

APPENDIX G

Aquatic Habitat Parameters & Stream Survey Data

Changes Between Draft and Final Environment Impact Statement

- Changed appendix letter from K to G.
- Updated information with current monitoring data.
- Made minor editorial and spelling corrections.

APPENDIX G

AQUATIC HABITAT PARAMETERS & STREAM SURVEY DATA

The following tables summarize these aquatic habitat parameters for major fish bearing streams within the project area and the results from a 2000 stream survey in the Remmel Lake/Spanish Camp part of the Pasayten Wilderness.

Figure G-1. Aquatic Habitat Parameters for Major Fish Bearing Streams

Watershed	Stream	Year	Outfitter Guide Analysis Unit	Highest 7-day Avg. Maximum Temperature (°C)	Sediment	Wood	Bank Erosion
Lightning Creek	Lightning Creek	2002	Pasayten	12 (hand held)	5-11% (avg ~7%)	Below ESA and OW Plan standards ¹	<2%
Pasayten River	Pasayten River	1998	Pasayten	6.6 (hand held)	12%	Below ESA & OW Plan Standards	avg <4%
Lost River	Lost River	2000	Pasayten	14.1	avg ~6%	Above ESA & Below OW Plan Standards	~avg 6%
Upper Chewuch River	Chewuch River	2001	Pasayten	16.6	~ avg 7%	Above ESA & PAC & Below OW Standards	<3%
	Lake Creek	2003	Pasayten	14.5 (above lake)	21% (upper most site & after Farewell Fire) ~avg 7% (below lake)	Above ESA PAC & Below OW Plan Standards	~avg 3%
	Andrews Creek	2005	Pasayten	16.8	17.3% avg (after 2003 fire) 7% avg prior	Above ESA PAC & Below OW Plan Standards	<2% before and after fire
Ruby Creek	Ruby Creek	2001	North Cascades	No Data	1-2%	Below ESA and OW	1.80%

¹ ESA standards for large wood levels are 20 pieces greater than 12 inches diameter and 35 feet or longer per mile. OW Plan (Okanogan and Wenatchee Forest Plans) standards are 106 pieces greater than 12 inches diameter and 35 feet or longer per mile. PAC (PACFISH) standards are 20 pieces greater than 12 inches diameter and 35 feet or longer per mile. Note: OW Plan standards are much higher than ESA and PAC standards as well as the standard set in recent publication of 33 pieces/mile for streams in eastern Washington (Fox and Bolton 2007).

Watershed	Stream	Year	Outfitter Guide Analysis Unit	Highest 7-day Avg. Maximum Temperature (°C)	Sediment	Wood	Bank Erosion
						Plan standards	
	Granite Creek	1999	North Cascades	15.7	8% avg	Below ESA and OW Plan standards (likely due to HWY 20 that is adjacent)	~avg 5%
	Slate Creek	1998	Upper Methow	15	~ avg 8%	Above ESA & Below OW Plan Standards	~avg 5%
	Canyon Creek	1998	Pasayten/ Upper Methow	15.2	avg 9%	Below ESA and OW Plan standards (Natural - high gradient & energy)	~avg 3%
Upper Methow River	WF Methow River	2003	Upper Methow	18.2	4-13% (~avg 10%)	Above ESA & Below OW Plan Standards	~ avg 3%
	Robinson Creek	2003	Upper Methow	13.8	2.50%	Above ESA Below OW Plan Standards in Wilderness Boundary	0%
Middle Methow River	Wolf Creek	2005	Lake Chelan Sawtooth	16.1 (upper site)	7-14 (~avg 10%)	Above ESA & Below OW Plan Standards	<1%
	Goat Creek (roads and timber harvest in drainage)	2000	Upper Methow	17.8	Avg 7%	Above ESA & Below OW Plan Standards	Avg 5%

Watershed	Stream	Year	Outfitter Guide Analysis Unit	Highest 7-day Avg. Maximum Temperature (°C)	Sediment	Wood	Bank Erosion
	Blue Buck Creek (before and after 2006 fire, drainage has roads and past timber harvest)	2004/2007	Bear/Ramsey/Volstead	11.3/15.8	22%/25%	Above ESA & PAC & Below OW Plan Standards	~avg 0.3%/~avg 2%
Lower Methow River	Foggy Dew Creek (upper reach in roadless area)	1997	Sawtooth Backcountry	14.1	10%	Below ESA and OW Plan standards	1.70%
	Crater Creek	1997	Sawtooth Backcountry	58F (hand held)	5 & 8% (~avg 6.5%)	Below ESA & OW Plan standards	<1%
Twisp River	Twisp River	2001	Middle Methow	12.1 (upper most temp site)	~8% (pebble count) & 12.5 - 15.07% (McNeil Sample)	Below ESA & OW Plan standards	~6%
	East Fork Buttermilk Creek (in Wilderness)	1995	Middle Methow	52F (hand held)	Cobble/Small Boulder, No Riffle Embeddedness	Below ESA & OW Plan standards	~5%
	West Fork Buttermilk Creek (in Wilderness)	1995	Middle Methow	No Data, likely low due to bull trout presence	Moderate Fine Sediment Levels, noted as being well sorted and stored.	Below ESA & OW Plan standards	<2%
Upper Lake Chelan	Prince Creek	2000	Lake Chelan Sawtooth	16 (max daily temp)	high (naturally high erosive soils)	Above ESA Standards	avg 2% (Fish Creek)

Watershed	Stream	Year	Outfitter Guide Analysis Unit	Highest 7-day Avg. Maximum Temperature (°C)	Sediment	Wood	Bank Erosion
Lower Lake Chelan	Safety Harbor Creek	2000	Lake Chelan Sawtooth	18 (max daily temp)	high (naturally high erosive soils)	Above ESA Standards	No Data
Sinlahekin Creek	Middle Fork Toats Coulee	1995	Pasayten	46F (hand held)	Gravel/Sand /Cobble	Above ESA Standards	<2%

Figure G-2. Stream surveys completed in a 2000 field trip to the Rimmel/Spanish Camp Area of the Pasayten Wilderness.

<u>Watershed</u>	<u>Stream Segment</u>	<u>Wetted width/depth Ratio</u>	<u>% Bank Erosion</u>	<u>% Undercut banks</u>	<u>Sinuosity</u>
Ashnola River	Beaver T1	10.6	<20% exposed at trail crossing	> 75% undercut	High
	Beaver T2	5.8	0%	>75%	High
	Bob Creek	<10; channel too undercut or subterranean and covered with veg. To measure.	0%	100% undercut	Very High
	N Fk. Spanish T1	8.7	0%	>75% undercut	Moderate
	N Fk. Spanish T2	4.3	1%	>75%	High
	N Fk. Spanish T3	6.4	10%	>75%	High
	N Fk. Spanish T4	16.1	10%	<50%	Low
	Spanish Cabin Creek T1	16.5	10% (stock water hole and trail crossing)	75% under cut	Low
	Spanish Cabin Creek T2	13.2	20%	75% undercut	Low
Spanish Cabin Creek T3	15	10%	90% undercut banks	Low	
Upper Chewuch River	North Shore Rimmel Camp Creek T1	24.3	25%	0% under cut	Very low
	T2 just before entering lake	4.4	0%	100% undercut	High
	Old Camp Creek – to the east of Rimmel Lake and high point.T1	4	0%	100%	Moderate to high
	T2	3.6	0%	100%	High
	T3	10.86	30%	0%	Low

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