APPENDIX

(Figures 1 - 3)

(Tables 1 - 17)

(Glossary of Terms)

Figure 1. Habitat criteria curves.

COHO SALMON

10010 SPAWNING 78/01/24.

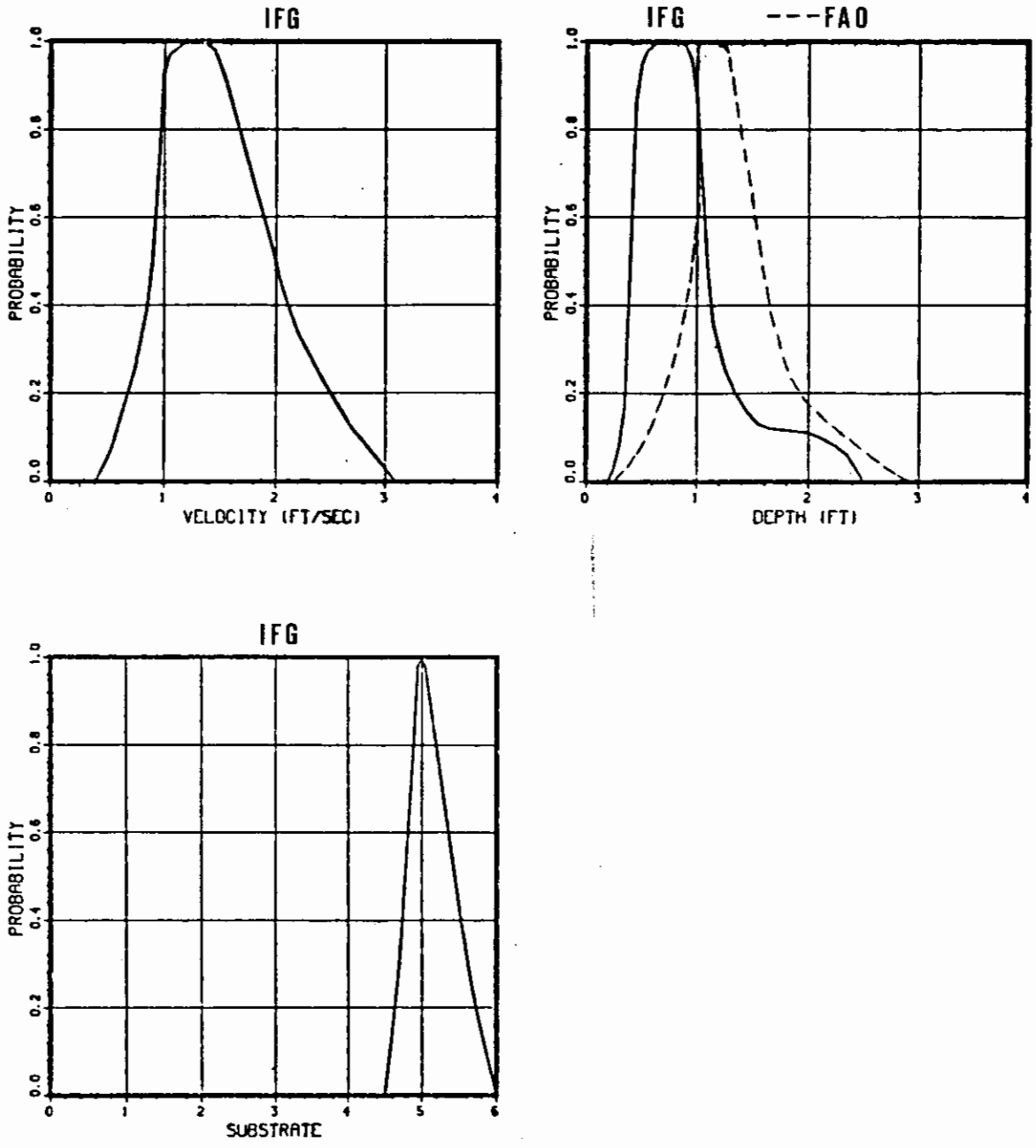
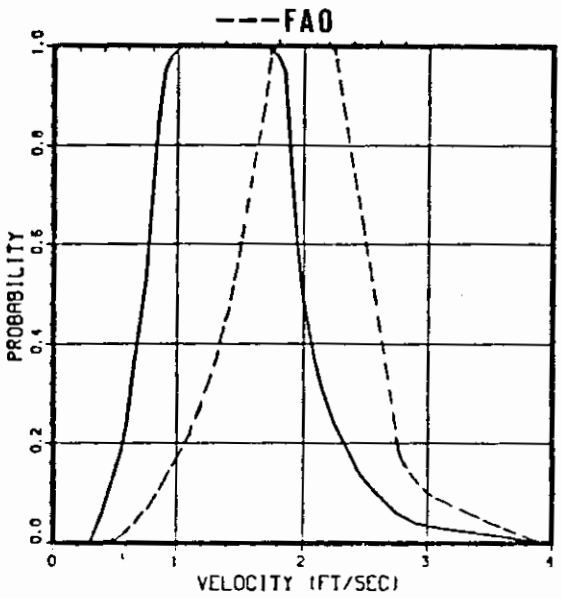
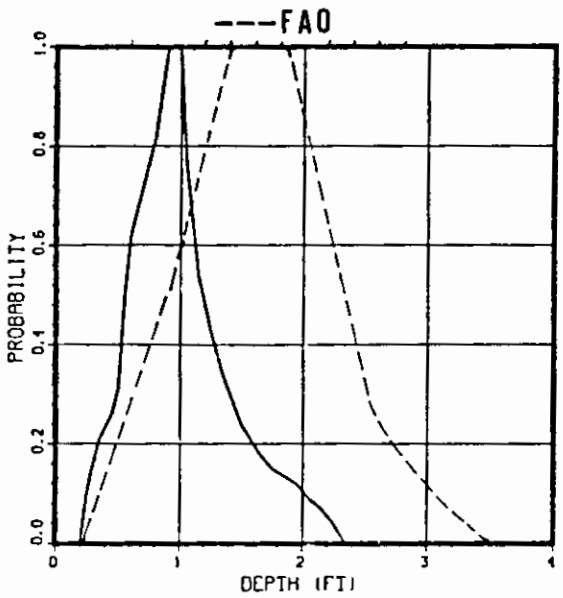


Figure 2. Habitat criteria curves.

SPRING CHINOOK

10111 SPAWNING 78/01/24.





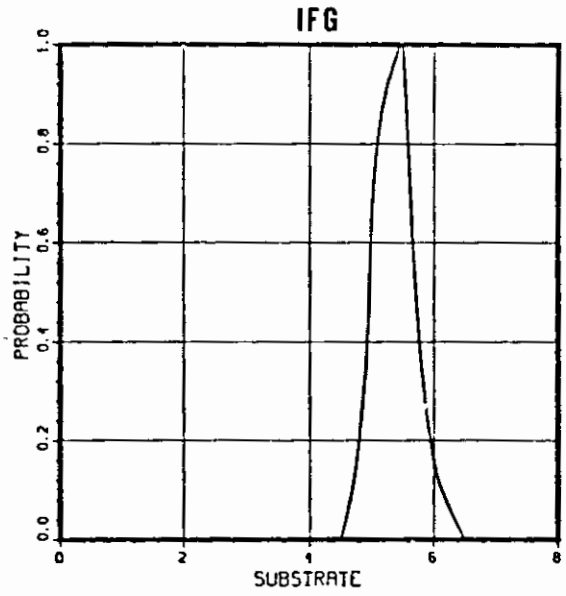


Figure 3. Habitat criteria curves.

FALL CHINOOK

10112 SPAWNING 78/01/24.

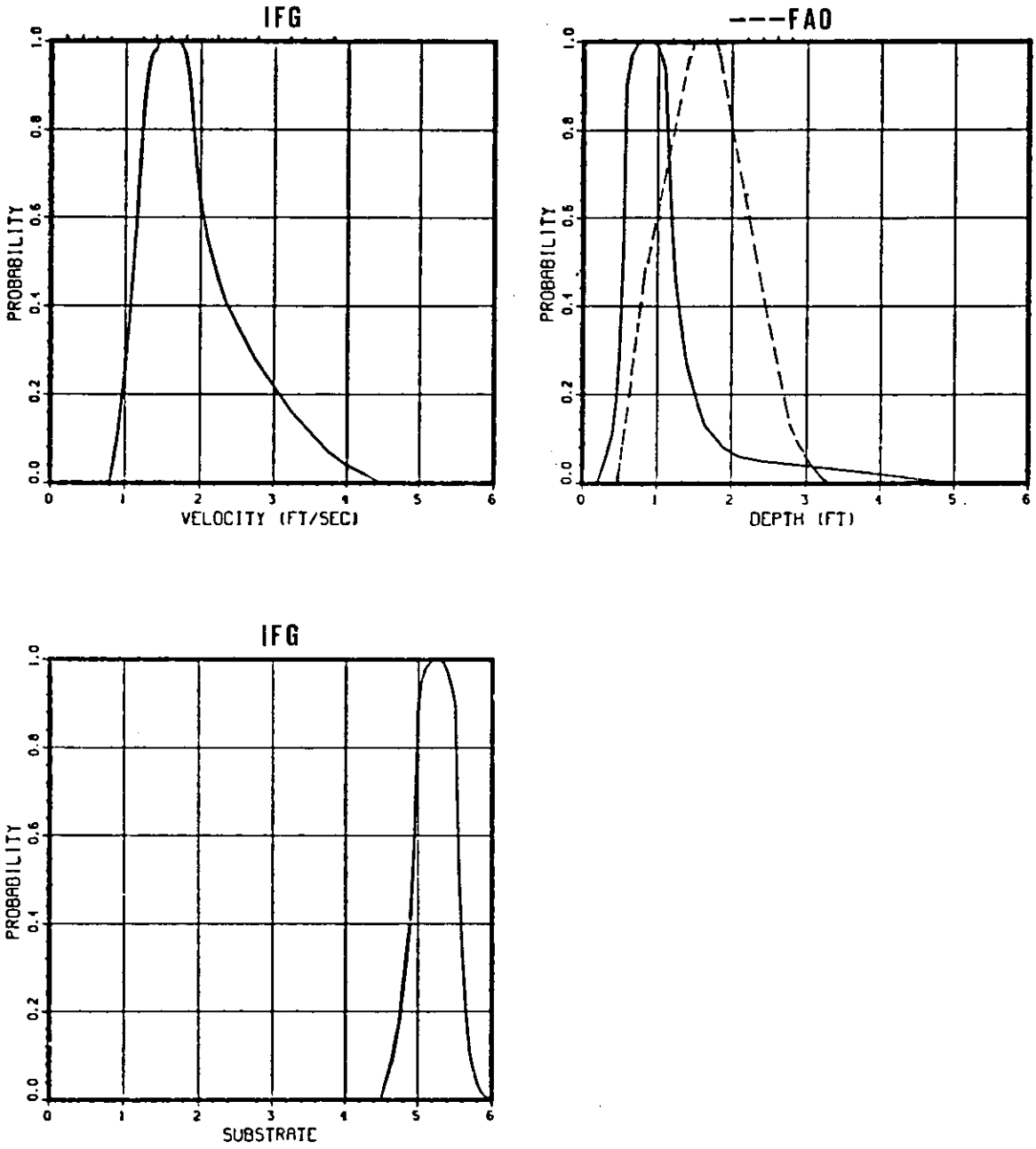


Table 1. Stream/watershed characteristics used to define North Fork, South Fork and mainstem Skokomish River reach partitions for study representation.

Study Area	Stream Reach Represented	Stream/Watershed Characteristics
N3 (NE¼SW¼ Sec.7, T21N, R4W, Potlatch, WA map)	Mouth of North Fork Skokomish River, RM 9, upstream to mouth of unnamed trib., RM 10.5, # 0100	Moderate stream gradient; valley broadened and mostly flat; good pool : riffle ratio; abundant spawning substrate; low summer flow in some sections seasonally restrictive to all fish usage; banks mostly modified, little overhead canopy; adequate benthic food production; land use - mostly cleared for cattle grazing; major flow source, McTaggert Creek.
N2 (NW¼NE¼ Sec.31, T22N, R4W, Potlatch, WA map)	Mouth of unnamed trib., RM 10.5, upstream to mouth McTaggert Creek, RM 13.3	Moderate stream gradient; valley narrowed and steeper; good pool : riffle ratio; abundant spawning substrate; low summer flow can be restrictive to fish usage; banks mostly unmodified with fair to good predominantly deciduous overhead canopy; adequate benthic food production; land use - general logging; major flow source, McTaggert Creek.
N1 (SW¼NW¼ Sec.29, T22N, R4W, Potlatch, WA map)	Mouth of McTaggert Creek, RM 13.3, upstream to Cushman Dam No. 2, RM 17.3	Moderate to steep gradient; valley narrows to form a canyon in upper 1½ miles below dam; ratio of pool areas increased as riffles decreased; fair to good quantity of suitable spawning substrate downstream is decreased towards the dam; flow source limited to runoff from approximately 5 square miles of the watershed plus small amount of dam leakage; banks mostly well vegetated with mixed deciduous/ conifer canopy; abundant benthic food production; land use - general logging.

Table 1. Continued.

Study Area	Stream Reach Represented	Stream/Watershed Characteristics
S4 (S½NW¼ Sec. 14, T21N, R4W, Potlatch, WA map)	Mainstem mouth upstream to mouth of North Fork, RM 9.01	Slight to moderage gradient; broad flat valley in the lower flood plain; long deep pools separated by short riffles; lower 3 miles affected by tide fluctuations; abundant spawning substrate; some extensive gravel bars upstream; banks partially disturbed and eroding with intermittent deciduous canopy overhead; abundant benthic food production; predominantly agricultural land use; flow source is total Skokomish watershed (except upper North Fork above Cushman #2 Dam) including lower North Fork and Vance Creek.
S3 (SE¼SW¼ Sec. 1, T21N, R5W, Mt. Tebo, WA map)	South Fork from mouth of North Fork upstream to bottom of canyon, RM 4.0	Moderate gradient; broad, flat valley narrowing upstream at canyon bottom; pools longer than riffles with some glides; abundant spawning substrate in most portions; bank partially disturbed and eroding with some deciduous overhead canopy; extensive areas of gravel bar bounding channel; abundant benthic food production; predominantly agricultural land use; flow source is runoff from generally disturbed and altered upper South Fork and Vance Creek watersheds.
S2 (W½NW¼ Sec. 22, T22N, R5W, Mt. Tebo, WA map)	Lower canyon bottom, RM 4.0 upstream to upper canyon top RM 9.8	Moderately steep gradient; mostly narrow steep-sided canyon; more riffles or glides than pools, with some cascades; reduced spawning substrate area with increased rubble or larger rock; upper canyon banks are predominantly bedrock and canyon wall with small gravel beds; lower canyon not as constricted with considerably larger area of suitable spawning substrate; canyon walls providing considerable shading; adequate benthic food production; land use is logging; flow source is runoff from generally disturbed and altered upper South Fork watershed.

Table 1. Continued.

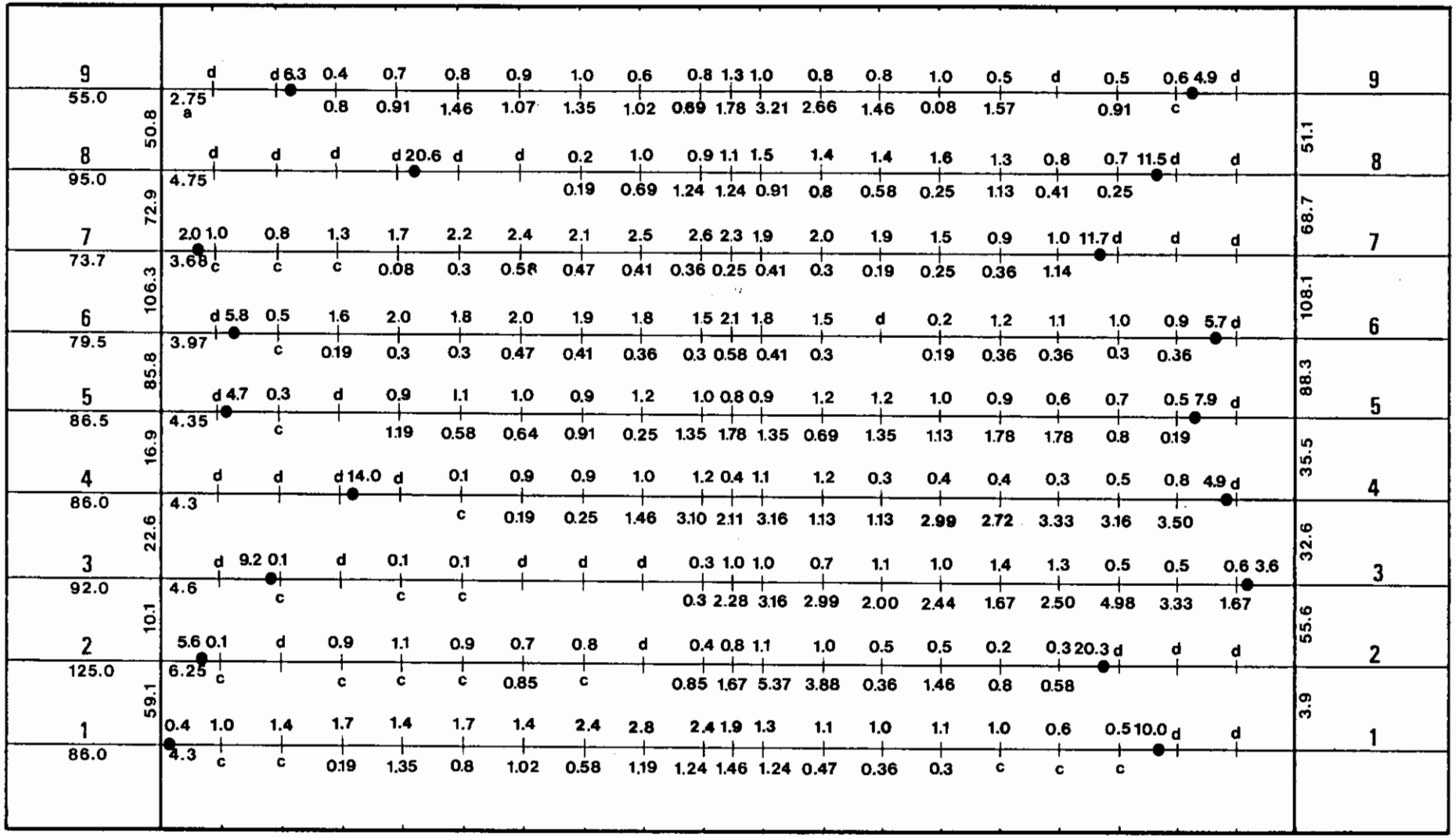
Study Area	Stream Reach Represented	Stream/Watershed Characteristics
S1 (¼ mile downstream of bridge at Brown Creek Campground, unnumbered Sec., T22N, R5W, Mt. Tebo, WA map)	Canyon top, RM 9.8, upstream to RM 16	Moderate gradient, relatively narrow valley with moderately steep sides; good pool : riffle ratio with some glides; abundant spawning substrate; banks generally alternate between extensive gravel bars and fewer rock or earth wall cuts, with relatively little overhead canopy; adequate benthic food production; land use primarily logging with seasonal recreation in accessible areas; flow source is runoff from generally disturbed (logging) and altered immediate and upper watershed.

TABLE 2.

RIVER SYSTEM North Fork Skokomish

Study Reach N 1

Date of Data Collection 2-7-78



● Distance from reference stake to water's edge.

a) Distance between data points on respective transect, representing 1/20 total transect width.

b) Above each data point is the recorded water depth; below the respective data point is the recorded flow velocity (if a single number, it was measured at 0.4 depth when depth was ≤ 3 feet; if two numbers, they were measured at 0.8 (upper number) and 0.2 depth when depth was > 3 feet).

c) Current unmeasurable.

d) Dry -- recorded as dry if data point is over a point beyond the stream's wetted perimeter or it is over an emergent rock within the wetted perimeter.

TABLE 3. SURVEY DATA

DATE: 2-7-78

STATION: N 1

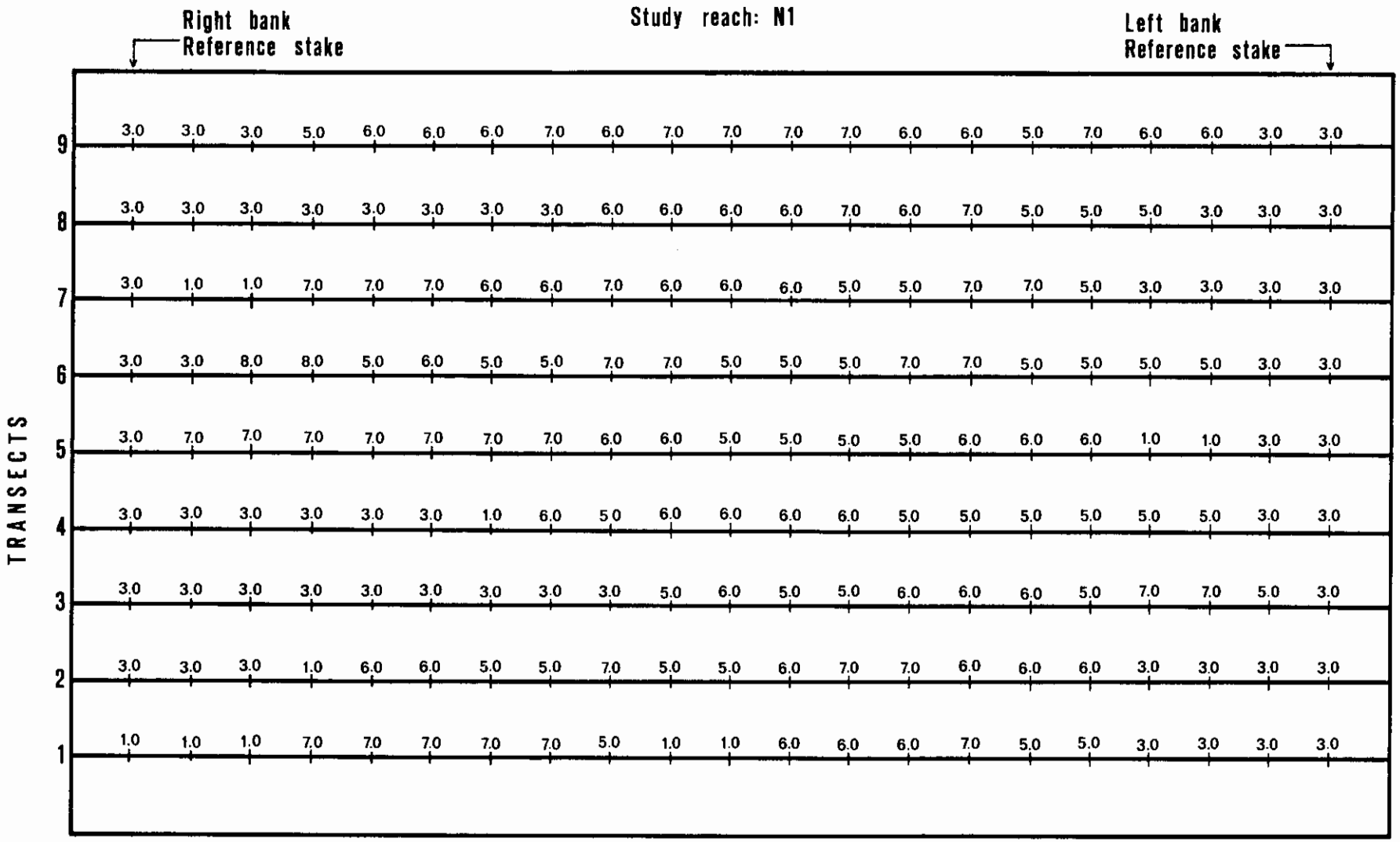
Transect	Instrument Height	Water Reading	Surface Elevation	HEADSTAKE LEFT Reading	HEADSTAKE LEFT Elevation	HEADSTAKE RIGHT Reading	HEADSTAKE RIGHT Elevation	TURN POINT Foresight	TURN POINT Backsight
1	Backsight (2.91) 102.91			4.00	98.91				
2				3.50	99.41				
3				3.72	99.19				
4	103.14			3.79	99.35			5.32	5.55
5				4.55	98.59				
6				3.15	99.99				
7	103.16			2.72	100.44			4.81	4.83
8				3.59	99.57				
9		5.17	97.99	3.95	99.21				
8		5.25	97.91						
7		5.25	97.91						
6	103.48	5.61	97.87					4.83	5.15
5		5.63	97.85						
4		5.73	97.75						
3		6.07	97.41						
2		6.31	97.17						
1		6.33	97.15						
B.M.	103.31 (3.30) (.01 Error)							5.60	5.43

Table 5. STUDY AREA - NT. .

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	6.80	4.26	556.08	1732.03
2	10.00	27.15	878.69	3192.90
3	13.60	94.80	1541.27	4493.36
4	15.00	115.12	1941.74	4939.47
5	20.00	200.19	3330.29	6378.78
6	25.00	295.76	4205.27	7274.41
7	27.00	363.18	(4266.93)	8043.47
8	30.00	927.77	3944.99	8527.89
9	33.00	(1135.73)	3696.36	(8532.63)
10	35.00	1007.12	3506.38	8247.30
11	37.00	965.12	3212.37	7844.89
12	40.00	920.09	2782.70	7423.34
13	42.40	917.17	2513.25	7071.00
14	45.00	934.10	2350.94	6705.12
15	47.00	945.28	2178.43	6459.27
16	50.00	963.08	2124.27	6162.54
17	53.00	964.55	2102.15	5932.46
18	55.00	952.97	2039.09	5784.51
19	60.00	933.09	1787.14	5291.15
20	65.00	887.68	1555.12	4929.02
21	70.00	824.72	1397.79	4581.09
22	75.00	809.95	1217.29	4352.25
23	80.00	822.62	1174.36	4101.63
24	85.00	861.81	1137.88	3790.03
25	90.00	904.31	1150.42	3610.53
26	95.00	957.98	1142.11	3486.88
27	100.00	977.04	1122.93	3374.90
28	105.00	904.08	1117.82	3245.73
29	110.00	840.85	1125.67	3122.89
30	115.00	789.41	1153.17	3040.73

TABLE 4. SUBSTRATE DATA [1]



[1] IFG substrate coding (Bovee 1978):

Plant detritus/organic material	-1	Gravel	-5
Mud/soft clay	-2	Cobble/rubble	-6
Silt	-3	Boulder	-7
Sand	-4	Bedrock	-8

NORTH FORK SKOKOMISH RIVER WASHINGTON
STUDY REACH N1

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER, S=.0(

	Q	(SPRING) SPAWNING	(FALL) SPAWNING	JUVENILE	INCUBATION
1	6.80	7.37	0.00	1446.92	1661.48
2	10.00	29.61	4.79	2547.38	3233.83
3	13.60	81.90	87.96	4068.33	4657.43
4	15.00	112.35	148.67	4605.01	5172.31
5	20.00	285.50	308.52	6329.98	6813.75
6	25.00	484.12	414.48	8009.23	8953.86
7	27.00	466.52	358.84	(8520.14)	9078.36
8	30.00	562.75	593.59	8497.51	9661.17
9	33.00	845.49	1013.75	8010.92	(9781.20)
10	35.00	1011.79	989.01	7646.95	9737.64
11	37.00	978.41	955.41	7311.35	9652.84
12	40.00	890.75	919.44	6879.22	9390.59
13	42.40	919.36	952.27	6574.44	9094.68
14	45.00	881.17	1008.41	6318.77	8739.43
15	47.00	867.16	1051.05	6148.88	8480.25
16	50.00	886.18	1090.32	5940.40	8101.96
17	53.00	925.48	1109.65	5791.18	7844.52
18	55.00	949.00	1107.42	5678.40	7670.46
19	60.00	1026.89	1080.39	5327.09	7106.81
20	65.00	1158.28	1111.35	4989.18	6730.60
21	70.00	(1195.75)	1090.21	4739.01	6387.56
22	75.00	1110.07	1105.25	4482.42	6111.69
23	80.00	1054.83	(1123.18)	4235.57	5807.28
24	85.00	1002.04	1113.16	3996.52	5445.83
25	90.00	984.75	1102.19	3812.06	5177.47
26	95.00	975.62	1094.54	3633.17	5004.99
27	100.00	979.71	1069.08	3509.85	4851.29
28	105.00	946.73	1031.96	3415.67	4702.89
29	110.00	882.38	884.71	3331.90	4551.71
30	115.00	822.61	786.18	3267.92	4416.56

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON, FAO VELOCITY, DEPTH, S

	Q	SPAWNING
1	6.80	47.69
2	10.00	172.32
3	13.60	391.70
4	15.00	468.60
5	20.00	704.23
6	25.00	903.98
7	27.60	961.08
8	30.00	1769.79
9	33.00	(2321.23)
10	35.00	2260.63
11	37.00	1997.36
12	40.00	1826.44
13	42.40	1704.82
14	45.00	1646.62
15	47.00	1616.06
16	50.00	1574.13
17	53.00	1527.50
18	55.00	1504.12
19	60.00	1499.36
20	65.00	1403.44
21	70.00	1375.97
22	75.00	1341.35
23	80.00	1295.94
24	85.00	1236.36
25	90.00	1168.52
26	95.00	1056.79
27	100.00	959.92
28	105.00	868.50
29	110.00	777.51
30	115.00	657.18

NORTH FORK SKOKOMISH RIVER WASHINGTON
STUDY REACH N1

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAD

	Q	
1	6.80	86.05
2	10.00	196.88
3	13.60	356.04
4	15.00	418.63
5	20.00	695.54
6	25.00	1068.52
7	27.00	1198.10
8	30.00	1651.54
9	33.00	2119.49
10	35.00	(2279.88)
11	37.00	2012.22
12	40.00	1882.44
13	42.40	1798.96
14	45.00	1533.40
15	47.00	1456.09
16	50.00	1397.49
17	53.00	1366.07
18	55.00	1358.96
19	60.00	1391.69
20	65.00	1261.49
21	70.00	1227.66
22	75.00	1161.64
23	80.00	1099.85
24	85.00	1052.15
25	90.00	1009.66
26	95.00	956.82
27	100.00	899.82
28	105.00	789.08
29	110.00	688.57
30	115.00	611.15

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	6.60	0.00
2	10.00	9.68
3	13.60	57.41
4	15.00	84.71
5	20.00	142.65
6	25.00	127.68
7	27.00	109.87
8	30.00	645.15
9	33.00	(1446.40)
10	35.00	1127.30
11	37.00	982.24
12	40.00	856.45
13	42.40	805.52
14	45.00	962.14
15	47.00	1040.52
16	50.00	1092.77
17	53.00	1091.86
18	55.00	1070.06
19	60.00	1043.07
20	65.00	923.74
21	70.00	926.87
22	75.00	954.35
23	80.00	886.59
24	85.00	845.39
25	90.00	765.89
26	95.00	675.97
27	100.00	625.75
28	105.00	586.37
29	110.00	508.02
30	115.00	353.13

NORTH FORK SKOKOMISH RIVER WASHINGTON
STUDY REACH N1

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	6.80	133.73
2	10.00	402.56
3	13.60	694.76
4	15.00	783.99
5	20.00	963.38
6	25.00	1267.67
7	27.00	1840.98
8	30.00	(2438.77)
9	33.00	1998.28
10	35.00	1747.91
11	37.00	1452.78
12	40.00	1212.97
13	42.40	1067.53
14	45.00	928.65
15	47.00	823.72
16	50.00	684.61
17	53.00	587.60
18	55.00	529.49
19	60.00	422.57
20	65.00	368.15
21	70.00	291.46
22	75.00	302.18
23	80.00	329.67
24	85.00	343.72
25	90.00	356.88
26	95.00	360.81
27	100.00	344.55
28	105.00	318.21
29	110.00	304.36
30	115.00	284.18

DEPTH BRACKETS	-I	-I	-I	-I	-I	-I	-I	-I
SUBSTRATE BRACKETS	-I	-I	-I	-I	-I	-I	-I	-I
CURVE ID NUMBERS	-11010	-11001	-11000	-11023	-12002	-12003		

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER,S=

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	6.80	0.00	2474.47	5240.68	2777.03
2	10.00	6.23	3978.67	6756.05	4055.35
3	13.60	36.28	5948.05	8279.60	5328.63
4	15.00	69.10	6766.71	8839.59	5813.28
5	20.00	272.34	9255.54	10494.26	7488.02
6	25.00	496.27	11410.86	11887.18	9187.96
7	27.00	476.10	11722.00	(11905.24)	9515.94
8	30.00	587.52	12015.12	11565.96	10716.79
9	33.00	1138.80	(12181.68)	11052.87	11413.99
10	35.00	1395.69	11921.15	10496.94	11557.30
11	37.00	1427.52	11309.38	9844.45	(11605.48)
12	40.00	1283.67	10367.13	8986.17	11482.14
13	42.40	1174.81	9877.62	8520.53	11116.40
14	45.00	1188.27	9318.69	8033.13	10570.31
15	47.00	1255.77	9000.10	7785.19	10193.78
16	50.00	1327.51	8587.02	7501.00	9694.34
17	53.00	1382.20	8350.07	7195.04	9341.06
18	55.00	1401.46	8193.26	6989.49	9145.58
19	60.00	1409.73	7814.95	6608.88	8776.06
20	65.00	1535.42	7526.95	6243.72	8458.40
21	70.00	(1612.46)	6890.14	5577.58	7774.17
22	75.00	1550.85	6262.13	5001.80	7515.01
23	80.00	1479.25	5896.56	4667.47	7117.74
24	85.00	1424.19	5659.37	4360.36	6804.91
25	90.00	1355.17	5469.45	4154.63	6584.54
26	95.00	1259.74	5221.07	3942.50	6382.59
27	100.00	1154.24	4964.07	3740.04	6195.33
28	105.00	1055.97	4723.78	3587.65	6011.24
29	110.00	956.58	4523.04	3485.61	5834.19
30	115.00	863.98	4315.74	3368.67	5640.05

Table 5 STUDY AREA - N1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. IFG CURVES

	Q	STENONEMA SP.	ACRONEURIA SP.
1	6.60	399.59	306.21
2	10.00	850.21	551.63
3	13.60	1286.01	892.31
4	15.00	1375.78	1015.82
5	20.00	1812.75	1434.37
6	25.00	(2030.57)	1821.43
7	27.00	1938.27	1887.71
8	30.00	1882.66	2013.57
9	33.00	1982.76	2239.85
10	35.00	1962.52	2338.92
11	37.00	1917.43	2428.32
12	40.00	1872.39	(2521.71)
13	42.40	1794.61	2470.56
14	45.00	1740.80	2340.53
15	47.00	1721.35	2217.03
16	50.00	1674.78	2011.64
17	53.00	1628.47	1972.67
18	55.00	1577.29	1938.66
19.	60.00	1442.38	1861.74
20	65.00	1368.00	1858.53
21	70.00	1206.74	1814.43
22	75.00	1025.55	1735.09
23	80.00	887.59	1609.96
24	85.00	693.73	1513.83
25	90.00	577.33	1419.95
26	95.00	527.44	1325.11
27	100.00	500.90	1207.30
28	105.00	469.26	1090.46
29	110.00	450.23	1017.04
30	115.00	437.96	940.03

CURVE ID NUMBERS -10010 -10000 -10023 -10111 -10112 -10101 -10123 -10650 -10760 -10810 -1210
-11001 -11000 -11023 -12003 -13003

Table 6. STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	10.00	161.05	2889.86	3750.32
2	13.00	362.02	3312.64	4979.20
3	15.00	540.63	(3498.68)	5635.58
4	20.00	1020.42	3288.35	6930.53
5	25.00	1723.66	2895.87	7541.86
6	27.00	1985.74	2796.34	7707.41
7	30.00	2593.39	2662.95	8004.65
8	33.00	3144.04	2527.60	8344.93
9	35.00	3347.61	2423.96	8524.86
10	37.00	3550.02	2347.36	8625.64
11	40.00	3952.68	2246.46	8730.62
12	45.00	4316.34	2062.34	8850.81
13	47.00	4382.60	2023.01	8877.71
14	50.00	4407.44	1970.34	8922.83
15	53.00	4596.79	1922.37	8934.68
16	55.00	4629.67	1895.90	8930.95
17	60.00	(4674.45)	1803.30	8884.28
18	65.00	4568.19	1745.10	8924.60
19	70.00	4400.08	1699.61	8968.90
20	75.00	4219.23	1632.82	(9025.23)
21	80.00	4053.94	1550.25	8970.61
22	85.00	3904.34	1467.28	8547.16
23	90.00	3724.45	1452.44	8468.70
24	92.00	3651.99	1408.97	8453.58
25	95.00	3529.61	1354.14	8488.00
26	100.00	3354.46	1291.32	8242.23
27	105.00	3219.13	1274.04	7909.19
28	110.00	3139.00	1279.77	7769.84
29	115.00	3084.58	1307.12	7753.83
30	120.00	3087.48	1375.31	7820.83

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER, S=.0025)

	Q	(SPRING) SPAWNING	(FALL) SPAWNING	JUVENILE	INCUBATION
1	10.00	54.25	50.27	4323.33	4057.19
2	13.00	111.00	127.90	5204.23	5572.21
3	15.00	167.93	202.63	5632.74	6470.33
4	20.00	362.08	505.24	6464.84	8087.28
5	25.00	622.22	899.12	6759.90	8304.87
6	27.00	749.13	1099.02	6800.17	9219.59
7	30.00	962.07	1437.46	(6825.70)	9552.88
8	33.00	1169.96	1829.76	6762.31	10066.73
9	35.00	1346.91	2109.63	6702.00	10339.72
10	37.00	1498.67	2390.36	6625.91	10552.41
11	40.00	1703.17	2856.70	6548.50	10761.62
12	45.00	2115.80	3606.74	6298.25	11097.93
13	47.00	2284.87	3884.75	6196.30	11226.25
14	50.00	2546.48	4285.87	6051.11	11411.61
15	53.00	2803.96	4647.26	5906.61	11515.69
16	55.00	2943.53	4859.32	5824.94	11572.21
17	60.00	3252.30	5114.13	5600.19	11701.42
18	65.00	3550.46	5262.25	5416.60	11779.91
19	70.00	3822.63	5356.28	5248.80	12238.89
20	75.00	4077.23	(5400.45)	5047.89	12444.22
21	80.00	4328.13	5359.62	4854.32	12452.01
22	85.00	4509.31	5234.76	4716.21	12422.34
23	90.00	4479.24	5097.68	4659.17	(12514.88)
24	92.00	4514.53	5039.87	4626.32	12511.80
25	95.00	(4567.31)	4961.33	4590.77	12512.65
26	100.00	4559.73	4819.24	4514.20	12439.16
27	105.00	4471.43	4730.27	4473.11	12216.59
28	110.00	4410.63	4697.32	4481.73	12041.15
29	115.00	4320.80	4706.94	4557.13	12072.78
30	120.00	4229.19	4618.00	4722.49	12099.53

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON,FAO VELOCITY,DEPTH,SUBSTR

	Q	SPAWNING
1	10.00	671.63
2	13.00	981.16
3	15.00	1204.16
4	20.00	1840.10
5	25.00	2483.17
6	27.00	2749.09
7	30.00	3141.64
8	33.00	3474.59
9	35.00	3651.08
10	37.00	3825.24
11	40.00	4153.12
12	45.00	4430.15
13	47.00	4527.67
14	50.00	4672.14
15	53.00	4830.60
16	55.00	4907.94
17	60.00	4994.36
18	65.00	5050.11
19	70.00	5119.33
20	75.00	5209.41
21	80.00	(5217.33)
22	85.00	5075.04
23	90.00	4826.17
24	92.00	4723.88
25	95.00	4660.76
26	100.00	4414.96
27	105.00	4265.10
28	110.00	4226.93
29	115.00	4269.02
30	120.00	4276.88

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAD

	Q	
1	10.00	1215.57
2	13.00	1556.61
3	15.00	1766.56
4	20.00	2239.12
5	25.00	2636.14
6	27.00	2798.10
7	30.00	3018.89
8	33.00	3224.96
9	35.00	3348.77
10	37.00	3470.17
11	40.00	3712.75
12	45.00	3877.76
13	47.00	3919.04
14	50.00	3980.08
15	53.00	4055.68
16	55.00	4096.07
17	60.00	4205.50
18	65.00	4351.84
19	70.00	4511.87
20	75.00	4636.56
21	80.00	(4639.48)
22	85.00	4616.50
23	90.00	4554.45
24	92.00	4570.60
25	95.00	4586.40
26	100.00	4471.96
27	105.00	4324.99
28	110.00	4224.94
29	115.00	4119.78
30	120.00	4085.60

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	10.00	183.86
2	13.00	355.98
3	15.00	451.07
4	20.00	824.73
5	25.00	1294.98
6	27.00	1511.28
7	30.00	1868.06
8	33.00	2225.84
9	35.00	2410.19
10	37.00	2602.20
11	40.00	3005.16
12	45.00	3450.48
13	47.00	3601.12
14	50.00	3790.12
15	53.00	3993.84
16	55.00	(4093.77)
17	60.00	4081.94
18	65.00	4047.83
19	70.00	4015.86
20	75.00	3955.75
21	80.00	3764.52
22	85.00	3477.73
23	90.00	3303.58
24	92.00	3220.97
25	95.00	3073.32
26	100.00	2749.26
27	105.00	2631.79
28	110.00	2623.72
29	115.00	2742.32
30	120.00	2923.02

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	10.00	1391.78
2	13.00	1644.47
3	15.00	1977.33
4	20.00	2032.60
5	25.00	(2043.87)
6	27.00	2029.10
7	30.00	2002.80
8	33.00	1949.13
9	35.00	1895.88
10	37.00	1840.04
11	40.00	1769.35
12	45.00	1646.35
13	47.00	1614.07
14	50.00	1565.86
15	53.00	1548.24
16	55.00	1539.76
17	60.00	1464.11
18	65.00	1414.50
19	70.00	1433.10
20	75.00	1477.93
21	80.00	1491.86
22	85.00	1389.25
23	90.00	1198.64
24	92.00	1107.70
25	95.00	1046.36
26	100.00	979.98
27	105.00	927.68
28	110.00	893.02
29	115.00	873.38
30	120.00	898.06

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER, SI=.0025

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	10.00	15.27	4402.32	4938.42	4879.26
2	13.00	39.17	5040.43	5389.86	5842.13
3	15.00	64.24	5378.59	5569.32	6436.29
4	20.00	189.99	6121.23	5929.63	7837.99
5	25.00	429.57	6636.19	(6005.41)	9087.05
6	27.00	554.64	6797.92	6004.28	9543.92
7	30.00	738.61	7020.05	5981.19	10178.63
8	33.00	950.09	7224.05	5967.03	10740.90
9	35.00	1094.36	7308.37	5925.04	11084.84
10	37.00	1238.07	7363.97	5854.10	11417.07
11	40.00	1459.11	7399.73	5724.36	11864.22
12	45.00	1918.76	7444.50	5492.96	12539.65
13	47.00	2101.79	(7460.34)	5413.99	12791.10
14	50.00	2356.89	7450.57	5290.01	13132.92
15	53.00	2630.11	7421.34	5172.22	13442.85
16	55.00	2814.26	7402.53	5110.81	13639.59
17	60.00	3201.05	7335.42	4990.50	14095.36
18	65.00	3546.98	7306.99	4915.50	14513.35
19	70.00	3850.18	7299.49	4834.68	14905.56
20	75.00	4090.34	7259.68	4755.02	15262.03
21	80.00	4243.42	7257.35	4742.57	15550.07
22	85.00	(4345.56)	7193.49	4658.89	15791.54
23	90.00	4318.99	7124.27	4581.62	15973.35
24	92.00	4325.41	7085.62	4561.53	16011.94
25	95.00	4323.20	7020.85	4493.78	16060.33
26	100.00	4280.67	6929.75	4335.76	15903.15
27	105.00	4181.91	6848.59	4195.24	(16279.72)
28	110.00	4078.03	6796.40	4134.61	15107.56
29	115.00	4043.21	6750.54	4095.11	16031.69
30	120.00	4003.77	6715.80	4080.56	15932.89

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. TFG CURVES NYM

	Q	
1	10.00	255.52
2	13.00	334.43
3	15.00	369.18
4	20.00	476.82
5	25.00	581.54
6	27.00	618.10
7	30.00	664.70
8	33.00	701.49
9	35.00	722.45
10	37.00	738.90
11	40.00	726.28
12	45.00	735.38
13	47.00	(739.75)
14	50.00	739.42
15	53.00	731.13
16	55.00	725.91
17	60.00	702.03
18	65.00	668.76
19	70.00	618.67
20	75.00	564.71
21	80.00	516.42
22	85.00	474.05
23	90.00	482.37
24	92.00	473.54
25	95.00	462.53
26	100.00	451.20
27	105.00	449.76
28	110.00	455.33
29	115.00	462.47
30	120.00	467.42

Table 6 STUDY AREA - N2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR STENONEMA SP. IFG CURVES NYM

	Q	
1	10.00	342.04
2	13.00	403.01
3	15.00	436.52
4	20.00	580.64
5	25.00	583.36
6	27.00	579.65
7	30.00	(601.70)
8	33.00	596.96
9	35.00	580.20
10	37.00	559.50
11	40.00	473.80
12	45.00	409.70
13	47.00	382.54
14	50.00	340.56
15	53.00	305.73
16	55.00	284.23
17	60.00	245.92
18	65.00	217.03
19	70.00	181.52
20	75.00	148.36
21	80.00	120.32
22	85.00	100.28
23	90.00	159.15
24	92.00	167.88
25	95.00	167.61
26	100.00	170.37
27	105.00	173.50
28	110.00	175.57
29	115.00	186.18
30	120.00	194.82

SUBSTRATE BRACKETS -I -I -I -I -I -I -I -I

CURVE ID NUMBERS -10010 -10000 -10023 -10111 -10112 -10101 -10123 -10600 -10700 -10310 -11210
-11001 -11000 -11023 -12003 -13003

Table 7. STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	10.00	19.33	1039.11	7560.05
2	15.00	64.14	799.26	8662.86
3	20.00	167.90	743.44	9113.24
4	25.00	277.59	722.85	10402.27
5	30.00	447.79	690.11	11157.47
6	33.00	501.08	708.67	11562.15
7	35.00	537.66	734.47	11752.42
8	37.00	575.81	796.37	11904.37
9	39.00	605.49	732.90	12520.58
10	45.00	700.64	645.68	13719.09
11	47.00	733.91	631.01	13791.93
12	50.00	795.05	626.19	13979.44
13	53.00	867.85	632.50	14305.50
14	55.00	908.98	635.40	14300.33
15	60.00	963.30	667.80	14001.50
16	62.00	981.36	718.55	(14164.76)
17	65.00	965.38	811.53	13293.04
18	70.00	917.24	1060.61	13941.28
19	75.00	932.59	2032.39	12794.50
20	80.00	1079.72	(2596.65)	10463.41
21	85.00	1217.18	1196.96	9325.95
22	90.00	(1220.89)	767.07	8703.47
23	95.00	1161.29	658.51	7945.15
24	100.00	996.72	981.22	6972.80
25	105.00	879.77	1219.68	6432.25
26	110.00	742.42	1509.00	5909.09
27	115.00	612.84	1600.98	5461.61
28	120.00	525.22	1589.70	5090.71
29	125.00	451.43	1653.62	4815.31
30	130.00	387.83	1795.30	4633.88

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER, S=.0025)

	Q	(SPRING) SPAWNING	(FALL) SPAWNING	JUVENILE	INCUBATION
1	10.00	57.39	0.00	2859.14	7732.24
2	15.00	132.26	11.61	3229.42	8879.44
3	20.00	224.92	69.10	3363.93	9690.38
4	25.00	355.63	213.77	3537.44	11163.62
5	30.00	520.90	437.72	3660.49	12222.30
6	33.00	642.48	603.31	3733.99	12577.57
7	35.00	734.13	713.80	3816.91	12784.79
8	37.00	835.66	798.92	3936.68	13452.38
9	39.00	951.47	874.08	4041.61	14173.37
10	45.00	1348.75	1107.03	3935.80	15851.38
11	47.00	1476.60	1201.32	3757.51	15128.82
12	50.00	1626.14	1344.10	3709.18	16601.45
13	53.00	1815.51	1485.83	3694.87	17069.01
14	55.00	1942.04	1525.72	3725.03	17177.66
15	60.00	(2196.99)	(1534.06)	3988.01	18344.90
16	62.00	2176.62	1482.69	4170.78	(19164.16)
17	65.00	2129.40	1443.15	4232.15	18459.43
18	70.00	1993.55	1352.56	4775.59	17444.60
19	75.00	1793.88	1348.10	(5928.76)	16037.26
20	80.00	1712.71	1357.55	5571.61	13090.87
21	85.00	1560.18	1314.39	3860.95	11554.05
22	90.00	1472.71	1144.09	3238.13	11023.97
23	95.00	1241.49	1058.62	3360.99	10213.13
24	100.00	1025.63	861.93	3630.30	9253.50
25	105.00	851.06	800.14	3879.04	8525.90
26	110.00	707.36	745.10	3955.51	7914.58
27	115.00	577.76	595.79	3961.91	7380.28
28	120.00	494.92	409.24	4020.33	6934.12
29	125.00	429.54	259.81	4124.11	6552.85
30	130.00	375.94	160.11	4302.39	6275.82

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON,FAO VELOCITY,DEPTH,SUBSTRA

	Q	SPAWNING
1	10.00	71.03
2	15.00	220.32
3	20.00	427.12
4	25.00	662.36
5	30.00	962.68
6	33.00	1044.46
7	35.00	1081.43
8	37.00	1120.57
9	39.00	1165.50
10	45.00	1373.87
11	47.00	1503.68
12	50.00	1726.39
13	53.00	2013.10
14	55.00	2070.02
15	60.00	2396.76
16	62.00	2588.69
17	65.00	(2659.59)
18	70.00	2522.92
19	75.00	2259.91
20	80.00	2062.09
21	85.00	1884.07
22	90.00	1664.27
23	95.00	1413.87
24	100.00	1070.16
25	105.00	838.80
26	110.00	662.57
27	115.00	508.42
28	120.00	425.66
29	125.00	313.04
30	130.00	226.25

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAO

	Q	
1	10.00	91.93
2	15.00	197.49
3	20.00	353.14
4	25.00	484.07
5	30.00	631.07
6	32.00	680.40
7	35.00	727.63
8	37.00	787.05
9	39.00	851.81
10	45.00	1023.34
11	47.00	1105.32
12	50.00	1246.60
13	53.00	1417.36
14	55.00	1499.26
15	60.00	1709.45
16	62.00	1811.66
17	65.00	1886.74
18	70.00	(1960.75)
19	75.00	1812.48
20	80.00	1694.89
21	85.00	1563.88
22	90.00	1406.50
23	95.00	1234.87
24	100.00	1076.70
25	105.00	840.43
26	110.00	678.16
27	115.00	562.78
28	120.00	495.49
29	125.00	442.60
30	130.00	387.57

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	10.00	0.00
2	15.00	6.62
3	20.00	54.80
4	25.00	176.02
5	30.00	465.68
6	33.00	527.64
7	35.00	550.89
8	37.00	571.58
9	39.00	595.21
10	45.00	635.01
11	47.00	674.80
12	50.00	803.39
13	53.00	1004.17
14	55.00	1040.94
15	60.00	1089.13
16	62.00	1086.94
17	65.00	1158.02
18	70.00	(1165.71)
19	75.00	1028.43
20	80.00	920.79
21	85.00	974.16
22	90.00	1006.05
23	95.00	728.81
24	100.00	521.97
25	105.00	441.80
26	110.00	397.97
27	115.00	352.58
28	120.00	197.05
29	125.00	122.62
30	130.00	90.45

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	10.00	312.57
2	15.00	492.41
3	20.00	760.19
4	25.00	964.95
5	30.00	1041.77
6	33.00	1034.87
7	35.00	1011.34
8	37.00	992.31
9	39.00	1008.04
10	45.00	1504.40
11	47.00	1627.62
12	50.00	1778.99
13	53.00	1915.05
14	55.00	1897.92
15	60.00	(2049.53)
16	62.00	2023.31
17	65.00	1903.32
18	70.00	1751.29
19	75.00	1806.17
20	80.00	1919.80
21	85.00	1864.84
22	90.00	1378.02
23	95.00	968.96
24	100.00	732.48
25	105.00	519.63
26	110.00	391.01
27	115.00	302.83
28	120.00	249.03
29	125.00	209.29
30	130.00	175.12

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER, S=.0025)

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	10.00	50.59	5431.20	8412.12	6469.26
2	15.00	105.25	6780.98	9445.19	8395.84
3	20.00	176.25	7456.59	9609.24	9461.26
4	25.00	314.36	8367.67	9829.11	11007.30
5	30.00	546.18	8981.70	9709.45	12537.53
6	33.00	719.51	9472.41	9876.65	13257.93
7	35.00	859.65	9836.94	10120.64	13710.73
8	37.00	1012.19	10135.98	10379.39	14173.78
9	39.00	1179.82	10320.44	10520.54	14644.21
10	45.00	1681.98	10621.31	10158.69	16507.10
11	47.00	1855.98	10640.39	10047.41	16927.46
12	50.00	2080.05	10532.76	9989.60	17475.27
13	53.00	2266.26	10528.60	9994.09	17934.09
14	55.00	2451.76	10592.55	10117.82	18121.23
15	60.00	(2666.12)	11196.68	(11308.84)	19085.51
16	62.00	2605.36	(11259.32)	11258.90	19404.22
17	65.00	2596.15	11199.25	10831.68	(19414.93)
18	70.00	2536.94	10875.89	10050.58	18507.97
19	75.00	2321.32	11030.32	10759.52	16515.98
20	80.00	2173.37	10581.63	10469.73	14715.23
21	85.00	1906.95	7431.36	7363.15	13423.53
22	90.00	1740.20	6568.97	6494.44	12367.44
23	95.00	1413.58	6716.76	6565.22	11437.21
24	100.00	1182.80	6684.69	6510.75	10528.13
25	105.00	1020.97	6478.51	6369.29	9350.03
26	110.00	891.33	6396.54	6328.21	9255.53
27	115.00	764.85	6158.37	6149.73	8853.21
28	120.00	654.44	5822.34	5900.69	8497.27
29	125.00	576.48	5627.65	5772.61	8136.72
30	130.00	519.30	5530.36	5725.75	7807.19

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. TEG CURVES NYMP

	Q	
1	10.00	1953.08
2	15.00	2549.87
3	20.00	2771.32
4	25.00	3371.89
5	30.00	3921.22
6	33.00	4233.53
7	35.00	4392.21
8	37.00	4535.04
9	39.00	4712.81
10	45.00	5528.71
11	47.00	5666.96
12	50.00	(5797.71)
13	53.00	5601.10
14	55.00	5514.66
15	60.00	5585.42
16	62.00	5550.05
17	65.00	5642.84
18	70.00	5382.16
19	75.00	4486.36
20	80.00	4201.32
21	85.00	3969.17
22	90.00	3536.45
23	95.00	3047.33
24	100.00	2603.71
25	105.00	2423.68
26	110.00	2286.13
27	115.00	2160.92
28	120.00	2032.56
29	125.00	1909.06
30	130.00	1796.03

Table 7 STUDY AREA - N3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR STENONEMA SP. TEG CURVES NYMP

	Q	
1	10.00	2636.87
2	15.00	3594.38
3	20.00	3675.46
4	25.00	4199.05
5	30.00	4591.25
6	33.00	4616.86
7	35.00	4571.55
8	37.00	4505.00
9	39.00	4632.28
10	45.00	(4733.30)
11	47.00	4619.76
12	50.00	4331.15
13	53.00	4162.36
14	55.00	4168.57
15	60.00	4557.99
16	62.00	4547.98
17	65.00	4235.75
18	70.00	3723.10
19	75.00	3354.28
20	80.00	2771.73
21	85.00	2485.68
22	90.00	2204.22
23	95.00	1961.94
24	100.00	1645.97
25	105.00	1489.99
26	110.00	1383.74
27	115.00	1266.30
28	120.00	1251.51
29	125.00	1255.66
30	130.00	1262.37

Table 8. STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	40.00	352.51	627.44	20856.59
2	80.00	1023.62	905.10	21857.60
3	100.00	1282.76	(1124.25)	23184.72
4	111.00	1230.70	954.88	23591.48
5	120.00	1202.36	821.73	(23605.11)
6	140.00	809.02	949.38	23030.50
7	160.00	1410.48	454.01	21501.03
8	180.00	1344.22	388.11	20428.23
9	200.00	1207.81	293.40	20144.96
10	220.00	1328.31	263.33	20084.03
11	238.00	1490.82	259.61	20064.84
12	260.00	1524.09	261.76	19994.30
13	280.00	1551.42	251.34	19533.56
14	300.00	1691.29	243.92	19133.72
15	320.00	1728.49	248.24	19178.17
16	340.00	(1874.38)	236.18	19057.33
17	360.00	1742.18	237.66	19018.91
18	380.00	1609.63	246.51	18564.20
19	400.00	1448.37	257.51	18135.61
20	420.00	1331.48	276.30	17893.36
21	440.00	1139.92	294.67	17459.22
22	460.00	929.18	315.01	16964.00
23	480.00	749.12	337.83	16353.30
24	500.00	641.09	329.46	15743.69
25	550.00	567.21	349.29	14434.43
26	600.00	630.72	391.26	13857.53
27	650.00	634.37	455.78	13463.01
28	700.00	624.71	571.41	13168.60
29	750.00	608.04	791.29	12799.25
30	800.00	624.41	1026.52	12365.90

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER, S=.0025)

	Q	SPRING SPAWNING	FALL SPAWNING	JUVENILE	INCUBATION
1	40.00	586.22	531.50	4922.96	21375.98
2	80.00	2394.71	1578.54	5362.71	24263.44
3	100.00	3283.70	1763.19	(5968.12)	25906.46
4	111.00	3770.41	1827.26	5770.32	23082.37
5	120.00	4117.95	1858.82	5348.55	28613.40
6	140.00	3680.63	1435.76	5447.62	28988.93
7	160.00	4547.90	2155.11	4016.19	28342.34
8	180.00	4542.30	2207.38	3763.26	28670.00
9	200.00	(4592.79)	2272.21	3405.19	29247.95
10	220.00	4436.90	2403.51	3253.09	29680.19
11	238.00	4275.53	2515.52	3143.90	29901.13
12	260.00	4032.96	2559.57	3014.95	30034.84
13	280.00	3986.69	2541.58	2951.86	29792.20
14	300.00	3977.63	2541.76	2864.38	29553.10
15	320.00	3906.17	(2594.86)	2820.95	29353.45
16	340.00	3869.94	2582.57	2824.09	29969.26
17	360.00	3834.65	2524.02	2925.29	(30082.84)
18	380.00	3793.53	2450.12	2900.97	29898.22
19	400.00	3499.85	2385.89	2805.34	29608.12
20	420.00	3267.27	2347.24	2712.70	29371.32
21	440.00	3006.04	2378.41	2633.45	29132.45
22	460.00	2756.38	2252.03	2590.45	28580.90
23	480.00	2417.82	2061.98	2568.97	27857.79
24	500.00	1880.64	1899.48	2550.37	27028.63
25	550.00	1463.76	1633.52	2607.72	24374.58
26	600.00	1324.83	1699.89	2753.18	23477.00
27	650.00	1317.97	1743.63	2988.29	22938.36
28	700.00	1438.17	1712.80	3343.85	22583.55
29	750.00	1572.38	1583.92	3927.63	22279.88
30	800.00	1811.17	1515.04	4468.12	21945.01

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON,FAO VELOCITY,DEPTH,SUBSTR

	Q	SPAWNING
1	40.00	864.86
2	80.00	1936.17
3	100.00	2384.43
4	111.00	2535.53
5	120.00	2673.67
6	140.00	1056.99
7	160.00	2570.91
8	180.00	2785.98
9	200.00	3419.59
10	220.00	3579.54
11	238.00	3776.92
12	260.00	3849.12
13	280.00	4028.59
14	300.00	4489.40
15	320.00	4788.82
16	340.00	5069.07
17	360.00	(5089.15)
18	380.00	5066.01
19	400.00	4872.39
20	420.00	4342.52
21	440.00	3846.71
22	460.00	3151.70
23	480.00	2446.69
24	500.00	2043.75
25	550.00	1712.96
26	600.00	1695.45
27	650.00	1554.95
28	700.00	1382.93
29	750.00	1099.78
30	800.00	788.34

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAO

	Q	
1	40.00	461.72
2	80.00	1122.66
3	100.00	1516.67
4	111.00	1674.00
5	120.00	1760.01
6	140.00	847.14
7	160.00	1997.93
8	180.00	2225.23
9	200.00	2754.29
10	220.00	3011.66
11	238.00	3264.40
12	260.00	3467.75
13	280.00	3714.49
14	300.00	4081.34
15	320.00	4451.57
16	340.00	4784.58
17	360.00	5106.26
18	380.00	(5207.66)
19	400.00	4759.17
20	420.00	4756.66
21	440.00	4103.16
22	460.00	3781.83
23	480.00	3128.23
24	500.00	2807.72
25	550.00	2312.32
26	600.00	1892.07
27	650.00	1792.32
28	700.00	1790.46
29	750.00	1576.83
30	800.00	1203.09

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	40.00	88.40
2	80.00	1096.93
3	100.00	1366.93
4	111.00	1452.85
5	120.00	1509.55
6	140.00	73.22
7	160.00	1573.67
8	180.00	1584.37
9	200.00	1688.05
10	220.00	1878.79
11	238.00	2327.50
12	260.00	2509.15
13	280.00	2485.23
14	300.00	2534.07
15	320.00	2501.84
16	340.00	(2634.10)
17	360.00	2174.95
18	380.00	1769.29
19	400.00	1396.28
20	420.00	1002.13
21	440.00	1053.16
22	460.00	630.16
23	480.00	551.20
24	500.00	537.22
25	550.00	566.99
26	600.00	786.99
27	650.00	808.93
28	700.00	643.72
29	750.00	226.66
30	800.00	38.53

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	40.00	1295.62
2	80.00	1208.26
3	100.00	1206.57
4	111.00	1295.36
5	120.00	1385.01
6	140.00	1365.84
7	160.00	2013.53
8	180.00	2002.94
9	200.00	1965.67
10	220.00	(2061.12)
11	238.00	2020.70
12	260.00	1965.51
13	280.00	1932.15
14	300.00	1844.91
15	320.00	1834.76
16	340.00	1843.46
17	360.00	1550.36
18	380.00	1578.38
19	400.00	1549.41
20	420.00	1241.31
21	440.00	1036.98
22	460.00	941.25
23	480.00	1022.18
24	500.00	1116.62
25	550.00	1079.23
26	600.00	902.10
27	650.00	489.26
28	700.00	212.86
29	750.00	135.55
30	800.00	108.54

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER,S=.0025

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	40.00	570.33	14498.67	16882.90	19336.29
2	80.00	3154.76	17691.46	16679.37	25752.06
3	100.00	4143.52	19863.96	(18122.95)	28431.53
4	111.00	4568.25	(20147.75)	17253.80	30054.30
5	120.00	4883.67	20054.05	16234.43	31088.43
6	140.00	4287.62	19748.47	15218.71	31249.07
7	160.00	5707.49	17223.61	12507.93	32992.17
8	180.00	5949.50	15630.36	11086.85	33991.58
9	200.00	6316.46	13877.90	9988.86	35460.39
10	220.00	6552.15	12846.25	9267.92	36528.69
11	238.00	6632.41	12198.94	8954.61	37358.23
12	260.00	6580.99	11343.77	8850.70	38241.26
13	280.00	6625.53	10809.28	8707.68	38907.06
14	300.00	6648.93	10356.89	8445.48	39531.33
15	320.00	(6664.83)	9965.94	8587.28	40057.91
16	340.00	6597.01	9413.13	8525.35	40518.94
17	360.00	6557.81	8979.12	8430.11	40901.46
18	380.00	6456.99	8526.88	8341.45	41182.56
19	400.00	6240.24	8021.32	8185.86	41438.70
20	420.00	5973.20	7587.90	8265.74	(41497.23)
21	440.00	5677.25	7309.55	8444.53	41289.57
22	460.00	5333.64	7082.05	8672.51	40850.76
23	480.00	4757.07	6936.92	8557.00	40236.88
24	500.00	4082.46	6874.40	8604.02	39559.71
25	550.00	2961.29	7262.50	8654.43	36999.06
26	600.00	2576.03	7876.54	8852.10	35203.82
27	650.00	2432.49	8535.07	9190.14	34545.21
28	700.00	2540.53	9117.26	9545.25	33979.46
29	750.00	2664.01	10077.92	9935.11	33448.06
30	800.00	2530.45	11055.53	10462.76	32890.65

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR STENONEMA SP. IFG CURVES NYM

	Q	
1	40.00	9246.39
2	80.00	8792.28
3	100.00	8978.55
4	111.00	9192.89
5	120.00	(9247.91)
6	140.00	8815.71
7	160.00	8138.81
8	180.00	7411.55
9	200.00	6776.36
10	220.00	6190.95
11	238.00	5815.59
12	260.00	5248.54
13	280.00	4762.59
14	300.00	4388.43
15	320.00	4058.74
16	340.00	3773.67
17	360.00	3710.65
18	380.00	3568.97
19	400.00	3426.17
20	420.00	3305.53
21	440.00	3166.22
22	460.00	3162.09
23	480.00	3194.20
24	500.00	3186.43
25	550.00	3487.65
26	600.00	3735.77
27	650.00	3892.25
28	700.00	3989.59
29	750.00	4007.75
30	800.00	3873.32

Table 8 STUDY AREA - S1

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. IFG CURVES NYM

	Q	
1	40.00	6802.38
2	80.00	8870.54
3	100.00	9138.89
4	111.00	9591.89
5	120.00	9962.91
6	140.00	10396.12
7	160.00	(10532.34)
8	180.00	10435.76
9	200.00	10179.37
10	220.00	10131.66
11	238.00	9839.13
12	260.00	9491.95
13	280.00	9141.57
14	300.00	8613.13
15	320.00	8590.71
16	340.00	8390.81
17	360.00	8217.52
18	380.00	8019.99
19	400.00	7804.10
20	420.00	7478.31
21	440.00	6939.10
22	460.00	6303.72
23	480.00	5946.05
24	500.00	5416.34
25	550.00	4443.34
26	600.00	4212.05
27	650.00	3895.14
28	700.00	3504.49
29	750.00	3048.19
30	800.00	2549.30

VELOCITY BRACKETS		-I		-I		-					
DEPTH BRACKETS	-I		-I		-I		-I	-I	-I	-I	-I	-I	-
SUBSTRATE BRACKETS		-I		-I		-I		-I	-I	-I	-I	-I	
CURVE ID NUMBERS	-10010	-10000	-10023	-10111	-10112	-10101	-10123	-10600	-10700	-10310	-1121
	-11001	-11000	-11023	-12003	-13003						

Table 9. STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	40.00	492.77	(3927.01)	8192.61
2	60.00	856.39	3192.88	8787.11
3	80.00	1346.49	2952.42	(8846.29)
4	100.00	1548.20	2644.76	8819.88
5	120.00	1571.03	2181.28	8463.01
6	140.00	(1630.17)	1896.94	8069.56
7	160.00	1498.17	1784.69	7685.24
8	180.00	1313.60	1643.38	7243.65
9	200.00	1316.04	1497.84	6787.98
10	220.00	1165.62	1401.81	6426.47
11	231.00	1114.40	1362.97	6238.27
12	260.00	1126.36	1215.10	5915.80
13	280.00	1103.11	1148.00	5576.26
14	300.00	1014.76	1112.56	5271.17
15	320.00	1046.44	1118.30	5156.57
16	340.00	1109.39	1063.97	4909.14
17	354.00	1054.29	1026.26	4672.68
18	380.00	1123.82	958.99	4286.22
19	400.00	969.21	904.98	3991.81
20	420.00	746.72	844.15	3635.76
21	440.00	500.01	788.63	3298.78
22	460.00	304.83	705.51	2996.86
23	480.00	183.93	654.46	2712.16
24	500.00	97.95	626.89	2468.78
25	520.00	56.19	609.43	2237.95
26	540.00	39.53	595.25	2028.46
27	560.00	28.69	584.03	1842.36
28	580.00	21.28	574.91	1706.65
29	600.00	15.86	560.82	1586.66
30	620.00	12.35	539.54	1493.85

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER, S=.0025)

	Q	SPRING SPAWNING	FALL SPAWNING	JUVENILE	INCUBATION
1	40.00	216.52	153.31	8241.38	10210.98
2	60.00	516.31	620.45	9471.13	11694.18
3	80.00	879.93	1279.32	(9736.99)	12343.43
4	100.00	1292.05	1821.10	9402.00	12793.63
5	120.00	1711.00	2132.53	8918.15	12930.55
6	140.00	2105.65	(2244.89)	8231.02	(12958.65)
7	160.00	2316.99	2120.85	7627.12	12910.41
8	180.00	2438.00	1929.35	7062.99	12704.61
9	200.00	(2439.07)	1801.08	6726.18	12441.76
10	220.00	2321.07	1729.22	6440.02	12194.60
11	231.00	2232.44	1720.41	6294.20	12099.09
12	260.00	1956.54	1758.27	5923.74	11755.94
13	280.00	1738.57	1811.87	5821.11	11361.94
14	300.00	1595.16	1878.40	5673.17	11038.42
15	320.00	1496.38	1863.91	5536.43	10859.47
16	340.00	1451.08	1880.30	5329.20	10511.37
17	354.00	1421.15	1912.53	5191.09	10212.71
18	380.00	1485.28	1934.92	4867.46	9716.37
19	400.00	1581.93	1921.96	4651.18	9374.01
20	420.00	1665.25	1724.46	4531.27	9008.64
21	440.00	1598.57	1435.31	4477.01	8630.95
22	460.00	1427.88	1116.63	4365.15	8224.43
23	480.00	1058.80	913.50	4248.61	7797.12
24	500.00	678.39	734.28	4145.98	7367.63
25	520.00	504.55	592.96	4060.09	6957.80
26	540.00	398.28	467.71	4007.80	6559.85
27	560.00	311.17	366.40	3974.99	6185.61
28	580.00	270.09	295.38	3961.20	5833.97
29	600.00	242.44	237.73	4011.69	5554.35
30	620.00	211.61	187.46	4048.18	5305.80

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON,FAO VELOCITY,DEPTH,SUBSTR

	Q	SPAWNING
1	40.00	593.47
2	60.00	1208.01
3	80.00	1648.98
4	100.00	(1697.92)
5	120.00	1617.95
6	140.00	1577.71
7	160.00	1492.18
8	180.00	1391.33
9	200.00	1234.06
10	220.00	1125.33
11	231.00	1082.03
12	260.00	898.41
13	280.00	874.36
14	300.00	801.01
15	320.00	781.04
16	340.00	804.21
17	354.00	851.47
18	380.00	878.53
19	400.00	841.10
20	420.00	719.20
21	440.00	590.37
22	460.00	407.16
23	480.00	224.75
24	500.00	110.00
25	520.00	48.50
26	540.00	26.91
27	560.00	18.98
28	580.00	13.63
29	600.00	10.29
30	620.00	7.54

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAO

	Q	
1	40.00	717.26
2	60.00	1088.32
3	80.00	1384.84
4	100.00	1445.77
5	120.00	(1529.75)
6	140.00	1492.99
7	160.00	1415.18
8	180.00	1286.19
9	200.00	1268.64
10	220.00	1230.90
11	231.00	1180.91
12	260.00	1064.67
13	280.00	1008.34
14	300.00	973.77
15	320.00	886.45
16	340.00	868.44
17	354.00	845.22
18	380.00	790.87
19	400.00	766.36
20	420.00	739.60
21	440.00	674.89
22	460.00	583.35
23	480.00	388.19
24	500.00	275.48
25	520.00	210.55
26	540.00	156.67
27	560.00	113.79
28	580.00	84.48
29	600.00	62.39
30	620.00	47.15

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	40.00	82.31
2	60.00	518.90
3	80.00	1295.14
4	100.00	1594.69
5	120.00	1584.26
6	140.00	1487.71
7	160.00	1219.96
8	180.00	920.89
9	200.00	719.59
10	220.00	620.19
11	231.00	641.42
12	260.00	687.36
13	280.00	802.58
14	300.00	878.61
15	320.00	850.64
16	340.00	851.88
17	354.00	899.46
18	380.00	866.81
19	400.00	902.96
20	420.00	679.64
21	440.00	411.52
22	460.00	125.82
23	480.00	72.75
24	500.00	49.21
25	520.00	41.30
26	540.00	35.45
27	560.00	30.36
28	580.00	25.41
29	600.00	21.30
30	620.00	17.73

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	40.00	1178.33
2	60.00	(1313.31)
3	80.00	1165.42
4	100.00	811.61
5	120.00	532.47
6	140.00	477.44
7	160.00	418.98
8	180.00	455.98
9	200.00	413.54
10	220.00	327.13
11	231.00	287.23
12	260.00	236.40
13	280.00	230.48
14	300.00	193.27
15	320.00	183.60
16	340.00	237.77
17	354.00	199.81
18	380.00	120.55
19	400.00	84.21
20	420.00	66.45
21	440.00	59.01
22	460.00	27.30
23	480.00	7.57
24	500.00	2.22
25	520.00	1.98
26	540.00	1.37
27	560.00	2.68
28	580.00	4.59
29	600.00	6.82
30	620.00	9.48

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER,S=.0025

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	40.00	130.27	10225.93	11444.22	10989.32
2	60.00	401.14	12214.20	11771.68	13632.79
3	80.00	807.45	13709.50	(11854.90)	15210.44
4	100.00	1336.73	14277.56	11369.50	16172.38
5	120.00	1891.18	(14599.03)	10793.06	16855.27
6	140.00	2278.77	14503.01	10197.88	17294.88
7	160.00	2455.94	14171.89	9519.65	17574.71
8	180.00	(2502.06)	13895.09	8885.74	17783.68
9	200.00	2413.22	13431.32	8262.76	17922.95
10	220.00	2214.05	12862.90	7750.41	18019.34
11	231.00	2098.64	12462.55	7470.74	(18042.51)
12	260.00	1815.88	11448.73	6858.74	18035.36
13	280.00	1659.16	10972.59	6551.46	18013.26
14	300.00	1546.56	10484.26	6260.52	17958.81
15	320.00	1432.29	10036.71	5971.58	17811.17
16	340.00	1356.54	9734.86	5687.34	17617.68
17	354.00	1319.98	9564.09	5472.63	17468.05
18	380.00	1300.70	9247.90	5113.54	17106.28
19	400.00	1415.10	8974.87	4878.50	16753.62
20	420.00	1497.78	8699.69	4633.85	16388.72
21	440.00	1417.53	8369.17	4367.20	16017.67
22	460.00	1202.66	8064.40	4123.25	15604.20
23	480.00	971.36	7719.73	3920.71	15143.97
24	500.00	751.27	7493.57	3762.25	14675.58
25	520.00	535.36	7283.58	3645.68	14193.55
26	540.00	388.35	7169.82	3543.63	13639.65
27	560.00	303.29	7067.27	3450.85	13047.11
28	580.00	247.83	6963.69	3367.06	12468.55
29	600.00	204.77	6846.17	3288.13	11973.07
30	620.00	168.84	6742.71	3211.17	11535.79

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. IFG CURVES NYM

	Q	
1	40.00	3229.71
2	60.00	4311.69
3	80.00	(4745.72)
4	100.00	4745.02
5	120.00	4413.84
6	140.00	3954.59
7	160.00	3492.10
8	180.00	3075.94
9	200.00	2684.89
10	220.00	2331.71
11	231.00	2152.90
12	260.00	1701.20
13	280.00	1423.32
14	300.00	1176.70
15	320.00	978.44
16	340.00	837.38
17	354.00	767.87
18	380.00	711.28
19	400.00	682.85
20	420.00	673.72
21	440.00	658.56
22	460.00	609.11
23	480.00	554.32
24	500.00	491.86
25	520.00	413.69
26	540.00	331.21
27	560.00	241.56
28	580.00	178.72
29	600.00	155.18
30	620.00	132.16

Table 9 STUDY AREA - S2

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM. FOR STENONEMA SP. IFG CURVES NYI

	Q	
1	40.00	2005.07
2	60.00	2565.68
3	80.00	(2801.03)
4	100.00	2797.73
5	120.00	2663.57
6	140.00	2518.99
7	160.00	2350.80
8	180.00	2183.47
9	200.00	1932.84
10	220.00	1711.15
11	231.00	1591.59
12	260.00	1317.99
13	280.00	1146.17
14	300.00	998.16
15	320.00	880.87
16	340.00	769.48
17	354.00	722.38
18	380.00	656.30
19	400.00	616.86
20	420.00	560.36
21	440.00	487.73
22	460.00	420.65
23	480.00	363.71
24	500.00	303.97
25	520.00	260.99
26	540.00	246.19
27	560.00	235.96
28	580.00	229.57
29	600.00	228.50
30	620.00	231.51

HEADER	17	10	10	10	0.00	0.00	0.00	0.00	0.00	0.00	
VELOCITY BRACKETS			-I		-I	-I	-I	-I	-I	-I	-I
DEPTH BRACKETS		-I		-I		-I	-I	-I	-I	-I	-I
SUBSTRATE BRACKETS			-I		-I	-I	-I	-I	-I	-I	-I
CURVE ID NUMBERS	-10010	-10000	-10023	-10111	-10112	-10101	-10123	-10600	-10700	-10310	-1121
	-11001	-11000	-11023	-12003	-13003						

Table 10. STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	50.00	1641.73	11136.39	17122.42
2	75.00	3317.90	(12051.58)	22802.05
3	100.00	7754.07	10647.63	25197.69
4	124.00	11294.79	10904.53	26607.74
5	150.00	(14117.76)	10486.04	26821.30
6	170.00	13894.40	9470.39	26757.06
7	194.00	12990.63	8794.63	26904.63
8	230.00	11872.50	7934.46	27760.72
9	250.00	10611.78	7090.90	28322.69
10	300.00	7775.36	6011.72	(28468.78)
11	350.00	5874.24	4373.60	26934.34
12	400.00	4647.05	3501.36	27102.98
13	450.00	3866.70	3153.65	27785.73
14	500.00	3461.07	3073.09	26179.57
15	550.00	3313.06	3112.89	25471.37
16	600.00	3053.50	2375.11	23886.30
17	650.00	3492.96	2393.55	22550.61
18	700.00	3398.75	2518.15	20310.99
19	750.00	3548.74	2147.17	19138.02
20	800.00	3199.36	1912.28	18485.84
21	850.00	2682.44	1999.94	17763.59
22	911.00	2062.07	2250.97	16081.89
23	950.00	1778.26	2486.35	16095.22
24	1000.00	1459.65	2405.64	15077.96
25	1100.00	1058.71	2153.36	13402.02
26	1200.00	815.09	1918.75	12974.65
27	1300.00	802.46	2058.95	13374.53
28	1400.00	801.73	2419.49	13092.16
29	1500.00	903.75	2720.67	13936.85
30	1600.00	1096.48	3202.27	14685.45

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER,S=.0025)

	Q	SPRING SPAWNING	FALL SPAWNING	JUVENILE	INCUBATION
1	50.00	225.64	309.30	14689.17	19254.92
2	75.00	665.28	874.61	18625.06	25095.44
3	100.00	1529.30	2485.89	20386.45	29346.64
4	124.00	2686.28	4899.04	21703.35	32353.72
5	150.00	4374.22	8373.41	(22128.97)	33582.34
6	170.00	5873.84	10876.06	21364.91	34476.40
7	194.00	7830.83	13292.86	20053.49	35977.74
8	230.00	11103.21	15462.05	18467.49	38738.25
9	250.00	12396.02	(16068.52)	17742.69	40129.25
10	300.00	14406.39	15232.02	15291.74	41552.60
11	350.00	(15039.26)	13660.20	13241.06	41284.66
12	400.00	13914.24	12502.96	11678.87	42122.19
13	450.00	12166.97	11430.16	10253.00	(42733.02)
14	500.00	10959.86	10864.33	8852.09	40799.96
15	550.00	9497.04	10324.27	8175.53	40560.89
16	600.00	8983.58	9880.33	6031.93	39023.55
17	650.00	8254.39	9563.30	5505.55	37740.68
18	700.00	6989.24	7857.70	6679.18	34284.80
19	750.00	7597.22	7504.32	6393.12	33401.77
20	800.00	7994.30	7051.06	6141.74	32670.82
21	850.00	7810.85	6338.25	6024.75	32224.49
22	911.00	6556.70	5010.36	5848.57	30348.83
23	950.00	6076.34	4566.46	5692.10	30184.31
24	1000.00	5582.71	4203.99	5393.13	28768.77
25	1100.00	4479.71	3518.81	4997.62	26252.59
26	1200.00	3441.76	3182.79	4397.90	24740.46
27	1300.00	2413.77	2704.25	4607.83	24128.37
28	1400.00	2193.08	2156.08	3326.38	22137.96
29	1500.00	2066.18	1994.20	3662.91	21778.08
30	1600.00	1968.25	2005.04	4094.25	21853.86

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON,FAO VELOCITY,DEPTH,SUBSTR

	Q	SPAWNING
1	50.00	3325.15
2	75.00	6557.24
3	100.00	10382.76
4	124.00	13187.55
5	150.00	14621.51
6	170.00	(14952.85)
7	194.00	14737.13
8	230.00	13895.15
9	250.00	13325.50
10	300.00	10859.28
11	350.00	8481.54
12	400.00	7345.03
13	450.00	7008.30
14	500.00	7292.88
15	550.00	7557.22
16	600.00	7965.55
17	650.00	8820.42
18	700.00	9739.62
19	750.00	10363.29
20	800.00	10116.18
21	850.00	9087.81
22	911.00	7371.66
23	950.00	6761.73
24	1000.00	6187.28
25	1100.00	5380.90
26	1200.00	4946.47
27	1300.00	4816.43
28	1400.00	4233.78
29	1500.00	4141.47
30	1600.00	4257.27

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAO

	Q	
1	50.00	5718.16
2	75.00	7469.09
3	100.00	9312.69
4	124.00	(9798.12)
5	150.00	9146.85
6	170.00	8963.52
7	194.00	8900.66
8	230.00	8887.92
9	250.00	8617.50
10	300.00	7860.61
11	350.00	6756.15
12	400.00	5733.33
13	450.00	5280.01
14	500.00	5076.40
15	550.00	4702.66
16	600.00	4888.13
17	650.00	5560.45
18	700.00	6421.10
19	750.00	7126.72
20	800.00	7914.68
21	850.00	8280.35
22	911.00	7222.26
23	950.00	7373.53
24	1000.00	7045.36
25	1100.00	6558.79
26	1200.00	6989.81
27	1300.00	7048.05
28	1400.00	6190.90
29	1500.00	5533.99
30	1600.00	5345.45

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	50.00	751.45
2	75.00	1997.34
3	100.00	4690.35
4	124.00	8143.69
5	150.00	10940.20
6	170.00	11885.73
7	194.00	11996.15
8	230.00	10487.78
9	250.00	9167.21
10	300.00	5646.92
11	350.00	3180.95
12	400.00	2175.56
13	450.00	1807.61
14	500.00	1787.92
15	550.00	2099.17
16	600.00	1989.96
17	650.00	2740.75
18	700.00	2847.61
19	750.00	3057.38
20	800.00	2425.78
21	850.00	1825.60
22	911.00	1235.12
23	950.00	1032.45
24	1000.00	998.95
25	1100.00	1109.23
26	1200.00	1015.74
27	1300.00	551.21
28	1400.00	233.82
29	1500.00	279.67
30	1600.00	448.60

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	50.00	9393.45
2	75.00	(11385.11)
3	100.00	9684.97
4	124.00	8497.29
5	150.00	6958.27
6	170.00	5893.73
7	194.00	5031.56
8	230.00	4143.67
9	250.00	3899.96
10	300.00	3990.33
11	350.00	4678.29
12	400.00	5450.66
13	450.00	6107.64
14	500.00	5941.39
15	550.00	5034.56
16	600.00	3731.19
17	650.00	3176.78
18	700.00	2053.13
19	750.00	1500.09
20	800.00	1153.83
21	850.00	901.54
22	911.00	757.29
23	950.00	782.86
24	1000.00	794.49
25	1100.00	816.02
26	1200.00	1282.45
27	1300.00	1586.85
28	1400.00	2034.21
29	1500.00	2737.97
30	1600.00	3440.03

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER,S=.0025

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	50.00	49.32	14645.37	17995.65	20918.47
2	75.00	155.73	18679.13	21079.82	28448.21
3	100.00	747.31	20980.27	21716.92	35224.20
4	124.00	2160.66	23065.90	22692.04	39655.25
5	150.00	4669.64	24550.51	24169.35	43042.92
6	170.00	7005.22	25308.23	(24828.12)	45252.26
7	194.00	9813.16	(25760.67)	24666.88	47394.03
8	230.00	12765.98	25548.94	23649.94	49974.02
9	250.00	13842.69	25219.99	23117.55	51206.71
10	300.00	(15237.11)	24125.62	21764.65	54145.25
11	350.00	14867.78	22615.42	20035.77	56721.44
12	400.00	13490.78	20781.50	17719.22	59312.15
13	450.00	11683.22	19663.41	16142.66	61555.46
14	500.00	10269.46	18292.71	14473.94	62664.93
15	550.00	9348.17	17324.88	13036.25	(63377.55)
16	600.00	9703.34	14368.30	10092.46	62265.86
17	650.00	9847.71	13514.44	9395.52	62065.99
18	700.00	10800.26	11418.77	9025.51	56724.93
19	750.00	11237.92	10754.03	8339.56	55738.57
20	800.00	11233.46	9951.22	7901.13	54442.72
21	850.00	11038.02	9573.19	8369.25	53623.20
22	911.00	10015.70	9145.03	8332.95	51059.58
23	950.00	9563.69	8881.33	8027.77	50551.47
24	1000.00	8457.95	8287.45	7845.26	48827.83
25	1100.00	6153.20	7224.83	7773.98	45337.61
26	1200.00	5371.65	6755.43	7761.74	41863.21
27	1300.00	5032.00	6335.81	8210.29	38320.50
28	1400.00	4029.96	6003.71	7914.66	36235.10
29	1500.00	3801.42	6444.67	8496.41	34387.37
30	1600.00	3589.17	7094.70	8961.46	33116.85

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. IFG CURVES NYM

	Q	
1	50.00	240.11
2	75.00	667.09
3	100.00	1039.27
4	124.00	1361.21
5	150.00	1612.22
6	170.00	1758.25
7	194.00	1855.31
8	230.00	1937.09
9	250.00	1999.06
10	300.00	2251.63
11	350.00	2463.41
12	400.00	2689.65
13	450.00	2879.63
14	500.00	2934.00
15	550.00	2901.46
16	600.00	(2985.42)
17	650.00	2864.11
18	700.00	2695.94
19	750.00	2560.95
20	800.00	2437.54
21	850.00	2304.22
22	911.00	2336.07
23	950.00	2216.31
24	1000.00	2001.16
25	1100.00	1629.46
26	1200.00	1113.47
27	1300.00	1126.23
28	1400.00	1223.31
29	1500.00	1357.36
30	1600.00	1510.35

Table 10 STUDY AREA - S3

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR STENONEMA SP. IFG CURVES /NYMF

	Q	
1	50.00	932.95
2	75.00	1483.45
3	100.00	2164.04
4	124.00	2582.00
5	150.00	2797.18
6	170.00	2894.46
7	194.00	2930.14
8	230.00	3164.31
9	250.00	3319.38
10	300.00	3612.98
11	350.00	3731.32
12	400.00	3984.10
13	450.00	(4098.47)
14	500.00	4089.73
15	550.00	3923.19
16	600.00	3207.00
17	650.00	2871.72
18	700.00	2184.88
19	750.00	1837.17
20	800.00	1470.25
21	850.00	1220.21
22	911.00	1215.98
23	950.00	1253.34
24	1000.00	1054.05
25	1100.00	969.38
26	1200.00	900.88
27	1300.00	904.99
28	1400.00	862.04
29	1500.00	947.71
30	1600.00	1046.93

THE WATER SURFACE ELEVATION (106.5) IS (5.9) FEET ABOVE THE LEFT END POINT OF XSEC 7 Q=15000.
HOWEVER, SINCE THERE IS LESS THAN 10.0 FEET INVOLVED, THE END-POINT WILL BE RAISED AND THE RUN ALLOWED T

THE WATER SURFACE ELEVATION (106.5) IS (3.3) FEET ABOVE THE RIGHT END POINT OF XSEC 7 Q=15000.
HOWEVER, SINCE THERE IS LESS THAN 10.0 FEET INVOLVED, THE END-POINT WILL BE RAISED AND THE RUN ALLOWED T

Table 11. STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR COHO SALMON (CLEAR WATER, S=.0025)

	Q	SPAWNING	FRY	INCUBATION
1	50.00	2305.11	1571.19	12695.46
2	75.00	6021.56	2468.25	14295.00
3	100.00	9462.64	2986.59	14681.24
4	125.00	9523.32	3365.01	14745.58
5	150.00	(10226.54)	(3484.26)	15241.24
6	200.00	7498.00	3356.69	(16161.64)
7	250.00	5759.09	2976.18	15673.36
8	300.00	5065.54	2696.63	14965.78
9	347.00	5207.10	2727.59	14343.04
10	400.00	5357.73	2524.74	13436.58
11	450.00	4638.31	2378.74	13644.10
12	500.00	4251.00	2241.50	13601.89
13	550.00	4254.98	2139.73	13941.67
14	600.00	4394.81	1901.31	13470.30
15	656.00	4122.90	1657.74	13159.45
16	700.00	3982.74	1592.32	12654.25
17	750.00	3546.25	1462.07	11961.86
18	800.00	3672.66	1410.09	11396.44
19	850.00	4521.76	1426.23	10983.22
20	900.00	4757.83	1472.84	11220.94
21	950.00	4654.86	1450.41	11051.18
22	1000.00	4352.72	1477.09	11026.26
23	2879.00	881.39	143.55	4202.78
24	4000.00	230.85	76.22	745.57
25	5000.00	12.65	47.80	298.45
26	6000.00	0.00	42.07	104.60
27	7000.00	0.00	34.33	25.07
28	8000.00	0.00	29.69	.66
29	10000.00	0.00	21.80	0.00
30	15000.00	0.00	6.46	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHINOOK SALMON (CLEAR WATER,S=.0025)

	Q	(SPRING) SPAWNING	(FALL) SPAWNING	JUVENILE	INCUBATION
1	50.00	392.98	790.66	3944.96	12951.21
2	75.00	1132.78	2695.58	5797.26	15403.85
3	100.00	2121.31	5042.98	7771.15	16625.69
4	125.00	3535.74	7231.46	8484.01	18108.53
5	150.00	4835.53	8926.30	(8841.40)	19986.88
6	200.00	7065.57	10788.49	8500.49	22704.33
7	250.00	(8360.15)	(11065.82)	7884.63	23351.29
8	300.00	8213.45	10318.81	7426.61	23310.49
9	347.00	7748.83	9729.49	7075.98	23196.39
10	400.00	6643.93	8993.99	6741.19	22685.10
11	450.00	5899.47	8520.95	6350.50	23190.07
12	500.00	5562.74	8108.91	6106.11	23243.07
13	550.00	5142.18	7632.04	5900.57	(23654.62)
14	600.00	4894.99	7411.01	5726.10	23186.38
15	658.00	4814.59	7199.65	5516.99	22750.60
16	700.00	4773.60	6830.10	5492.78	22115.06
17	750.00	4774.94	6327.19	5554.98	21422.29
18	800.00	4735.68	5824.56	5414.55	20774.34
19	850.00	4592.29	5339.40	5485.69	20381.06
20	900.00	4345.37	5195.35	5510.54	20358.31
21	950.00	4123.46	5327.75	5286.29	19938.90
22	1000.00	3861.71	5661.66	4971.31	19714.70
23	2879.00	1209.64	1203.15	717.14	7232.73
24	4000.00	1064.67	708.12	493.57	2585.88
25	5000.00	106.02	147.08	370.75	1325.79
26	6000.00	7.25	5.10	306.62	747.58
27	7000.00	0.00	0.00	290.72	404.51
28	8000.00	0.00	0.00	325.96	191.19
29	10000.00	0.00	0.00	470.58	24.99
30	15000.00	0.00	0.00	1627.31	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CHUM SALMON, FAO VELOCITY, DEPTH, SUBSTRA

	Q	SPAWNING
1	50.00	5292.75
2	75.00	8482.77
3	100.00	10005.33
4	125.00	(10087.52)
5	150.00	9939.84
6	200.00	7811.30
7	250.00	7566.87
8	300.00	6668.59
9	347.00	6268.11
10	400.00	6126.51
11	450.00	5687.95
12	500.00	5212.73
13	550.00	5658.63
14	600.00	5711.74
15	658.00	5626.48
16	700.00	5731.72
17	750.00	5547.44
18	800.00	5462.48
19	850.00	5555.69
20	900.00	5472.58
21	950.00	5377.40
22	1000.00	5602.94
23	2879.00	1834.50
24	4000.00	340.20
25	5000.00	6.44
26	6000.00	0.00
27	7000.00	0.00
28	8000.00	0.00
29	10000.00	0.00
30	15000.00	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR PINK SALMON, FAO

	Q	
1	50.00	5694.35
2	75.00	7994.41
3	100.00	8081.27
4	125.00	8057.85
5	150.00	8809.23
6	200.00	8740.99
7	250.00	(9144.95)
8	300.00	8651.24
9	347.00	7892.33
10	400.00	7161.31
11	450.00	6444.70
12	500.00	5979.79
13	550.00	5898.59
14	600.00	6032.19
15	658.00	6546.71
16	700.00	6537.94
17	750.00	6153.81
18	800.00	6290.95
19	850.00	6314.52
20	900.00	5664.63
21	950.00	5328.70
22	1000.00	5313.33
23	2879.00	1467.31
24	4000.00	588.97
25	5000.00	24.06
26	6000.00	0.00
27	7000.00	0.00
28	8000.00	0.00
29	10000.00	0.00
30	15000.00	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR SOCKEYE SALMON

	Q	SPAWNING
1	50.00	2355.25
2	75.00	5072.85
3	100.00	7746.75
4	125.00	8618.84
5	150.00	(8660.11)
6	200.00	8236.95
7	250.00	6287.54
8	300.00	5253.76
9	347.00	5034.87
10	400.00	4481.77
11	450.00	3908.44
12	500.00	3919.37
13	550.00	4297.25
14	600.00	4734.22
15	658.00	4650.23
16	700.00	4237.64
17	750.00	3816.08
18	800.00	3439.69
19	850.00	3028.35
20	900.00	3262.18
21	950.00	3834.01
22	1000.00	4441.41
23	2879.00	921.78
24	4000.00	10.66
25	5000.00	0.00
26	6000.00	0.00
27	7000.00	0.00
28	8000.00	0.00
29	10000.00	0.00
30	15000.00	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR CUTTHROAT TROUT

	Q	SPAWNING
1	50.00	(8913.51)
2	75.00	8279.20
3	100.00	7007.07
4	125.00	4265.08
5	150.00	3056.00
6	200.00	2598.77
7	250.00	3065.79
8	300.00	2619.57
9	347.00	2040.41
10	400.00	2296.42
11	450.00	2449.40
12	500.00	2634.75
13	550.00	2572.15
14	600.00	2681.43
15	658.00	3260.23
16	700.00	3459.39
17	750.00	3187.15
18	800.00	2852.00
19	850.00	2694.59
20	900.00	2661.16
21	950.00	2512.75
22	1000.00	2216.42
23	2879.00	470.90
24	4000.00	0.00
25	5000.00	0.00
26	6000.00	0.00
27	7000.00	0.00
28	8000.00	0.00
29	10000.00	0.00
30	15000.00	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR WINTER STEELHEAD (CLEAR WATER,S=.0025)

	Q	SPAWNING	JUVENILE	FRY	INCUBATION
1	50.00	145.23	6088.80	4894.79	13513.01
2	75.00	1019.46	8015.83	5138.79	15860.10
3	100.00	2091.08	9139.02	5313.74	17468.79
4	125.00	3159.98	9854.81	(5361.58)	22502.97
5	150.00	4213.71	10291.69	5251.45	25770.33
6	200.00	5758.20	10612.33	5069.53	30262.77
7	250.00	6826.15	(10754.51)	4818.31	32373.20
8	300.00	(6974.62)	10542.52	4574.35	34503.64
9	347.00	5607.37	10382.26	4552.01	35585.20
10	400.00	6187.47	9967.00	4339.26	36590.97
11	450.00	5647.37	9697.87	4208.78	37707.17
12	500.00	4992.66	9502.09	4242.72	38474.26
13	550.00	4384.69	9271.49	4178.09	39006.45
14	600.00	4162.64	9103.63	4074.47	(39042.54)
15	658.00	4120.32	8961.03	3930.09	38866.19
16	700.00	4230.13	8717.01	3814.04	38691.05
17	750.00	4209.21	8443.82	3776.28	38408.66
18	800.00	4190.72	8212.03	3677.54	37987.29
19	850.00	3930.63	8051.96	3543.78	37540.03
20	900.00	3757.19	7978.44	3598.91	37309.13
21	950.00	3475.75	7851.52	3574.54	35934.80
22	1000.00	3301.91	7757.89	3470.93	36179.83
23	2879.00	1559.77	2460.85	821.27	15051.70
24	4000.00	823.50	1569.92	231.38	6838.91
25	5000.00	101.63	1154.73	150.33	4143.38
26	6000.00	5.28	1026.86	152.29	2551.23
27	7000.00	0.00	1027.45	160.22	1446.88
28	8000.00	0.00	1078.06	175.44	717.65
29	10000.00	0.00	1462.54	255.58	110.20
30	15000.00	0.00	3758.16	986.50	.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR ACRONEURIA SP. IFG CURVES NYMP

	Q	
1	50.00	0.00
2	75.00	0.00
3	100.00	0.00
4	125.00	0.00
5	150.00	0.00
6	200.00	0.00
7	250.00	0.00
8	300.00	0.00
9	347.00	0.00
10	400.00	0.00
11	450.00	0.00
12	500.00	0.00
13	550.00	0.00
14	600.00	0.00
15	658.00	0.00
16	700.00	0.00
17	750.00	0.00
18	800.00	0.00
19	850.00	0.00
20	900.00	0.00
21	950.00	0.00
22	1000.00	0.00
23	2679.00	0.00
24	4000.00	0.00
25	5000.00	0.00
26	6000.00	0.00
27	7000.00	0.00
28	8000.00	0.00
29	10000.00	0.00
30	15000.00	0.00

Table 11 STUDY AREA - S4

Q VS. AVAILABLE HABITAT AREA PER 500 FEET OF STREAM FOR STENONEMA SP. IFG CURVES NYMP

	Q	
1	50.00	0.00
2	75.00	0.00
3	100.00	0.00
4	125.00	0.00
5	150.00	0.00
6	200.00	0.00
7	250.00	0.00
8	300.00	0.00
9	347.00	0.00
10	400.00	0.00
11	450.00	0.00
12	500.00	0.00
13	550.00	0.00
14	600.00	0.00
15	658.00	0.00
16	700.00	0.00
17	750.00	0.00
18	800.00	0.00
19	850.00	0.00
20	900.00	0.00
21	950.00	0.00
22	1000.00	0.00
23	2879.00	0.00
24	4000.00	0.00
25	5000.00	0.00
26	6000.00	0.00
27	7000.00	0.00
28	8000.00	0.00
29	10000.00	0.00
30	15000.00	0.00

Table 12. Daily high and low water temperatures measured in a pool (on the bottom) at Study Area N-3, North Fork Skokomish River, during July, August, and September, 1979 (field unit #2, model D-45, Peabody-Ryan thermograph).

DATE	DAILY WATER TEMPERATURE (F°) LOW	HIGH
July 10	----	55
11	53	54
12	52.5	57.5
13	52.5	54.5
14	53	61.5
15	55	63
16	57	65
17	58	65.5
18	59	66.5
19	60	67
20	60.5	67
21	59	60
22	57	----
23	57	63.5
24	57	63.5
25	57	64
26	57.5	65.5
27	58	62.5
28	57	60.5
29	55	63.5
30	57.5	67
31	59	69
August 1	60	61
2	57.5	64.5
3	58	63
4	56	64.5
5	58	68.5
6	55.5	64
7	56	----
8 - 15	----	----
16	62	----
17	62	67
18	56	56
19	53.5	55
20	54.5	55
21	56	58
22	53	58
23	54	58
24	54	55
25	54	59
26	58	71
27	56.5	69
28	54	59.5
29	54	60
30	55	60
31	53	60.5
September 1	52	61
2	57	61
3	54	54
4	53.5	55.5
5	54	54
6	53.5	55

TABLE 13. NORTH FORK SKOKOMISH RIVER MEAN MONTHLY DISCHARGE (cfs)
(From U.S.G.S. gaging station no. 1205650000, below Staircase Rapids, records 1925–1974).

DISCHARGE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AVERAGE	377	674	780	681	601	463	511	692	637	361	154	139
MAXIMUM	1136	1655	1778	1915	1381	1325	901	1304	1332	915	384	420
MINIMUM	44	40	255	124	111	190	280	333	184	88	55	50

TABLE 14. NORTH FORK SKOKOMISH RIVER MEAN MONTHLY DISCHARGE (cfs) CALCULATIONS
(From U.S.G.S. gaging station no. 1205950000 records, 1945–1974).

DISCHARGE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AVERAGE	86	188	251	274	234	151	90	56	45	25	15	11
MAXIMUM	943	936	1262	938	982	570	240	251	320	215	130	30
MINIMUM	5	13	81	54	74	56	33	22	10	5	3	5

TABLE 15. SOUTH FORK SKOKOMISH RIVER MEAN MONTHLY DISCHARGE (cfs)
(From U.S.G.S. gaging station no. 1206050000 records, 1932–1974).

DISCHARGE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AVERAGE	536	1102	1463	1375	1166	927	776	617	393	225	136	181
MAXIMUM	1727	2337	3330	4030	2594	2138	1397	1259	909	479	229	618
MINIMUM	85	77	642	243	414	446	343	298	161	105	80	69

TABLE 16. SKOKOMISH RIVER MEAN MONTHLY DISCHARGE (cfs)
(From U.S.G.S. gaging station no. 12061500 records, 1944–1974).

DISCHARGE	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
AVERAGE	891	1808	2336	2283	2110	1606	1262	927	597	373	245	300
MAXIMUM	2436	3788	4432	5540	4045	3432	2005	1675	1213	783	376	884
MINIMUM	169	453	999	524	780	772	487	497	308	189	144	150

Table 17. Log normal distribution station 1205950000 North Fork Skokomish River near Potlatch, Washington. Mean monthly discharge - Skokomish River basin.

	YEARS FLOW IS NOT EXCEEDED					
Month	9 in 10	2 in 3	1 in 2	1 in 5	1 in 10	1 in 20
OCT	162	60	36	14	8	5
NOV	377	187	132	66	46	34
DEC	414	265	212	137	109	90
JAN	510	292	221	128	96	76
FEB	413	247	191	115	88	71
MAR	251	163	132	86	69	58
APR	150	99	80	53	43	36
MAY	98	59	45	27	21	17
JUNE	76	39	28	14	10	8
JULY	43	23	17	9	7	5
AUG	23	14	11	7	5	4
SEPT	18	13	10	7	6	5
ANNUAL	178	129	110	80	68	59

GLOSSARY OF TERMS

calibration discharge: a measured stream discharge (cfs), and the respective data set, forming one plotted point on a stage-discharge rating curve.

critical reach: a reach of stream having channel characteristics that cause it to be most sensitive to changes in flow. This, in turn, limits production success of one or more fish life stages. If adequate flow is maintained through the critical reach it is assumed that adequate habitat conditions will prevail for the respective fish life stages througout the entire stream.

discharge: the rate of flow, or volume of water flowing in a given stream at a given place and within a given period of time, expressed as cubic feet per second (cfs).

energy grade line: the difference in total energy at two or more channel cross-sections, divided by the distance between them.

flow: the movement of a stream of water from place to place; total water carried by a stream.

flow regime: a recurring pattern of stream flow occurrence with respect to stream discharge and stage.

flow-stage relation: see stage-discharge relation.

habitat evaluation criteria: the requirements of a particular fish life stage (or other aquatic species) for instream conditions -- depth, velocity, substrate, etc. -- as determined from numerous field observations, and expressed in the form of a curve displaying the parameter's relation to increasing probability of condition selection by the fish life stage.

hydraulic control: a cross-sectional point on a stream, normally at the upstream end of a shallow riffle, upstream of which water is backed up to form a pool; the cross-sectional point on a stream downstream of which water first ceases to flow as stream discharge is continuously reduced.

hydraulic simulation: the representation of a river reach by a device (such as a computer) that can imitate the hydraulic (flowing water) behavior of the river -- distribution of depths and velocities or other conditions -- over a range of river discharges.

hydraulic slope: the rate of stream surface change in vertical elevation per unit of horizontal distance. The gradient or slope of the water surface; hydraulic gradient.

life stage: a developmental and ethnological phase of a species' life, such as the egg stage of a fish. The succeeding fish life stages of salmonids are: incubation, fry (alevin), juvenile, adult, and spawning adult.

Manning's equation: an equation for calculation of mean channel velocity, in feet per second:

$$V = \frac{1.486\, R^{2/3} Se^{1/2}}{n}$$

where V = mean velocity; R = hydraulic radius (feet); Se = slope of the energy grade line, and n = coefficient of roughness (Manning's n).

partitioned reach: for the purpose of identifying a represented stream reach, a reach of stream having general uniformity of physical condition throughout its entire length.

prediction discharge: a discharge associated with a particular computer (program) prediction of area of suitable aquatic habitat.

representative reach: a reach of stream, having certain physical conditions, that is selected to represent a larger reach having similar physical conditions.

stage: the elevation of a water surface above or below an established datum or reference.

stage-discharge rating curve: a graphed plot of the relation between a stream's stage, usually plotted as ordinate, and the amount (cfs) of water flowing in the stream, plotted as abscissa. Curve accuracy is increased as the number of additional known stage-discharge points is increased.

stage-discharge relation: the complex interaction of channel characteristics, including cross-sectional area, shape, gradient and bed roughness, that define the rate of stage increase relative to the rate of discharge increase.

stage-elevation relation: the elevation of a stream's water surface relative to an established point of elevation or reference mark(s), such as a wooden stake set in the streambank.

streambed substrate: the bottom materials found in a stream, normally varying from the size of sand or silt to boulders.

tagline: a rope or cable bearing marks or permanent beads, located at specified lengths similar to marks on a rule, for locating measured distances from a known point.

transect: a narrow, continuous sampling area or line for locating sub-areas or points at which data is collected for the purpose of obtaining a representative sample of a larger area.

velocity-discharge relation: the lateral distribution and qualification of stream flow velocities relative to the rate of discharge increase.

weighted useable area: instream surface area having a particular combination of hydraulic conditions, multiplied by the composite value for that combination of conditions (from habitat evaluation criteria).