of rubble, large boulders, and patch gravel strips. The major feature in this stretch is Nooksack Falls, immediately upstream from Wells Creek (R.M. 65.0), which drops more than 100 feet forming a total block to upstream migration. Below the falls the river is confined to a narrow canyon for nearly a half mile to the Excelsior Powerhouse. This area contains mostly cascades and rapids. In the lower 1.5 miles below Excelsior the gradient is moderate with a few steeper sections. The somewhat broader channel remains essentially confined with stream widths ranging 10 to 25 yards during the early fall months. This lower stretch contains fairly good pool-riffle conditions of predominantly rubble and gravel material, and a few scattered boulder stretches. Stable stream banks are generally sharp-sloped earth or rock cuts and some gently sloping boulder and rubble beaches. Cover is mostly thick coniferous timber with some deciduous growth.

The major portions of most tributaries fall over steep mountain terrain with precipitous gradients including numerous cascades, falls and rapids. Their channels are confined by steep side slopes. Bottom materials consist of boulder and rubble with relatively few gravel riffles or patch gravel areas. Most tributaries have dense conifer forest cover. Only Deadhorse and Cascade creeks provide moderate gradient stream conditions with excellent spawning gravel along their lower 0.25 mile stretches.

Salmon Utilization

Chinook, coho, and pink utilize this section of river to just above the Excelsior Powerhouse. A few determined adults may reach Nooksack Falls. Deadhorse Creek has a large population of pink and some coho. Most spawning occurs in the main river with juvenile populations rearing in all accessible waters. Coho and some spring chinook have year around habitation.

Limiting Factors

The major limiting factor is Nooksack Falls which forms a total barrier to all anadromous fish. The steep gradients of the tributaries also restrict available spawning and rearing areas. The river's cold glacial character provides natural limitations.

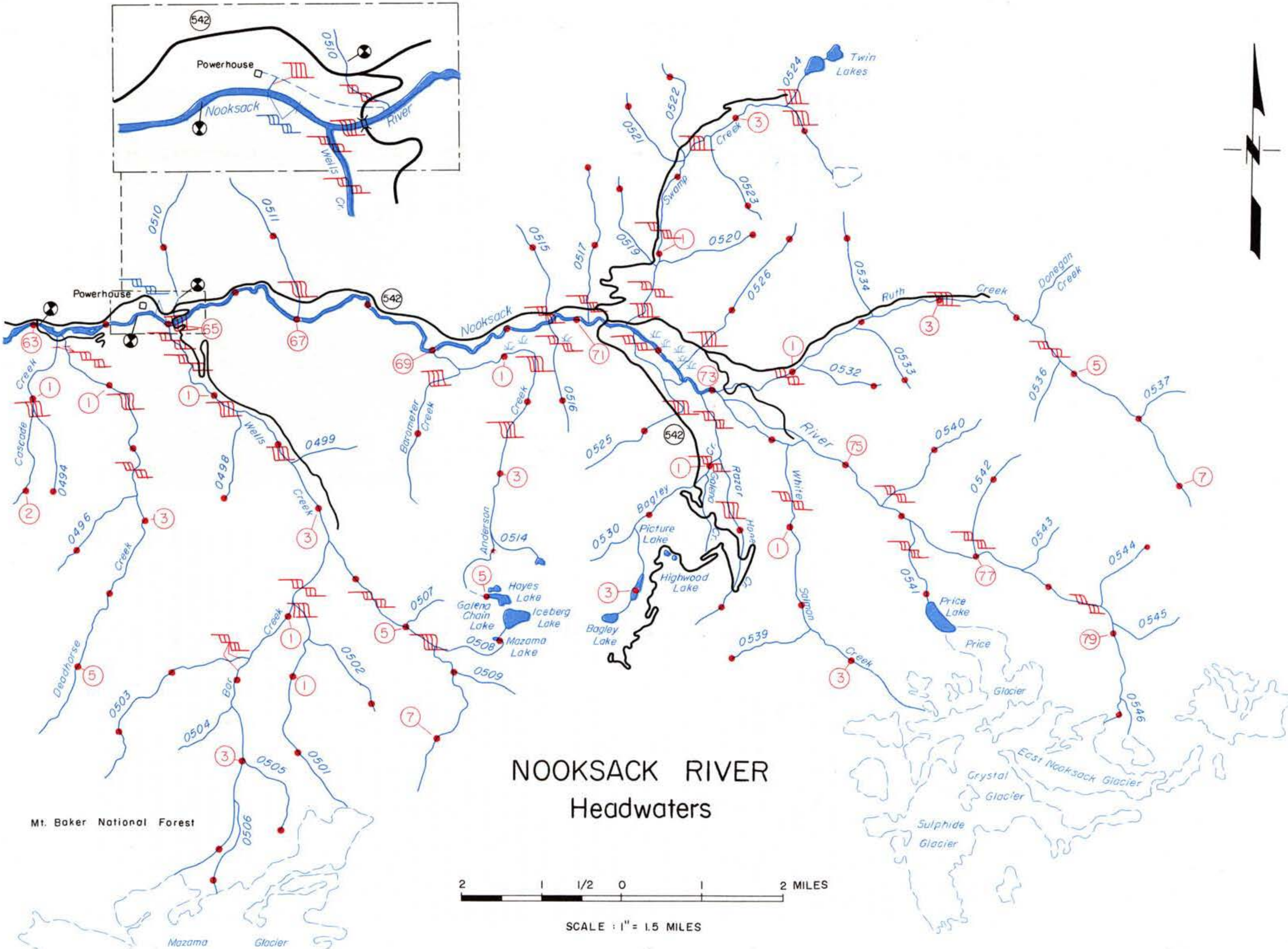
Beneficial Developments

No projects or programs have been undertaken to benefit salmon production.

Habitat Needs

Principal salmon habitat requirements include preserving stream-side cover and maintaining stream and streambed conditions in as near their natural state as possible.

PHOTO 01-13. North Fork Nooksack falls.


NOOKSACK RIVER
Headwaters
Mt. Baker National Forest
2 1 1/2 0 1 2 MILES
SCALE : 1" = 1.5 MILES
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Powerhouse
Nooksack River
Wells Cr.
Nooksack
River
Wells Creek
Cascade Creek
Deadhorse Creek
Bar Creek
Barometer Creek
Anderson Creek
Swamp Creek
Ruth Creek
Donegan Creek
Bagley Cr.
Galena Cr.
Razor Hone Cr.
White Salmon Creek
Twin Lakes
Hayes Lake
Galena Chain Lake
Iceberg Lake
Mazama Lake
Picture Lake
Highwood Lake
Bagley Lake
Price Lake
Price Glacier
Glacier
East Nooksack Glacier
Crystal Glacier
Sulphide Glacier
Mazama Glacier
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NOOKSACK RIVER—HEADWATERS
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0120	Nooksack River				Chin., Coho, Pink, Chum
0493	Cascade Creek	LB-63.3	2.2	—	Coho, Pink
0494	Unnamed	RB-1.1	1.0	—	None
0495	Deadhorse Creek	LB-63.4	5.9	—	Coho, Pink
0496	Unnamed	LB-2.7	1.3	—	None
0497	Wells Creek	LB-65.0	7.6	24.8	None
0498	Unnamed	LB-1.35	1.0	—	None
0500	Bar Creek	LB-3.5	4.6	—	None
0501	Unnamed	RB-0.9	2.8	—	None
0502	Unnamed	RB-0.5	1.1	—	None
0503	Unnamed	LB-1.7	2.5	—	None
0505	Unnamed	RB-3.0	1.0	—	None
0506	Unnamed	RB-3.45	1.2	—	None
0508	Unnamed	RB-5.6	1.3	—	None
	Mazama Lake	Outlet-1.0	—	—	
	Iceberg Lake	Outlet-1.3	—	—	
0510	Unnamed	RB-65.1	1.9	—	None
0511	Unnamed	RB-67.0	1.9	—	None
0512	Anderson Creek	LB-69.0	5.0	—	None
0513	Barometer Creek	LB-0.4	1.9	—	None
	Hayes Lake	Outlet-5.0	—	—	
0515	Unnamed	RB-70.7	1.3	—	None
0516	Unnamed	LB-70.71	1.4	—	None
0517	Unnamed	RB-71.2	2.0	—	None
0518	Swamp Creek	RB-71.6	4.6	—	None
0519	Unnamed	LB-0.85	1.1	—	None
0520	Unnamed	LB-0.9	1.0	—	None
0521	Unnamed	RB-2.2	1.1	—	None
0522	Unnamed	RB-2.25	1.2	—	None
0523	Unnamed	LB-2.65	1.2	—	None
0525	Unnamed	LB-72.4	1.7	—	None
0526	Unnamed	RB-72.6	2.1	—	None
0527	Bagley Creek	LB-72.9	3.3	5.56	None
0528	Razor Hone Creek	RB-0.8	2.3	—	None
	Bagley Lake (lower)	Outlet-2.7	—	—	
	Bagley Lake (upper)	Outlet-3.3	—	—	
0531	Ruth Creek	RB-73.1	7.2	12.7	None

NOOKSACK RIVER—HEADWATERS
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0532	Unnamed	LB-1.1	1.0	—	None
0533	Unnamed	LB-1.9	1.1	—	None
0534	Unnamed	RB-2.2	1.3	—	None
0538	White Salmon Creek	LB-74.2	3.8	—	None
0539	Unnamed	LB-2.3	1.0	—	None
0540	Unnamed	RB-75.7	1.7	—	None
0541	Unnamed	LB-76.1	1.1	—	None
	Price Lake	Outlet-1.1	—	—	
0542	Unnamed	RB-77.0	1.4	—	None
0544	Unnamed	RB-78.65	1.0	—	None

CHUCKANUT BAY DRAINAGE

This section covers 11 independent streams draining to Puget Sound from Samish Bay and Bellingham Bay between Edison in Skagit County and Bellingham in Whatcom County. Together these streams total about 58 linear stream miles. Principal access is via Chuckanut Drive between the towns of Bellingham and Burlington.

Stream Description

These independent streams drain from Chuckanut Mountain south of Bellingham. Chuckanut Creek is the largest with other important streams being Colony, Oyster, and Padden creeks. Each has forested hillsides over its upper reaches. Little development has taken place in the mountainous area except for logging on the upper slopes. Light residential/commercial use is found in northerly areas, while agriculture has developed in lowlands to the south. Considerable recreational use occurs throughout this drainage.

Chuckanut Creek flows west-northwest paralleling the Samish Road across the northern mountain slopes into upper Chuckanut Bay. Gradient over the upper 2 miles is mostly steep with numerous cascades and rapids and predominantly large rock bottom material. From about R.M. 4.0 to its mouth the stream has moderate gradient with a good pool-riffle balance and substrate of gravel with scattered rubble stretches. Cover is mostly dense deciduous trees and underbrush. Salmon access is to about R.M. 4.0, with a few ascending above for a short distance. Tributaries are quite steep and accessible for only a short distance.

Padden Creek flows northwest 4 miles from northern mountain slopes through Lake Padden and southern Bellingham Bay. Lake Padden is a domestic water supply. The creek then falls over a steep gradient for 1-2 miles with the narrow channel containing many cascades and rapids. Below R.M. 1.0 the stream takes on a moderate to gentle gradient, remaining confined with a number of good riffle-glide stretches, and few pools downstream to the tide gate entrance near salt water.

Oyster Creek flows southeast and south nearly 5 miles off the higher mountain slopes entering Samish Bay near Pigeon Point. The upper 4 miles course through a series of small lakes and swamps. It then falls over steep terrain with only about the lower one-fourth mile offering moderate gradient. In this stretch it is a riffle type stream with a gravel-rubble stream bottom. The banks support fairly dense deciduous trees and underbrush.

Colony Creek runs from the southern mountain slopes for more than 5 miles to enter Samish Bay southeast of Windy Point. The upper 2 miles present mostly moderate gradient as it courses through a number of small beaver dams or debris jams. Between R.M. 2.0 and 3.0 the gradient steepens as the stream cuts through a narrow ravine-type valley holding a number of steep cascades. The bottom is predominantly of boulder and rubble with only a few patch gravel areas. Below the ravine, the creek takes on a moderate to gentle gradient where the confined, sometimes channelized stream course contains mostly riffle and glide character with few pools. Below R.M. 2.0 the bottom is mainly gravel, with increasing amounts of sand and silt as it moves toward salt water. Whitehall Creek entering near the mouth of Colony Creek (R.M. 0.4) contains moderate gradient, excellent gravel and favorable cover in its lower reaches. Tributaries are mostly stedp with limited moderate gradient over their lower reaches. Cover is fairly dense over the upper watershed consisting mainly of deciduous trees and underbrush but quite sparse along the lower 2 miles.

Salmon Utilization

In Chuckanut Creek, coho spawn throughout the accessible reaches while chum mainly use the area below Chuckanut Drive. Chinook also occasionally inhabit this system. Little is known regarding the present salmon use in Padden Creek but reports indicate it has had runs of coho and chum. Large numbers of chum and some coho utilize the lower portion of Oyster Creek. Colony Creek likewise contains good numbers of chum and a fair coho population, with the lower reaches of Whitehall Creek being particularly productive. The smaller independent drainages are believed to have a little or no salmon use. They each have very steep gradients and intermittent flows just above salt water.

Limiting Factors

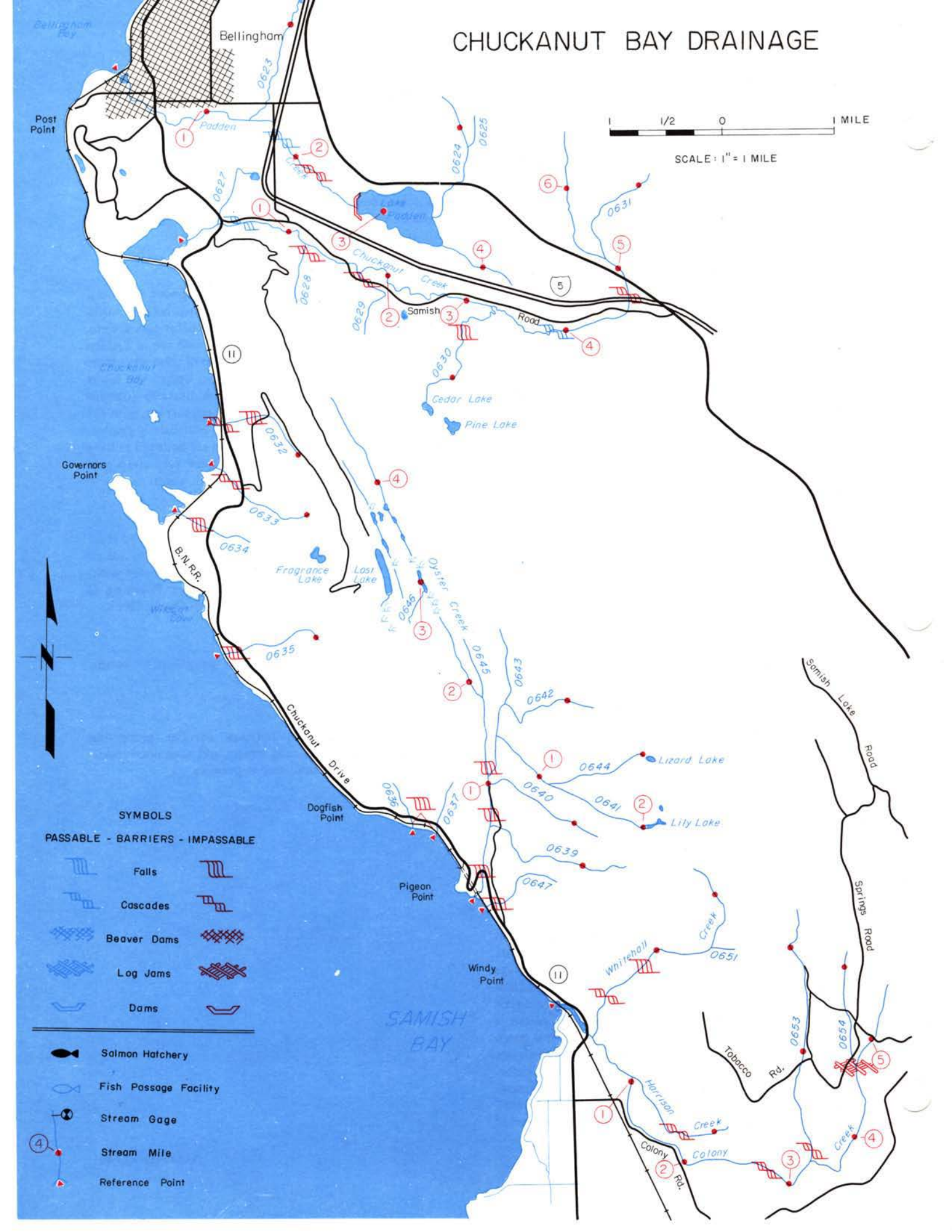
The principal limiting factor is steep gradient and inaccessibility within portions of these streams. Removal of stream-side cover, stream channelization, and water withdrawals further limits productive capabilities. Poaching of salmon is at times a problem, particularly in Oyster Creek.

Beneficial Developments

There have been no projects or programs to benefit salmon production in this watershed.

Habitat Needs

Principal habitat requirements involve preserving stream cover, and maintaining stream and streambed conditions in as near to a natural state as possible.


CHUCKANUT BAY DRAINAGE
Bellingham
Bellingham Bay
Post Point
Padden
Padden Creek
Lake Padden
Chuckanut Creek
Samish
Road
Cedar Lake
Pine Lake
Governors Point
Chuckanut Bay
Fragrance Lake
Lost Lake
Oyster Creek
B.N.R.R.
Chuckanut Drive
Dogfish Point
Pigeon Point
Windy Point
SAMISH BAY
Lizard Lake
Lily Lake
Whitehall Creek
Harrison Creek
Colony Rd.
Tobacco Rd.
Samish Lake Road
Springs Road
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SCALE: 1" = 1 MILE
SYMBOLS
PASSABLE - BARRIERS - IMPASSABLE
Falls
Cascades
Beaver Dams
Log Jams
Dams
Salmon Hatchery
Fish Passage Facility
Stream Gage
Stream Mile
Reference Point

CHUCKANUT BAY DRAINAGES
Nooksack River Basin—WRIA 01

Stream Number	Stream Name	Location Of Mouth	Length	Drainage Area	Salmon Use
0622	Padden Creek	Sec1,T37N,R2E	4.3	—	Coho, Chum
0623	Unnamed	RB-1.5	1.2	—	Unknown
	Unnamed Lake	Outlet-1.2	—	—	
	Lake Padden	Outlet-2.8	—	—	
0624	Unnamed	RB-3.4	1.3	—	None
0626	Chuckanut Creek	Sec13,T37N,R2E	6.5	—	Coho, Chum
0630	Unnamed	LB-3.2	1.4	—	Coho
	Cedar Lake	Outlet-1.4	—	—	
0631	Unnamed	LB-5.1	1.1	—	None
0632	Unnamed	Sec24,T37N,R2E	1.0	—	Unknown
0633	Unnamed	Sec25,T37N,R2E	1.0	—	Unknown
0635	Unnamed	Sec36,T37N,R2E	1.0	—	Unknown
0638	Oyster Creek	Sec16,T36N,R3E	4.9	—	Coho, Chum
0639	Unnamed	LB-0.65	1.4	—	None
0640	Unnamed	LB-1.0	1.2	—	None
0641	Unnamed	LB-1.1	2.05	—	None
0642	Unnamed	RB-0.4	1.2	—	None
0644	Unnamed	RB-1.1	1.0	—	None
	Lizard Lake	Outlet-1.0	—	—	
	Unnamed Lake	Outlet-2.05	—	—	
	Unnamed Lake	Outlet-2.9	—	—	
0648	Colony Creek	Sec21,T36N,R3E	5.6	8.36	Coho, Chum
0649	Drainage Ditch	LB-0.05	~ 8.0	—	Unknown
0650	Whitehall Creek	RB-0.45	2.4	—	Coho, (Chum)
0652	Harrison Creek	RB-0.95	1.2	—	(Coho)
0653	Unnamed	RB-3.4	2.5	—	Unknown
0654	Unnamed	RB-4.7	1.2	—	Unknown