3.4 INSTREAM FLOW RECOMMENDATIONS

A central purpose of watershed planning is to recommend instream flows for streams and rivers within the WRIA. An instream flow regulation establishes a "water right for the river" which is junior to all existing water rights but is senior to all new (future) appropriations. This has the effect of conditioning new water rights to maintain the regulatory instream flow level in the river, when available after legally authorized senior water rights have been satisfied. (Also see the box below, Appendix 3-C, and Sections 2.3.2 and 2.3.4 for further discussion of instream flow terms and the relation between instream flow and water rights.)

Issue: River flows are critical to fish at all lifestages. Among the ecological benefits to fish provided by the optimal volume and timing of flows are: passage for migrating adults and smolts; habitat for both fish and their prey; temperature management; and maintenance of riparian vegetation which shades and buffers the river channel; maintenance of the river channel itself, including bed and bank stability; and flushing flows.

Existing Conditions and Current Actions

Formal instream flows have not been set for any WRIA 18 streams (although many are either closed to further withdrawals or are operating under the provisional limitations placed on surface water sources pursuant to Ch. 75.20 RCW). However, extensive work has been done on the Dungeness watershed, beginning with the 1990 Dungeness IFIM study (Hiss & Lichatowich) and continuing with instream flow recommendations subsequently included in the DQ Plan (1994). Additional progress has been made through the Trust Water Agreement (1998), the CIDMP currently under way, other DRMT activities, and ongoing work under the guidance of the DRMT to address the "gap" identified in the DQ Plan between Dungeness River instream flow requirements and out-of-stream consumption (Dungeness recommendations are contained in Section 3.13). Outside the Dungeness watershed, less work has been done to identify or address potentially inadequate flows (or excessive withdrawals). However, the toe-width analysis required to develop the preliminary instream flow recommendations presented below has been completed on most WRIA 18 small streams. An IFIM study completed by Ecology (Slattery 1983) for Morse Creek is the basis for flow recommendations on that creek.

The City of Port Angeles has proposed to restart the Morse Creek hydroelectric facility located at river mile 5.0 (see Section 2.6 for further information and a map). The minimum flows proposed for the operation of this facility were modified in an agreement among the City of Port Angeles, Elwha Klallam Tribe, WDFW, and Ecology. These modified flows, shown in the box below, are subject to review by the USFWS and NOAA, and subsequent approval by FERC as an amendment to the existing project license.

Several streams in WRIA 18 have surface water rights exceeding natural flows in some low flow seasons, and many streams probably have summer low flows impacted by withdrawals from wells in hydraulic continuity with surface water (see Section 3.1.1 for further discussion). These existing low stream flows and the potential for exacerbation of low flows through development and further withdrawals reinforce the importance of determining and setting instream flows. Ecology will, through its rule-making procedure, adopt instream flow levels and then use them in its management of subsequent water rights applications for WRIA 18 streams.

Operational flows for the Morse Creek hydroelectric facility
(as proposed by the City or Port Angeles, Elwha Klallam Tribe, WDFW, and Ecology, but pending completion of a biological assessment and approval by USFWS, NOAA, and FERC)

Month	Min. Flow (cfs)	Month	Min. Flow (cfs)
January	48	July 16-31	50
Feb. 1-14	48	Aug. 1-15	50
Feb. 15-29	50	Aug. 16-31	58
March	50	September	no generation
April	55	Oct. 1-15	69
May	61	Oct. 16-31	60
June	61	November	48
July 1-15	61	December	48

Desired Conditions and Outcomes

- Retention of flows in all WRIA 18 streams and rivers to protect instream values.
- Establishment of instream flows by rule to protect surface waters not already appropriated and closure of certain WRIA 18 streams and rivers (see section 3.3.2) to new appropriations, at least during low flow seasons. Exceptions for meeting future demand outlined in intergovernmental agreements (see 3.1.4(C))
- Identification of water availability for future beneficial uses as defined in State Water Code, once instream flows are met.
- Minimization of out-of-basin exports of water, except for regional use of Elwha River water to Morse Creek watershed.
- Protection of senior water rights.
- Long-term monitoring of instream flows, particularly during low-flow seasons
- Enforcement of regulatory instream flows and seasonal closures.
- Adequate instream flows to maintain stream health and to enable sustainable, healthy salmon production as identified in this watershed plan.

Recommendations *(recommendations for regulatory instream flow levels for the Dungeness River are made in Section 3.13)*

A. Regulatory Instream Flow Levels: Tables 3.4-1 and 3.4-2 present instream flow recommendations to Ecology for East and West WRIA 18 subbasins, respectively. This plan recommends the flow levels indicated in Tables 3.4-1 and 3.4-2 as the basis for Ecology rule-making. Table 3.4-2 recommends minimum instream flows based on toe-width analysis, with the exception of Morse Creek (based on IFIM Study) and the Elwha River.

1. Set instream flows for all WRIA 18 streams to protect flows adequate for all life stages of salmonids, as identified in Tables 3.4-1 and 3.4-2.
2. Develop seasonal closures for those WRIA 18 streams that are flow-limited during the low-flow season and that are recommended by EMMT or DRMT, for consideration during rule-making.

Instream Flow Terms Defined

The term **"regulatory instream flows"** (or "instream flows" as generally used in the plan) refers to flow levels adopted into rule by the Department of Ecology through a public process; these flow levels protect instream resources and will be used in making water right or other water management decisions. An instream flow rule does not affect existing water rights; once in rule, these flows are used to condition future water rights where new water uses might be in continuity with restricted surface waters.

A **"regulatory instream flow level"** does not indicate or require that this amount of flow will necessarily be in the stream at any given time. It does provide protection to in-stream resources and existing water rights, however, and indicates to Ecology whether or not water might be available for *future* out-of-stream uses.

The flow levels proposed for instream flows in the plan may be higher than flows most often seen in a stream at a particular time. Setting flows at high levels protects the potential for use by fish; fish need a range of flows for long-term sustainability, including even infrequent high flows.

When water is available above the instream flow level, it may be considered available for new water uses. A water right issued following adoption of an instream flow rule is interruptible; that is, when flows in the stream drop to the level in the rules, the use is interrupted in favor of the senior instream flow right.

The instream flow levels proposed in this watershed plan have been developed using one of two methodologies, either the **"toe-width"** or the **"Instream Flow Incremental Methodology"** (IFIM). IFIM is usually applied to rivers and major tributaries, while toe-width is applied to small streams or tributaries. A toe-width recommendation is based on measurement of the stream channel and use of an equation that yields predictions of salmon and steelhead spawning and rearing flows. IFIM is a computer modeling approach based on several measurements, such as channel morphology, hydrology and fish usage at various depths and velocities. IFIM studies predict the amount of habitat available for species and lifestages over a range of flows.

"Surface Water Source Limitation" (SWSL) files: In many small streams across the state, restrictions to protect fish already exist on some water right permits. Under RCW 77.50.050 the Department of Fish and Wildlife (WDFW) reviews water right applications and advises Ecology as to whether sufficient stream flow would remain to support fish populations if the water right were granted (WDFW's advisories are called SWSL files). For example, WDFW might advise issuing a water right with a **"low flow proviso,"** requiring diversion to cease when stream flow drops to the level specified by WDFW on the water right. When WDFW judges that diverting any additional water would leave insufficient water to support fish, they might advise that all water right applications be denied for the entire stream. This has led Ecology to **close** some streams to further consideration of water right applications.

3. Unnamed tributaries in WRIA 18 not listed in Tables 3.4-1 and 3.4-2 should be closed to new surface diversions year-round.

4. Instream flows should be protected as well as supplemented and improved in the future as possible, to provide sufficient flows needed for healthy stocks of salmonids and other species in the area's rivers and streams.[1]

[1] DQ Rec. C.6

5. Management of water resources to preserve instream flow in the Dungeness River should take precedence over the intentional diversion of water to augment other streams and area wetlands; e.g., reduced diversions may increase flows in the mainstem of the Dungeness River.[2]

6. The status of large water rights should be evaluated, and agreements explored to limit use, including voluntary Trust water right agreements.

B. Water Budgets: Pursue funding to develop more accurate small stream water budgets, encompassing water rights, actual use, hydrograph, and groundwater interactions. The planning unit should prioritize streams for this type of research.

C. Land Use and Flows: Link land use management with protection of base flows and instream flows, such as, limiting impervious surfaces, increasing stormwater infiltration on-site wherever possible to recharge groundwater supplies, and managing the removal of natural vegetation.

D. Flow Fluctuations:

1. Stormwater, irrigation water, and habitat management should minimize unnatural flow fluctuations in small streams (both peak and low flows).

2. In order to achieve a net gain in productive biological capacity without artificial influence from the irrigation system, existing and potential development should incorporate components to allow recharge and runoff to wetlands, small streams and ground water.[3]

E. Water Availability for Future Appropriations for Growth: After instream flows are met in rivers and streams, identify water available for future appropriations for growth. See section 3.1 for additional strategies addressing water availability.

F. Stream priorities: EMMT has prioritized west WRIA 18 streams based on flow and habitat potential, and restoration potential, as shown in Table 3.4-3. This information will be useful for prioritizing watershed projects and funding, such as in future grant applications.

[2] DQ Rec. C.10.2.A.1

[3] DQ Rec. R.6.6

Table 3.4-1 Dungeness Planning Area (East WRIA18 and selected WRIA 17 streams) Recommendations for Regulatory Instream Flow Levels

(For purposes of future water right administration. Table also includes flow needs by life stage.)

Stream	Toe-Width (ft.)[1] & loc.	Spawning and Rearing flows (cfs)[2]	Regulatory Instream Flow[3] Recommendations by Month (cfs)[4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month.**											
			J	F	M	A	M	J	J	A	S	O	N	D
Bagley *SWSL Status "A"*[5]	12.6 @ Hwy. 101	Coho spawn 15 Steel spawn 29 Steel rear 6	15	10	29	29	20	20	6	6	6	6	15	15
Bell *SWSL Status "B"*[5]	9.8 @ Schmuck Rd.	Coho spawn 11 Steel spawn 22 Chum spawn 23 Steel rear 4	11	7	22	22	14	14	4	4	4	4	11	11
Cassalery *SWSL Status "C"*[5]	5.7 @ Wood-cock Rd.	Coho spawn 5 Steel spawn 12 Steel rear 2	5	3	12	12	8	8	2	2	2	2	5	5
Chicken Coop* *SWSL Status "C"*[5]	7.9 @ E. Sequim Bay Rd.	Steel rear 3	8	3	3	3	3	3	3	3	3	8	8	8
Dean*	10 @ Hwy. 101	Coho spawn 11 Steel rear 4	11	7	7	7	4	4	4	4	4	4	11	11
Dungeness River[6] *SWSL Status "A"*[5]	2 IFIM sites below Hwy. 101	All	575	575	575	475	475	475	475	180	180	180	575	575
Gierin	9.1 @ Holland Rd.	Coho spawn 10 Steel spawn 20 Steel rear 4	10	7	20	20	13	13	4	4	4	4	10	10

Stream	Toe-Width (ft.)[1] & loc.	Spawning and Rearing flows (cfs)[2]	Regulatory Instream Flow[3] Recommendations by Month (cfs) [4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month.**											
			J	F	M	A	M	J	J	A	S	O	N	D
Jimmycomelately* [7] *SWSL Status "A"*[5]	18 @ Old Blyn Hwy.	Coho spawn 24 Steel spawn 44 Chum spawn 49 Steel rear 10	24	16	44	44	30	30	10	10	24	24	24	24
Johnson* *SWSL Status "A"*[5]	11.3 @ W. Sequim Bay Rd.	Coho spawn 13 Steel spawn 26 Chum spawn 27 Steel rear 5	13	8	26	26	17	17	5	5	5	5	13	13
Matriotti *SWSL Status "C"*[5]	11.8 @ Lamar Lane	Coho spawn 14 Steel spawn 27 Chum spawn 29 Steel rear 5	14	10	27	27	18	18	5	5	5	5	14	14
McDonald (aka McDonnell) *SWSL Status "A"*[5]	24.3 @ Old Olympic Hwy.	Coho spawn 36 Steel spawn 63 Chum spawn 71 Steel rear 15	36	24	63	63	42	42	15	15	15	15	36	36
Meadowbrook *SWSL Status "C"*[5]	10.8 @ Sequim-Dungeness Way	Coho spawn 12 Steel spawn 24 Chum spawn 26 Steel rear 5	12	8	24	24	16	16	5	5	5	5	12	12
Siebert *SWSL Status "A"*[5]	24.5 @ Old Olympic Hwy.	Coho spawn 36 Steel spawn 63 Chum spawn 72 Steel rear 15	36	24	63	63	42	42	15	15	15	15	36	36

*This stream is in WRIA 17, which means instream flow recommendations shown here will likely not be adopted into rule until the rule development process for the Quilcene-Snow (WRIA 17) is undertaken.

Numbered Endnotes:

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[1] Toe-width and IFIM: The instream flow levels proposed in this watershed plan have been developed using one of two methodologies, either the **"toe-width"** or the **"Instream Flow Incremental Methodology"** (IFIM). IFIM is usually applied to rivers and major tributaries, while toe-width is applied to small streams or tributaries. A toe-width recommendation is based on measurement of the stream channel and use of an equation that yields predictions of salmon and steelhead spawning and rearing flows. IFIM is a computer modeling approach based on several measurements, such as channel morphology, hydrology and fish usage at various depths and velocities. IFIM studies predict the amount of habitat available for species and lifestages over a range of flows.

[2] Fish species utilization was determined at a meeting on 9/11/1997 with local biologists Tim Rymer and Ginna Correa (WDFW) and Mike Reed (Jamestown S'Klallam Tribe).

[3] The term **"regulatory instream flows"** (or "instream flows" as generally used in the plan**)** refers to flow levels adopted into rule by the Department of Ecology through a public process; these flow levels protect instream resources and will be used in making water right or other water management decisions. An instream flow rule does not affect existing water rights; once in rule, these flows are used to condition future water rights where new water uses might be in continuity with restricted surface waters.

A **"regulatory instream flow level"** does not indicate or require that this amount of flow will necessarily be in the stream at any given time. It does provide protection to in-stream resources and existing water rights, however, and indicates to Ecology whether or not water might be available for *future* out-of-stream uses.

The flow levels proposed here for instream flows may be higher than flows most often seen in a stream at a particular time. Setting flows at high levels protects the potential for use by fish; fish need a range of flows for long-term sustainability, including even infrequent high flows.

When water is available above the instream flow level, it may be considered available for new water uses. A water right issued following adoption of an instream flow rule is interruptible; that is, when flows in the stream drop to the level in the rules, the use is interrupted in favor of the senior instream flow right.

[4] Proposed instream flows using toe-width measurements were determined at a meeting on 11/17/1997 with Hal Beecher (WDFW) and Brad Caldwell (Ecology).

[5] In many small streams across the state, restrictions to protect fish already exist on some water right permits. Under RCW 77.50.050 the Department of Fish and Wildlife (WDFW) reviews water right applications and advises Ecology as to whether sufficient stream flow would remain to support fish populations if the water right were granted (WDFW's advisories are called SWSL files). For example, WDFW might advise issuing a water right with a **"low flow proviso,"** requiring diversion to cease when stream flow drops to the level specified by WDFW on the water right. When WDFW judges that diverting any additional water would leave insufficient water to support fish, they might advise that all water right applications be denied for the entire stream. This has led Ecology to **close** some streams to further consideration of water right applications.

SWSL Status "A"	This stream is closed to future water right appropriations.
SWSL Status "B"	This stream is recommended for closure (applies to streams in west WRIA 18; see Table 3.4-2).
SWSL Status "C"	This stream has a low-flow proviso associated with it.

[6] Instream flow recommendations for the Dungeness mainstem were developed as the result of studies conducted during the 1990s. During the 2514 planning process those recommendations were reviewed in light of ESA listings by the Dungeness River Restoration Group and the Dungeness River Management Team. The flows were adopted by the Dungeness River Management Team, forwarded to Ecology and are reflected here and elsewhere in this plan (see Recommendation 3.13 D1).

[7] The DQ Plan (1994; Figure 6.5) includes additional flow recommendations for Jimmycomelately Creek. Although the Dungeness River Management Team addressed 2514 planning issues and development for Jimmycomelately Creek and other streams draining to Sequim Bay, instream flow recommendations will likely not be adopted into rule until the rule development process for the Quilcene-Snow (WRIA 17) is undertaken.

Table 3.4-2 Elwha-Morse Planning Area (West WRIA18) Recommendations for Regulatory Instream Flow Levels

(For purposes of future water right administration. Table also includes fish species presence and flow needs by life stage.)

Stream	Toe-Width (ft.)[1] & loc.	Upstream Limit of Stock (RM)[2]	Stock and lifestage flows (cfs)	Regulatory Instream Flow[3] Recommendations by Month (cfs)[4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month (or half-month in some cases); X's indicate that the stock/stage is present.**													
				J	F	M	A		M	J		J	A	S	O		N	D
Dry Creek *SWSL Status "A"*[5]	12.8 @ RM 1.1 (just below Lower Elwha Rd.)	1	Coho spawn 15.5	15.5	15.5	X										15.5	15.5	15.5
		1	Coho incub. 10.3	X	X	X	X										X	X
		1	Coho rear 5.5	X	X	X	X	X	X	X		X	X	X	X	X	X	X
		1	Steel spawn 29.8	X	X	29.8	29.8	29.8	X	X						X	X	X
		1	Steel incub. 20	X	X	X	X	X	20	20				X	X	X	X	X
		1	Steel rear 6.1	X	X	X	X	X	X	X		6.1	6.1	6.1	6.1	X	X	X
		?	**Cutthroat	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Elwha River	Specific Elwha flows to be set after dam removal and river stabilization. Method of determining and setting instream flows to be determined by affected/interested parties.[6]																	
Ennis Creek	30 @ RM 0.3 (just below White Creek mouth)	5	Coho spawn 47.4	47.4	47.4	X										47.4	47.4	47.4
		5	Coho incub. 32	X	X	X	X										X	X
		5	Coho rear 18.6	X	X	X	X		X	X	X	X	X	X	X	X	X	X
		4.2	*Sp Chinook 92.3															
		5	Steel spawn 80.1	X	X	80.1	80.1		80.1	80.1					X	X	X	X
		5	Steel incub. 54	X	X	X	X		X	X	54			X	X	X	X	X
		5	Steel rear 20.5	X	X	X	X		X	X	X	20.5	20.5	20.5	20.5	X	X	X
		?	**Cutthroat	X	X	X	X		X	X	X	X	X	X	X	X	X	X
White Creek (Ennis trib.)	11.3 @ 50m above confl. w/ Ennis Cr.	0.25	Coho spawn 13.2	13.2	13.2	X										13.2	13.2	13.2
		0.25	Coho incub. 8.8	X	X	X	X										X	X
		0.25	Coho rear 4.6	X	X	X	X	X	X	X		X	X	X	X	X	X	X
		0.25	Steel spawn 19.2	X	X	19.2	19.2	19.2	X	X					X	X	X	X
		0.25	Steel incub. 12.8	X	X	X	X	X	12.8	12.8				X	X	X	X	X
		0.25	Steel rear 5.1	X	X	X	X	X	X	X		5.1	5.1	5.1	5.1	X	X	X
		?	Cutthroat	X	X	X	X	X	X	X		X	X	X	X	X	X	X

Table 3.4-2 Elwha-Morse Planning Area (West WRIA18) Recommendations for Regulatory Instream Flow Levels

(For purposes of future water right administration. Table also includes fish species presence and flow needs by life stage.)

Stream	Toe-Width (ft.)[1] & loc.	Upstream Limit of Stock (RM)[2]	Stock and lifestage flows (cfs)	Regulatory Instream Flow[3] Recommendations by Month (cfs)[4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month (or half-month in some cases); X's indicate that the stock/stage is present.**															
				J		F	M		A		M	J	J	A		S	O		N	D
Indian Creek *SWSL Status "B"[5]*	26.2 @ RM 0.1	Entire watershed will be accessible after dam removal	Coho spawn 39.7	X	X	X	X	X									X		X	X
			Coho incub. 26.4	X	X	X	X	X	X								X		X	X
			Coho rear 15.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
			Sp/Su/F Chinook spawn 78												78	78	78		78	
			Sp/Su/F Chinook incub. 52	52	52	52									X	X	X		X	52
			Sp/Su/F Chinook rear 15.3	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
			Pink spawn 78												X	X	X			
			Pink incub. 52	X	X	X	X								X	X	X		X	X
			Su/F[7] Chum spawn 78	X												X	X		X	X
			Su/F[7] Chum incub. 52	X	X	X										X	X		X	X
			Steel spawn 68.5	X	X	X	68.5	68.5	68.5	68.5	68.5	X				X	X		X	X
			Steel incub. 45.6	X	X	X	X	X	X	X	X	45.6				X	X		X	X
			Steel rear 16.9	X	X	X	X	X	X	X	X	X	16.9	16.9	X	X	X		X	X
			***Sockeye																	
			****Bull Trout																	
			**Cutthroat	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X
Lees Creek *SWSL Status "C"[5]*	15.9 @ RM 0.8	3.8	Coho spawn 20.6	20.6		20.6	X											20.6	20.6	20.6
		3.8	Coho incub. 13.7	X		X	X		X									X	X	X
		3.8	Coho rear 7.5	X		X	X		X	X	X	X	X	X		X	X	X	X	X
		3.8	Steel spawn 38.4	X		X	38.4		38.4	38.4						X	X	X	X	X
		3.8	Steel incub. 25.6	X		X	X		X	X	25.6	25.6				X	X	X	X	X
		3.8	Steel rear 8.3	X		X	X		X	X	X	X	8.3	8.3		8.3	8.3	X	X	X
		?	**Cutthroat	X		X	X		X	X	X	X	X	X		X	X	X	X	X

Table 3.4-2 Elwha-Morse Planning Area (West WRIA18) Recommendations for Regulatory Instream Flow Levels

(For purposes of future water right administration. Table also includes fish species presence and flow needs by life stage.)

Stream	Toe-Width (ft.)[1] & loc.	Upstream Limit of Stock (RM)[2]	Stock and lifestage flows (cfs)	Regulatory Instream Flow[3] Recommendations by Month (cfs)[4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month (or half-month in some cases); X's indicate that the stock/stage is present.**													
				J	F	M		A		M	J	J	A		S	O		N	D
Little River	38 @ RM 0.7	Entire watershed will be accessible after dam removal	Coho spawn 64.5	X	X	X	X									X	X	X	X
			Coho incub. 43	X	X	X	X	X									X	X	X
			Coho rear 26.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			Sp/Su/F Chinook spawn 123.7											124	124	124	124	124	
			Sp/Su/F Chinook incub. 82.4	82.4	82.4	X	X	X	X	X	X	X	X	X	X	X	X	X	82.4
			Sp/Su/F Chinook rear 26.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			Pink spawn 123.7											X	X	X			
			Pink incub. 82	X	X	X								X	X	X	X	X	X
			Su/F[7] Chum spawn 123.7	X											X	X	X	X	X
			Su/F[7] Chum incub. 82	X	X										X	X	X	X	X
			Steel spawn 105.4	X	X	105.4	105.4	105.4	105.4	105.4					X	X	X	X	X
			Steel incub. 70.2	X	X	X	X	X	X	X	70.2				X	X	X	X	X
			Steel rear 28.7	X	X	X	X	X	X	X	X	28.7	28.7	X	X	X	X	X	X
			****Bull Trout																
			**Cutthroat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Table 3.4-2 Elwha-Morse Planning Area (West WRIA18) Recommendations for Regulatory Instream Flow Levels

(For purposes of future water right administration. Table also includes fish species presence and flow needs by life stage.)

Stream	Toe-Width (ft.)[1] & loc.	Upstream Limit of Stock (RM)[2]	Stock and lifestage flows (cfs)	Regulatory Instream Flow[3] Recommendations by Month (cfs)[4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month (or half-month in some cases); X's indicate that the stock/stage is present.**																							
				J		F	M		A		M		J		J		A		S		O		N		D
Morse Creek[8]	**N/A**	4.7	Coho spawn 80	80	80	X	X	X													X		X		X
		4.7	Coho incub. 55	X	X	X	X	X	X	X											X		X		X
	Flows	4.7	Coho rear 35	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X
SWSL Status	**based on**	4.7	Sp/Su/F Chinook spawn 130												X	X	X	X	X	X	X				
"C"[6]	**IFIM**	4.7	Sp/Su/F Chinook incub. 90	X	X	X													X		X		X		X
		4.7	Sp/Su/F Chinook rear 90	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X		X		X
		4.7	Pink spawn 90												X	X	90	X	X						
		4.7	Pink incub. 60	X	X	X	X								X	X	X	X	X		X		X		X
		4.7	Pink rear n/a		X	X	X	X	X																
		4.7	*Su/F[7] Chum spawn 90	X	X														90		90		90		90
		4.7	Su/F[7] Chum incub. 60	X	X	X	X	X	X										X		X		X		X
		4.7	Su/F[7] Chum rear n/a		X	X	X	X	X	X	X	X													
		4.7	Steel spawn 170	X	X	170	170	170	170	170	170										X		X		X
		4.7	Steel incub. 115	X	X	X	X	X	X	X	X	115	115	115	115						X		X		X
		4.7	Steel rear 70	X	X	X	X	X	X	X	X	X	X	X	X	70	X	X			X		X		X
		?	**Cutthroat	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X		X		X
Peabody Creek	19	(barriers	Coho spawn 26	26		26	X															26	26		26
	@	begin	Coho incub. 16.7	X		X	X		X													X	X		X
	200 yds	at	Coho rear 9.6	X		X	X		X	X	X		X		X		X		X		X	X	X		X
SWSL Status	upstrm of Pbdy	mouth)	Steel spawn 47.2	X		X	47.2		47.2	47.2											X	X	X		X
"C"[5]	St. culvert		Steel incub. 31.7	X		X	X		X	X	31.7		31.7								X	X	X		X
			Steel rear 10.7	X		X	X		X	X	X		X		10.7		10.7		10.7		10.7	X	X		X
		?	**Cutthroat	X		X	X		X	X	X		X		X		X		X		X	X	X		X

Table 3.4-2 Elwha-Morse Planning Area (West WRIA18) Recommendations for Regulatory Instream Flow Levels

(For purposes of future water right administration. Table also includes fish species presence and flow needs by life stage.)

Stream	Toe-Width (ft.)[1] & loc.	Upstream Limit of Stock (RM)[2]	Stock and lifestage flows (cfs)	Regulatory Instream Flow[3] Recommendations by Month (cfs)[4] *(See endnotes for definitions of terms used in this table.)* **Numbers indicate recommended flow for the month (or half-month in some cases); X's indicate that the stock/stage is present.**												
				J	F	M	A		M	J	J	A	S	O		N	D
Tumwater	11.8	~3	Coho spawn 13.9	13.9	13.9	X									13.9	13.9	13.9
Creek	@	~3	Coho incub. 9.2	X	X	X	X								X	X	X
	RM 0.1	~3	Coho rear 4.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SWSL Status "C"[5]		~3	Steel spawn 27.1	X	X	27.1	27.1	27.1						X	X	X	X
		~3	Steel incub. 18	X	X	X	X	X	18	18				X	X	X	X
		~3	Steel rear 5.5	X	X	X	X	X	X	X	5.5	5.5	5.5	5.5	X	X	X
		?	**Cutthroat	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Valley	15.5	~3	Coho spawn 19.9	19.9	19.9	X									19.9	19.9	19.9
Creek	@	~3	Coho incub. 13.1	X	X	X	X								X	X	X
	RM 0.8	~3	Coho rear 7.2	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		~3	Steel spawn 37.2	X	X	37.2	37.2	37.2							X	X	X
		~3	Steel incub. 24.6	X	X	X	X	X	24.6	24.6					X	X	X
		~3	Steel rear 8	X	X	X	X	X	X	X	8	8	8	8	X	X	X
		?	**Cutthroat	X	X	X	X	X	X	X	X	X	X	X	X	X	X

* Extirpated, not prioritized in identifying flows

** Steelhead rearing flows satisfy cutthroat life history needs

*** Extirpated, not prioritized in identifying flows, sockeye flow requirements would be satisfied by pink/chum flows

Numbered Endnotes:

[1] Toe-width and IFIM: The instream flow levels proposed in this watershed plan have been developed using one of two methodologies, either the **"toe-width"** or the **"Instream Flow Incremental Methodology"** (IFIM). IFIM is usually applied to rivers and major tributaries, while toe-width is applied to small streams or tributaries. A toe-width recommendation is based on measurement of the stream channel and use of an equation that yields predictions of salmon and steelhead spawning and rearing flows. IFIM is a computer modeling approach based on several measurements, such as channel morphology, hydrology and fish usage at various depths and velocities. IFIM studies predict the amount of habitat available for species and lifestages over a range of flows.

[2] Upstream limit is variable for anadromous vs. resident fish and it differs currently from what historic conditions may have permitted. It is also dependent on whether or not adequate flows are present to enable an upper limit to be reached.

Table 3.4-2 Elwha-Morse Planning Area (West WRIA18) Recommendations for Regulatory Instream Flow Levels
(For purposes of future water right administration. Table also includes fish species presence and flow needs by life stage.)

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[3] The term **"regulatory instream flows"** (or "instream flows" as generally used in the plan) refers to flow levels adopted into rule by the Department of Ecology through a public process; these flow levels protect instream resources and will be used in making water right or other water management decisions. An instream flow rule does not affect existing water rights; once in rule, these flows are used to condition future water rights where new water uses might be in continuity with restricted surface waters.

A **"regulatory instream flow level"** does not indicate or require that this amount of flow will necessarily be in the stream at any given time. It does provide protection to in-stream resources and existing water rights, however, and indicates to Ecology whether or not water might be available for *future* out-of-stream uses.

The flow levels proposed for instream flows in the plan may be higher than flows most often seen in a stream at a particular time. Setting flows at high levels protects the potential for use by fish; fish need a range of flows for long-term sustainability, including even infrequent high flows.

When water is available above the instream flow level, it may be considered available for new water uses. A water right issued following adoption of an instream flow rule is interruptible; that is, when flows in the stream drop to the level in the rules, the use is interrupted in favor of the senior instream flow right.

[4] Caldwell, Beecher, et al, 2002, 2003; except for Morse Creek (drafted based on Ecology's IFIM study by K. Slattery (May 1983)). Note from Caldwell/Beecher for meeting of Elwha-Morse Management Team (EMMT), 2/13/03: Incubation flows for Chinook, coho, chum, pink and steelhead are generally considered to require 2/3 of their spawning flow.

[5] "Surface Water Source Limitation" (SWSL) files: In many small streams across the state, restrictions to protect fish already exist on some water right permits. Under RCW 77.50.050 the Department of Fish and Wildlife (WDFW) reviews water right applications and advises Ecology as to whether sufficient stream flow would remain to support fish populations if the water right were granted (WDFW's advisories are called SWSL files). For example, WDFW might advise issuing a water right with a **"low flow proviso,"** requiring diversion to cease when stream flow drops to the level specified by WDFW on the water right. When WDFW judges that diverting any additional water would leave insufficient water to support fish, they might advise that all water right applications be denied for the entire stream. This has led Ecology to **close** some streams to further consideration of water right applications.

SWSL Status "A" This stream is closed to future water right appropriations.
SWSL Status "B" This stream is recommended for closure.
SWSL Status "C" This stream has a low-flow proviso associated with it.

[6] Instream flows for the Elwha River will be determined following dam removal (see Table 3.3.3). Until that time, interim flow management is conducted consistent with the City's Water Shortage Response Plan, which incorporates a series of "fish triggers", or flow levels that, if reached during declining flows, result in increasing levels of water conservation in order to maintain instream flows as fully as possible (see 3.7.1 for more detail).

[7] Su/F = Summer/Fall. Note that for this stream, summer chum spawning is possible but has not been documented.

[8] Morse Creek flows provided by WDFW included a review of the 1983 IFIM study conducted by the Department of Ecology. In some months, minimum flows are recommended based on protecting priority lifestages rather than secondary lifestages (even if the latter are higher). The recommended instream flows in this table apply to the entire stream. Existing water rights are not subject to these flows, including hydropower operation between RM 4.3 and 7.3 (known as the "bypass reach") for which specific instream flow requirements have been established in a separate forum (see pgs. 3.4-1 and 2). Effective habitat for salmonids exists in the lowest 0.7 miles of the bypass reach, downstream of an impassable falls at appx. RM 5.0.

Table 3.4-3 Priorities for West WRIA 18 Rivers and Streams

Category	Criteria
A: Highest Priority Streams Indian Creek Little River Elwha River Ennis Creek Morse Creek	*Streams meet the following criteria:* ❖ West WRIA streams with both snowmelt and rain runoff or lake fed (Indian Creek) ❖ High quality habitat (existing or potential) ❖ Number and significance of salmonid stocks (based on North Olympic Peninsula Lead Entity Group Strategy)
B: High Priority Streams Tumwater Creek Valley Creek	*Streams meet three or more of the following criteria:* ❖ Good potential riparian and stream habitat quality ❖ Salmon recovery potential ❖ Community restoration efforts in progress ❖ Potential or existing value for educational or recreational purposes ❖ Public health and water quality concerns ❖ Estuary values or recovery potential ❖ Streams already over-appropriated
C: Low Priority Streams Dry Creek Peabody Creek White Creek Lees Creek	*Remainder of West WRIA 18 streams*

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