

**APPENDIX A:
AQUATIC CAPABILITY RATINGS - MANAGEMENT INDICATOR SPECIES**

CHANNEL TYPE		COHO		PINK		CHUM		SOCKEYE		CHINOOK		DOLLY VARDEN		STEELHEAD	
NEW	OLD	ASA	ARA	ASA	ARA	ASA	ARA	ASA	ARA	ASA	ARA	ASA	ARA	ASA	ARA
ESTUARINE PROCESS GROUP															
ES1	E4	N	H	N	N	N	L	N	L	N	N	N	N	N	N
ES2	E3	H	H	H	H	H	L	N	N	N	N	M	M	N	N
ES3	E2	M	L	L	L	L	L	N	N	N	N	M	M	N	N
ES4	E1	H	L	H	H	N	N	N	N	N	N	N	N	N	N
ES8	E5	N	N	N	N	N	N	N	M	N	N	N	N	N	N
PALUSTRINE PROCESS GROUP															
PA1	L1	L	H	N	N	N	N	L	M	N	N	L	H	N	N
PA2	L2	L	H	N	N	N	N	M	M	N	N	L	H	N	N
PA3	L4	L	H	N	N	N	N	M	H	L	M	L	M	N	N
PA4	L5	L	H	N	N	N	N	L	H	N	L	L	L	N	N
PA5	L3	N	H	N	N	N	N	L	H	N	N	N	H	N	N
FLOOD PLAIN PROCESS GROUP															
FP1	C4	L	H	N	N	N	N	L	L	N	N	L	M	N	N
FP2	C6	L	M	N	N	N	N	L	L	N	N	L	M	N	N
FP3	B1	H	H	M	N	M	N	H	N	L	L	H	H	M	H
FP4	C1	H	H	H	N	H	N	H	N	M	M	H	H	H	H
FP5	C3	H	H	H	N	H	N	H	N	H	H	H	H	H	H
GLACIAL OUTWASH PROCESS GROUP															
GO1	D8	M	H	N	N	M	N	M	M	M	M	L	L	N	N
GO2	D4	L	L	N	N	M	N	M	L	M	M	L	H	N	N
GO3	D5	M	M	L	N	M	N	M	M	M	M	L	L	N	N
GO4	D3	L	L	N	N	L	N	L	N	L	L	M	M	N	N
GO5	D1	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALLUVIAL FAN PROCESS GROUP															
AF1	B5	M	M	M	N	M	N	M	N	N	N	M	M	L	L
AF2	A3	L	L	N	N	N	N	L	N	N	N	L	M	N	N
AF8	D6	N	N	N	N	L	N	L	N	N	N	L	L	N	N
LARGE CONTAINED PROCESS GROUP															
LC1	C2	M	M	M	N	M	N	L	N	N	N	H	H	M	H
LC2	C5	M	M	L	N	L	N	L	N	L	M	H	H	M	M
MODERATE GRADIENT MIXED CONTROL PROCESS GROUP															
MM1	B2	M	M	M	N	M	N	L	N	L	L	H	H	L	L
MM2	B3	M	L	M	N	M	N	L	N	H	L	H	H	H	M
MODERATE GRADIENT CONTAINED PROCESS GROUP															
MC1	B4	L	M	N	N	N	N	N	N	N	N	L	L	N	N
MC2	B6	L	M	L	N	L	N	N	N	N	N	M	M	L	M
MC3	B7	L	L	N	N	N	N	N	N	N	N	L	M	L	L
HIGH GRADIENT CONTAINED PROCESS GROUP															
HC1	A6	N	L	N	N	N	N	N	N	N	N	L	M	N	N
HC2	A7	L	L	N	N	N	N	N	N	N	N	M	M	N	N
HC3	A2	L	L	N	N	N	N	N	N	N	N	L	M	N	N
HC4	A5	N	N	N	N	N	N	N	N	N	N	N	N	N	N
HC5	A4	N	N	N	N	N	N	N	N	N	N	L	M	N	N
HC6	A1	N	N	N	N	N	N	N	N	N	N	N	N	N	N
HC8	D7	N	N	N	N	N	N	N	N	N	N	N	N	N	N
HC9	D2	N	N	N	N	N	N	N	N	N	N	N	N	N	N

- CHANNEL TYPE CODE: NEW=AFTER 9/91, OLD=PRIOR TO 9/91
- ASA=A AVAILABLE SPAWNING AREA
- ARA=A AVAILABLE REARING AREA
- N=NEGLIGIBLE, L=LOW, M=MODERATE, H=HIGH

**APPENDIX B:
RIPARIAN MANAGEMENT CONCERNS**

CHANNEL TYPE		STREAM CLASS	LARGE WOOD	SEDIMENT RETENTION	STREAM BANK SENSITIVITY	SIDESLOPE SENSITIVITY	FLOOD PLAIN PROTECTION	CULVERT FISH PASSAGE
NEW	OLD							
ESTUARINE PROCESS GROUP								
ES1	E4	I	L	H	M	NA	L	H
ES2	E3	I	L	H	H	NA	M	M
ES3	E2	I	L	M	M	NA	M	H
ES4	E1	I	M	H	H	NA	H	NA
ES8	E5	I	L	H	H	NA	H	H
PALUSTRINE PROCESS GROUP								
PA1	L1	I	L	H	L	NA	M	M
PA2	L2	I	M	H	L	NA	M	L
PA3	L4	I	L	H	M	NA	H	NA
PA4	L5	I	L	H	M	NA	H	NA
PA5	L3	I	L	H	L	NA	M	NA
FLOOD PLAIN PROCESS GROUP								
FP1	C4	I	M	H	H	NA	M	L
FP2	C6	I	L	H	H	NA	M	M
FP3	B1	I	H	H	M	NA	M	M
FP4	C1	I	H	H	H	H	H	H
FP5	C3	I	H	H	H	NA	H	NA
GLACIAL OUTWASH PROCESS GROUP								
GO1	D8	I	M	L	H	NA	H	M
GO2	D4	I	M	L	M	L	M	NA
GO3	D5	I	M	L	H	NA	H	NA
GO4	D3	I or II	L	M	M	L	M	L
GO5	D1	III	NA	M	M	L	L	NA
ALLUVIAL FAN PROCESS GROUP								
AF1	B5	I	H	H	H	NA	H	H
AF2	A3	II	M	M	H	NA	H	L
AF8	D6	II or III	L	L	H	NA	H	NA
LARGE CONTAINED PROCESS GROUP								
LC1	C2	I	L	L	L	M	NA	L
LC2	C5	I or II	L	L	L	H	NA	L
MODERATE GRADIENT MIXED CONTROL PROCESS GROUP								
MM1	B2	I	M	M	M	L	M	H
MM2	B3	I	H	M	H	L	M	H
MODERATE GRADIENT CONTAINED PROCESS GROUP								
MC1	B4	I or II	L	L	L	L	NA	L
MC2	B6	I or II	M	L	L	M	NA	L
MC3	B7	II	L	L	L	H	NA	NA
HIGH GRADIENT CONTAINED PROCESS GROUP								
HC1	A6	II or III	L	L	L	L	NA	NA
HC2	A7	II or III	M	L	M	L	NA	L
HC3	A2	II	M	L	M	M-H	NA	L
HC4	A5	II or III	L	L	L	M	NA	L
HC5	A4	III	L	L	L	L	NA	NA
HC6	A1	III	M	L	M	H	NA	L
HC8	D7	III	L	L	L	M	NA	L
HC9	D2	III	L	L	M	M	NA	NA

- CHANNEL TYPE CODE: NEW= AFTER 9/91, OLD= PRIOR TO 9/91
- NA= NOT APPLICABLE, L= LOW, M= MODERATE, H= HIGH

**APPENDIX C:
ALASKA REGION CHANNEL TYPE LEGEND**

Estuarine Process Group

- ES1 Silt Substrate Estuarine Channel or Slough (E4)
- ES2 Narrow Small Substrate Estuarine Channel (E3)
- ES3 Narrow Large Substrate Estuarine Channel (E2)
- ES4 Large Estuarine Channel (E1)
- ES8 Broad Braided Glacial Outwash Estuarine Channel (E5)

Palustrine Process Group

- PA1 Narrow Placid Flow Channel (L1)
- PA2 Moderate Width Placid Flow Channel (L2)
- PA3 Shallow Groundwater Fed Slough (L4)
- PA4 Flood Plain Backwater Slough (L5)
- PA5 Beaver Dam/Pond Channel (L3)

Flood Plain Process Group

- FP1 Uplifted Beach Channel (C4)
- FP2 Foreland Uplifted Estuarine Channel (B8, C6)
- FP3 Narrow Low Gradient Flood Plain Channel (B1)
- FP4 Low Gradient Flood Plain Channel (C1)
- FP5 Wide Low Gradient Flood Plain Channel (C3)

Glacial Outwash Process Group

- GO1 Glacial Outwash Flood Plain Side Channel (D8)
- GO2 Large Meandering Glacial Outwash Channel (D4)
- GO3 Large Braided Glacial Outwash Channel (D5)
- GO4 Moderate Width Glacial Channel (D3)
- GO5 Cirque Channel (D1)

Alluvial Fan Process Group

- AF1 Moderate Gradient Alluvial Fan Channel (B5)
- AF2 High Gradient Alluvial Cone Channel (A3)
- AF8 Glacial Alluvial Cone Channel (D6)

Large Contained Process Group

- LC1 Low Gradient Contained Channel (C2)
- LC2 Moderate Gradient Contained Narrow Valley Channel (C5)

Moderate Gradient Mixed Control Process Group

- MM1 Narrow Mixed Control Channel (B2)
- MM2 Moderate Width Mixed Control Channel (B3)

**APPENDIX C:
ALASKA REGION CHANNEL TYPE LEGEND**

Moderate Gradient Contained Process Group

- MC1 Narrow Shallow Contained Channel (B4)
- MC2 Moderate Width and Incision, Contained Channel (B6)
- MC3 Deeply Incised Contained Channel (B7)

High Gradient Contained Process Group

- HC1 Shallowly Incised Muskeg Channel (A6)
- HC2 Shallowly to Moderately Incised Footslope Channel (A7)
- HC3 Deeply Incised Upper Valley Channel (A2)
- HC4 Deeply Incised Muskeg Channel (A5)
- HC5 Shallowly Incised Very High Gradient Channel (A4)
- HC6 Deeply Incised Mountainslope Channel (A1)
- HC8 Moderate/High Gradient Glacial Cascade Channel (D7)
- HC9 High Gradient Incised Glacial Torrent Channel (D2)

Notes:

1. Mapping Units for Lacustrine Process Group have not been defined to date. Lakes and large ponds are delineated in the GIS watershed cover and denoted with the symbol "L" in the GIS streams cover.

2. The following Process Groups were/are no longer valid as of 7/91:

Uncontained Footslope Glacial Process Group

Moderate Gradient Glacial Outwash Process Group

Contained Mountainslope Glacial Process Group

3. Channel Type naming conventions:

- Shallowly Incised..... = <5 m (16.5 ft)
- Moderately Incised..... = 5-10 m (16.5-33 ft)
- Deeply Incised..... = > 10 m (33 ft)
- Narrow width..... = < 10 m (33 ft)
- Moderate width..... = 10-20m (33-66 ft)
- Wide..... = >20 m (66 ft)
- Low Gradient..... = <2%
- Moderate Gradient..... = 2-6%
- High Gradient..... = 6-15% , Very High Gradient = >15%

4. The old Channel Type mapping symbols are shown in parenthesis (eg (B5)) following each CT name.

**APPENDIX D:
FOREST WIDE CHANNEL TYPE SUMMARY**

Individual Channel Types Reported as a Percentage of the Total Mapped Channels
On the Tongass National Forest

Estuarine Process Group

ES10.02%
ES21.00%
ES30.20%
ES41.00%
ES80.10%

Total: 2.32%

Palustrine Process Group

PA13.0%
PA20.3%
PA31.0%
PA40.2%
PA51.0%

Total: 5.5%

Flood Plain Process Group

FP10.2%
FP20.1%
FP35.0%
FP43.0%
FP52.0%

Total: 10.3%

Glacial Outwash Process Group

GO1< 1.0%
GO21.0%
GO31.0%
GO41.0%
GO50.2%

Total: <4.2 %

Alluvial Fan Process Group

AF11.0%
AF22.0%
AF80.3%

Total: 3.3%

Large Contained Process Group

LC11.0%
LC21.0%

Total: 2.0%

**APPENDIX D:
FOREST WIDE CHANNEL TYPE SUMMARY**

Moderate Gradient Mixed Control Process Group

MM16.0%

MM23.0%

Total: 9.0%

Moderate Gradient Contained Process Group

MC14.0%

MC22.0%

MC31.0%

Total: 7.0%

High Gradient Contained Process Group

HC14.0%

HC22.0%

HC36.0%

HC43.0%

HC514.0%

HC625.0%

HC80.1%

HC94.0%

Total: 58.1%

Total may exceed 100 percent due to rounding.

**APPENDIX E:
CHANNEL TYPE PHASES**

- ES4l - LARGE SUBSTRATE PHASE have larger material, cobble/small boulder size range. Available spawning habitat is somewhat less than is typical for this channel type.
- ES4d - SAND DUNE PHASE are incised beach or sand dune channels found in coastal foreland areas. They are differentiated by the amount of glacial influence.
- PA1v - SCRUB FOREST PHASE: Riparian vegetation interspersed with patches of muskeg or shrub (Sitka alder and shore pine) plant communities.
- FP1f - FORESTED PHASE has a dominant Sitka spruce riparian vegetation component, however, willow/alder shrub species predominate along the channel margins. This vegetation pattern limits potential large woody debris recruitment to these streams.
- FP1s - SHRUB PHASE has extensive willow/alder shrub communities in the riparian zone.
- FP2f - FORESTED PHASE riparian vegetation has co-dominant spruce and nonforest plant communities. Inchannel large woody debris recruitment is a significant factor influencing fish rearing capability in some channel reaches.
- FP2s - NONFOREST PHASE riparian vegetation is dominantly shrub and muskeg bog plant communities.
- FP3a - VOLCANIC ASH PHASE is primarily restricted to Kruzof Island. Stream bank composition is influenced by poorly consolidated volcanic ash and breccias. Stream bank and sideslope sensitivity may be higher than is typical for this channel type.
- FP3m - MUSKEG VEGETATION/GRAVEL SUBSTRATE PHASE is characterized by muskeg/scrub forest riparian vegetation. Fish spawning and rearing habitat capabilities may be lower than is typical for this channel type.
- FP3f - FORELAND OUTWASH FORESTED PHASE is influenced significantly by groundwater influx from shallow alluvial aquifers. Fish habitat capability may be higher than is typical for this channel type due to temperature moderation by groundwater.
- FP3s - FORELAND OUTWASH SHRUB PHASE is significantly influenced by groundwater inflow. Rearing habitat capability may be less than FP3f (FORELAND OUTWASH FORESTED PHASE) due to a lack of large woody debris input, and, as a consequence, less pool structure and cover habitat.
- FP4a - VOLCANIC ASH PHASE is limited geographically to drainage basins heavily affected by geologically recent volcanic deposits. Stream bank and substrate composition is predominantly scoria and ash particles deposited by multiple volcanic eruptions.
- FP4l - LARGE SUBSTRATE PHASE has greater stream power than a typical FP4 channel, thus functioning as a more efficient sediment transporter. Substrate usually is somewhat larger, and large woody debris has less influence on channel dynamics.
- FP4m - MUSKEG PHASE is typified by low gradient, muskeg or meadow channels. However, significant fine gravel, sand, and silt deposition and transport occur in this phase, making these channels more similar to the Flood Plain Process Group versus those channels categorized in the Palustrine Process Group.
- FP4f - FORELAND, OUTWASH, FORESTED PHASE includes alluvial flood plain channels that are set apart by predominant groundwater recharge. This phase is restricted to coastal foreland landforms with early successional Sitka spruce riparian stands.

**APPENDIX E:
CHANNEL TYPE PHASES**

- FP4s - FORELAND, OUTWASH, SHRUB PHASE includes foreland groundwater streams with shrub or muskeg riparian vegetation.
- FP5l - LARGE SUBSTRATE PHASE has greater stream power than the typical FP5 and is a more efficient sediment transport system. Substrate has a larger mean diameter than in the typical FP5 channel.
- FP5m - MUSKEG PHASE includes riparian vegetation consisting of muskeg and meadow interspersed with individual trees and some forest. This is an alluvial channel with significantly greater sediment transport than Palustrine Process Group channels that often have similar riparian plant communities.
- FP5f - FORELAND OUTWASH FORESTED PHASE are alluvial channels that are strongly influenced by groundwater recharge from shallow aquifers. This phase is restricted to coastal foreland landforms. Sitka spruce communities dominate the riparian vegetation.
- FP5s - FORELAND OUTWASH SHRUB PHASE are groundwater fed, coastal foreland channels, with predominantly nonforested riparian plant communities.
- FP5b - BEDROCK INFLUENCE PHASE have mixed bank control associated with occasional bedrock outcrops.
- AF2s - SHRUB PHASE consists primarily of brush riparian vegetation.
- AF8s - SHRUB PHASE consists primarily of brush riparian vegetation.
- LC1g - GLIDE PHASE has consistently lower gradient stream reaches than is typical for LC1 channels. This phase tends to occur where channel base level is controlled by a downstream feature such as resistant bedrock outcrops or a lake inlet or outlet.
- LC1r - MORaine PHASE has bank control from glacial moraine deposits. Stream substrate has a larger boulder component, and sideslope stability may be lower than is typical for LC1 channels.
- MM1s - SHRUB PHASE is typically situated in the upper valley reaches of a watershed. Snow avalanche slopes are proximal to this channel. Riparian vegetation consists of brush species (Sitka alder and willow). Rearing capability for this phase is less than is typical for this channel type due to a lack of rearing habitat associated with large wood.
- MM2s - SHRUB PHASE is typically adjacent to steep mountainslopes subject to extensive snow avalanche activity. Riparian vegetation consists mainly of disturbance vegetation, alder and salmonberry. Large woody debris volume is comparatively low in this phase, therefore, fish capability may be lower.
- MM2m - MUSKEG PHASE is typically associated with glacially scoured lowland landforms. Riparian vegetation consists of mixed conifer scrub forest and muskeg bog species.
- MC1m - MUSKEG PHASE is typically a high energy system with muskeg bog and shrub riparian vegetation. Fish habitat associated with large woody debris may be less in this phase than is typical for MC1 channel types.
- HC2s - SHRUB PHASE consists primarily of brush vegetation.