NOTES:
This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Back** process covering the **2012-2015** work window for steelhead.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	2.3: Injury and Mortality: Mechanical Injury	5.00%								2015 LB EP: No Actions, no change. -MAH.2.25.2016
Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	3.1: Food: Altered Primary Productivity	5.00%	40	40	40	50	40	50		2012 LF EP: nutrient project scoping underway- potential benefits tbd in 2015 look back. / 2015 LB EP: No Actions, no change. -MAH.2.25.2016
Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	4.1: Riparian Condition: Riparian Vegetation	15.00%	25	25	25.1	30	25.5	35		CCD planting planned but not estimated - consider in 2015 workshop 2015: One project treated 0.2 miles of riparian habitat. Adjusted from % improvement by 2018 and 2033, respectively, the effective miles treated by 2013 = .008 and by 2033 = 0.06. Relative to the 23 steelhead bearing riparian river miles in the Assessment Unit (from STreamnet), the improvement to 2018 = .03% (.008/23*100) and to 2033 (0.06/23*100) = 0.3%. EWL 3.19.16 One project added post look back meeting and concurred by full expert panel during look forward meeting. Thus, two projects treated .2 stream miles. Prorated to account for realized improvement by 2018 and 2033 (respectively), in 2018 0.014 stream miles were treated and in 2033 0.105 stream miles treated. Relative to the 23 steelhead bearing stream miles in the assessment unit, there will be a

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Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	0.00%	10	10	11.3	15	10	15		0% weight - therefore, side channels are considered in LF 6.2, instream complexity 2015 Four projects treated 0.37 side channel miles, but were adjusted to represent effectiveness to 2018 and 2033, respectively. Thus, the realized improvement to 2018 was across 0.32 side channel miles and also 0.32 miles in 2033. Relative to the 23 steelhead bearing stream miles in the Assessment Unit , the improvement is 1.3% (0.302/23*100) in both 2018 and 2033. EWL 3.19.16
Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15.00%	80	80	80.1	85	81	85	Not a lot of opportunity but extrememly high benefit and priority as refuge and rearing areas are rare in this portion of the watershed 16 mile reach; 6 of 16 miles IMW control area but does have potential for treatment	2012: Roaring Ck. - steelhead stream, may apply to juvenile Chinook rearing 2015: The Expert Panel initially discussed counting side channel improvements in this limiting factor Assessment, but ultimately decided to only use those parameters in consideration for limiting factor 5.1 improvements. Ultimately, the benefits from one project were considered - a levee removal action for floodplain access. The 0.04 miles treated was adjusted for projected improvement in 2018 and 2033, respectively (both were the same in this case). Thus the realized river miles improved was 0.032. Relative to the 23 steelhead bearing river miles in the Assessment Unit (from Streamnet), improvement for this limiting factor = 0.1% (0.032/23*100). EWL 3.15.16

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Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	70	70	70.3	72	71	72	although there may not be a lot of opportunity for making changes, it is still high priority	2015: While the Expert Panel recognizes that it's difficult to affect bed and channel form in this area, 4 projects were assessed for limiting factor 6.1. The Expert Panel considered measured lengths of treated areas, then prorated stream miles treated to reflect how much each project action addressed this limiting factor, and taking into account whether wood was in active channel. They don't expect to see much pool depth change because of large substrates, adjustments were made accordingly. Estimates were projected both to 2018 and to 2033. The 1.38 stream miles treated were assessed to have realized impact to 0.069 river miles by 2018 and 0.138 river miles by 2033. Relative to the 23 steelhead river miles in the Assessment Unit (based on Streamnet), the improvement is expected to be 0.3% by 2018 and 0.6% by 2033. EWL 3.15.16

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Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	25	25	30	50	35	70		Estimate considers RM 0.8 - 2.3 Boulder Cluster, Foreman Side Channel, Entiat Fish Hatchery - all include some LWD, ELJs - based on L Entiat RA All 7 projects represent about 1/2 of opportunities 2015:Pool formation was considered in limiting factor 6.1, and not here for limiting factor 6.2. The Expert Panel considered 4 projects and adjusted the stream miles treated to reflect the anticipated improvement realized in 2018 and 2033 (respectively). The Expert Panel was conscientious to keep in mind the limits of possibilities within the treated areas given the boulder sizes, which limit how much channel structure and form can be changed in this Assessment Unit. Relative to the 23 steelhead bearing stream miles in the Assessment Unit (from Streamnet data layer), the improvement in both 2018 and in 2033 is 5.0% (1.1425/23*100). EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	23	23	23	50	23	50		2012:Other actions may improve sediment conditions- evaluate in 2015 Workshop 2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS1	Lower Entiat	9.2: Water Quantity: Decreased Water Quantity	10.00%	50	50	50	55	50	55		2015 LB EP: No actions, no change. EP moved one action that was not completed, Roaring Creek screen(s), to the LF. 0% uplift. - MAH2.25.16

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Upper Columbia Steelhead	Entiat River	ERS2	Mad River	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	98	98	99.5	100	99.5	100		2012 EP: Tillicum Cr culverts are the last barriers. / 2015 LB EP: Considered the Tillicum Creek culverts were the last barriers, opening 2 miles of habitat total. Panel calculated 2 miles x 25% prorated increase over 16.8 miles total Streamnet-based length = 3.0% uplift. -MAH2.25.16 During the Lookforward meeting in June, 2016, projects for this LF were revisited for Lookback calculations. Miles to next barrier were revised, therefore, treated stream miles were modified. Total miles treated = 1. With proration factors for 2018 (25%) and 2033 (25%), the total stream miles effectively treated by both 2018 and 2033=0.25. Relative to the 16.8 steelhead bearing stream miles in the assessment unit, there will be a 1.5% improvement in 2018 and a 1.5% improvement in 2033. EWW 7.29.16
Upper Columbia Steelhead	Entiat River	ERS2	Mad River	3.1: Food: Altered Primary Productivity	20.00%	40	40	40	50	40	50		2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS2	Mad River	4.1: Riparian Condition: Riparian Vegetation	20.00%	70	70	70	75	70	80		2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS2	Mad River	6.1: Channel Structure and Form: Bed and Channel Form	20.00%	90	90	90	92	90	92		2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Entiat River	ERS2	Mad River	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	91	91	91	97	91	99		2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS2	Mad River	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	23	23	23	50	23	50		2012: Roads are a source of sediment 2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS2	Mad River	9.2: Water Quantity: Decreased Water Quantity	0.00%								2015: No actions were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	95	100		2015 LB EP: No actions, no change. - MAH.2.25.16
Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	3.1: Food: Altered Primary Productivity	10.00%	40	40	40	50	40	55		2015 LB EP: No actions, no change. - MAH.2.25.16
Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	4.1: Riparian Condition: Riparian Vegetation	15.00%	60	60	60.2	65	61.1	70		2015: Two actions were undertaken during 2012-2015 over 0.45 river miles of riparian habitat. Recognizing that vegetation takes time to grow, the amount of treated habitat was valued at 6% for 2018, but by 2033 the panel anticipates it will be 30% improved (therefore = 0.027 and 0.135 miles, respectively). Considered relative to the 12.2 steelhead bearing river miles in the Assessment Unit, there is a 0.2% improvement in 2018 (0.027/12.2*100), and a 1.1% improvement in 2033 (0.135/12.2*100). EWL 3.19.16

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Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	5.2: Peripheral and Transitional Habitats: Floodplain Condition	35.00%	60	60	66.2	70	66.2	70		2015: Three projects were undertaken during 2012-2015 affecting 0.76 river miles. The miles treated were adjusted by the Expert Panel to reflect % improvement over time (15-100%). There was no difference in projections in 2018 and 2033. Thus the realized change in both 2018 and 2033= 0.4965 river miles. Relative to the 12.2 steelhead bearing river miles in the Assessment Unit, the improvement for this limiting factor = 4.1% (0.4965/12.2*100). EWL 3.15.16 During the June, 2016 lookforward meeting, the Expert Panel concurred with Yakama Nation's suggestion to increase the proration value of the 3-D project from 15% to 100%. This change increased the stream miles effectively treated by 2018 and 2033 to 0.76. Relative to the 12.2 steelhead bearing stream miles in the assessment unit, there will be a 6.2% improvement in both 2018 and 2033. EWW 7.29.16

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Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	90	90	93.2	99	97	99		2012: Estimate considers Dillwater Project described under LF 6.2 Estimate assumes no social constraints affecting project implementation Lower Tyee & a few unknown possibilities should get to the 99% 2015: Three projects treated 0.79 river miles. Adjusted for anticipated improvement in 2018 and 2033, respectively (but the same in this case), the Expert Panel expects 0.395 miles of improved bed and channel form. Relative to the 12.2 steelhead bearing river miles in the Assessment Unit, the improvement is 3.2% (0.395/12.2*100). EWL 3.15.16

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Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	25	35	39.7	50	39.7	60		2012: 16 mile reach - 10 mi private, 6 USFS - work all on private 2015: Three projects treated 1..55 river miles. The Expert Panel adjusted those river miles base on expected improvement by 2018 and 2033, respectively (in this case they are the same) and it is anticipated that there will be full realization of improvement (=100%). Therefore treated river miles = 1.55. Relative to the 12.2 steelhead bearing river miles in the Assessment Unit, improvement = 12.7% (1.55/12.2*100). EWL 3.15.16 During the June, 2016 lookforward meeting, the Expert Panel concurred with Yakama Nation's suggestion to increase the proration value of the 3-D project to 100%. This change increased the stream miles effectively treated by 2018 and 2033 to 1.79. Relative to the 12.2 steelhead bearing stream miles in the assessment unit), there will be a 14.7% improvement in both 2018 and 2033. EWL 7.20.16
Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	75	75	75	82	75	85		2012: May be some benefits from riparian project so may add improvements during 2015 workshop 2015: The Expert Panel reports that there were no projects to address this limiting factor during the 2012-2015 timeframe. Therefore, there is no change from the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Entiat River	ERS3A	Middle Entiat	9.1: Water Quantity: Increased Water Quantity	0.00%								2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3B	Upper Middle Entiat	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	93	93	93	99		99		2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3B	Upper Middle Entiat	3.1: Food: Altered Primary Productivity	45.00%	40	40	40	50	40	55		2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3B	Upper Middle Entiat	4.1: Riparian Condition: Riparian Vegetation	0.00%	80	80	80	85		90		2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3B	Upper Middle Entiat	6.2: Channel Structure and Form: Instream Structural Complexity	55.00%	80	80	80	90	80	90	Do not expect increased benefit after 2018 from added LWM	2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3B	Upper Middle Entiat	7.2: Sediment Conditions: Increased Sediment Quantity	0.00%	23	23	23	30		30		2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16
Upper Columbia Steelhead	Entiat River	ERS3B	Upper Middle Entiat	9.1: Water Quantity: Increased Water Quantity	0.00%								2015: There were no projects undertaken during 2012-2015 to address this limiting factor, therefore, no change from Low bookend. EWL 3.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	77	90	96.1	90	90	90	Cambell diversion 2016: According to the Expert Panel, the Low bookend is too low.	2015 LB EP: 2 actions, both partial barriers. Panel believes there are still barriers in the AU (Frazier?), and the uplift should not go to 100%. There were 6.4 miles total improved access, adjusted to reflect achieved improvement in 2018 (2.8 miles*50% + 3.6miles*10%) = 1.76mi. Relative to the 9.2 steelhead bearing river miles in the Assessment Unit (from Streamnet), the improvement = 19.1% (1.76/9.2*100). - MAH2.25.16 & EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	2.3: Injury and Mortality: Mechanical Injury	5.00%	80	80	87.5	95	90	95	Are being addressed	2012:replace 4 brush screens w/drum screens + Battie = 5 2015 LB EP: There are 5 screens that need to be replaced. The panel considered that replacing all 5 screens would result in a 15% uplift to the 95% high bookend. Since only one screen was replaced, that equals 1/5th of 15%, with 90% proration due to replacement instead of removal = 2.7% uplift. -MAH2.25.2016 2016: Full panel recalculated benefits during the look forward meeting- because there are 2 diversions left in the assessment unit, and this project fixes one problem, and there is a 15 % gap between the high and low bookends, this project will result in 7.5% improvement. EWW 7.29.16

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Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	4.1: Riparian Condition: Riparian Vegetation	20.00%	70	70	70.8	75	80	80	Good until you get to the WDFW property (if you are considering stream margin and not floodplain vegetation).	Basis: 32.65 riparian acres; 1.7 riparian miles; 3.2 wetland acres 2015: Two projects treated 1.5 stream miles, but recognizing that vegetation takes time to grow, the project length was adjusted for improvement by 2018 = 0.075 stream miles. Relative to the 9.2 steelhead bearing stream miles in the Assessment Unit, there was a 0.8% improvement (0.075/9.2*100). EWL 3.19.16 6.23.16: revise as per Chinook revision
Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	60	60	67.6	80	70	80		2012: 1.29 mi added or enhanced 2015: Two projects were accomplished between 2012 and 2015. One of them:Schoolhouse: created 11 pools, 12 engineered log jams, enhanced seep and a side channel, and dropped big cottonwoods in after fire. Treated length of stream was adjusted by % of PFC, treatment intensity, and time needed to see form changes (some scour seen already in Schoolhouse) to estimate the realized change in 2018 (0.7 stream miles for both projects). Considered over all steelhead bearing stream miles in the Assessment Unit (9.2 miles; from Streamnet), the relative improvement for this limiting factor = 7.6% (0.7/9.2*100). EWL 3.14.16

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Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	60	60	74.7	80	75	80		2012: Basis: 6.2 mi; 2 structures 2015: Two projects were accomplished between 2012 and 2015. 12 log structures were spread out over 1 river mile. Fire-killed wood was cut and dropped in stream after fire to provide sediment traps. Treated length of stream (1.4 river miles) was adjusted by % of anticipated improvement through 2018 (100% in both projects). Considered over all steelhead bearing stream miles in the Assessment Unit (9.2 miles;from Streamnet), the relative improvement for this limiting factor = 15.2% (1.4/9.2*100). EWL 3.14.16 June 2016: Miles and proration factors revisited by full panel = 1.35 stream miles with realized improvement by 2018. Relative to 9.2 steelhead bearing stream miles = 14.7% improvement. EWW 8.3.16
Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	55	55	55	65	56	75		didn't consider road decommissioning in 2012 estimate 2015: No projects were undertaken during 2012-2015 to address this limiting factor, therefore there is no change to the low bookend. EWL 3.19.16

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Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	8.1: Water Quality: Temperature	5.00%	40	40	43.5	55	45	55		2015: The benefit from flow increase provided by Upper Beaver Creek lease (18%) was adjusted to convert from flow to temperature effects for fish (25%) = 4.5% improvement (18*25). EWL 3.11.16 June 2016: Uplift from flow was modified during full Expert panel meeting, therefore this affected the temperature calculation, which is assumed a function of flow and shading (LF 4.1 = 0). Thus, the improvement to flow was recalculated to be 14% and prorated 25% for effectiveness = 3.5%. EWW 8.3.16
Upper Columbia Steelhead	Methow River	MES1	Beaver Creek	9.2: Water Quantity: Decreased Water Quantity	25.00%	60	60	73.9	80	75	80	Cambell diversion; maybe others (?)	550 AF (2 cfs) 16.5 mi about 25% of total diversions 2015: Beaver Creek #123 late season instream flow was added (2.08 cfs) during Expert Panel meeting. Some is permanent trust (2013 to 2018), some is leased. Total leased cfs, averaged over time provides 1.8 cfs. Relative to base flow (10 cfs; value provided by Expert Panel) the water input improves this limiting factor by 17.8% (1.8/10*100) . EWL 3.14.16 June 2016: The full expert panel reconsidered this calculation, and agreed that the project resulted in an annual average of 1.8 cfs returned to the stream, but prorated based on affected stream mileage in the assessment unit (77.9%). Therefore, the estimated improvement = 13.9%. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES2	Black Canyon	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	90	90	90	100	90	100	1 culvert remaining (higher up)	
Upper Columbia Steelhead	Methow River	MES2	Black Canyon	4.1: Riparian Condition: Riparian Vegetation	0.00%	80	80	80	90	80	95		
Upper Columbia Steelhead	Methow River	MES2	Black Canyon	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	90	90	90	90	90	90		
Upper Columbia Steelhead	Methow River	MES2	Black Canyon	7.2: Sediment Conditions: Increased Sediment Quantity	45.00%	65	65	65	70	65.1	75	Managed for timber harvest and grazing. Roads and recreation.	
Upper Columbia Steelhead	Methow River	MES2	Black Canyon	9.2: Water Quantity: Decreased Water Quantity	35.00%	70	70	70	75	70.2	75		
Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%								2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	3.1: Food: Altered Primary Productivity	16.00%	75	75	75	85	75	85	Early Winters and Lost River Combined in 09 EP	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	4.1: Riparian Condition: Riparian Vegetation	17.00%	90	90	90	92	90	95	Place with the riparian condition problem is the campground	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	6.1: Channel Structure and Form: Bed and Channel Form	17.00%	90	90	90	95	90	95	From campground down has been incised.	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	75	75	75	93		93		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	75	75	75	80	75	80		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES3	Early Winters Creek	9.2: Water Quantity: Decreased Water Quantity	25.00%	75	75	75	85	75.2	85	Early Winters and Lost River Combined in 09 EP ; Early Winters Irrigation (16cfs?) right across from the campground	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES5A	Gold Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	95	95	95	100	95	100	Riparian mostly functioning (for being in a canyon) - biggest problems in flats and road footprint	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES5A	Gold Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	75	75	75	80	75.1	85	Not much floodplain naturally - not much could do.	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES5A	Gold Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	45	45	45	50	45	50	To go higher than 80% would have to pull major roads and get people off the creek.	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES5A	Gold Creek	6.1: Channel Structure and Form: Bed and Channel Form	35.00%	70	70	70	75	70	80		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES5A	Gold Creek	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	45	45	45	60	45.1	75		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES5A	Gold Creek	9.2: Water Quantity: Decreased Water Quantity	5.00%	90	90	90	90.5	90.5	90.5		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES5B	Libby Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	95	95	95	100	95	100		2015 No actions. No change. Yakama Nation confirmed no actions for this LF.
Upper Columbia Steelhead	Methow River	MES5B	Libby Creek	4.1: Riparian Condition: Riparian Vegetation	35.00%	75	75	75	77	75.3	80	Confluence to border of WDFW property (~RM 1.5?) opportunities for fencing and revegetation. Evaluated for the entire watershed.	2015 No actions. No change. Yakama Nation confirmed no actions for this LF.
Upper Columbia Steelhead	Methow River	MES5B	Libby Creek	6.1: Channel Structure and Form: Bed and Channel Form	25.00%	60	60	60	75	60.1	75	Mouth to ~RM4 focus of this EC	2015 No actions. No change. Yakama Nation confirmed no actions for this LF.
Upper Columbia Steelhead	Methow River	MES5B	Libby Creek	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	45	45	45	60	45.1	75		2015 No actions. No change. Yakama Nation confirmed no actions for this LF.
Upper Columbia Steelhead	Methow River	MES5B	Libby Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	75	75	75	80	75.2	80	Diversions probably not migration barriers.	2015 No actions. No change. Yakama Nation confirmed no actions for this LF.
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	85	85	85	98	85	98		2015: No actions were undertaken to address this limiting factor during the 2012-2015 time frame, therefore there was no change to the low bookend. EWL 3.20.16

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Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	3.1: Food: Altered Primary Productivity	5.00%	75	75	75	85	75	85		2015: No actions were undertaken to address this limiting factor during the 2012-2015 time frame, therefore there was no change to the low bookend. EWL 3.20.16
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	4.1: Riparian Condition: Riparian Vegetation	15.00%	55	55	55.5	65	58	75	Riparian and floodplain combined in 09 EP used lower Chewuch values	2015 Yakama Nation entered some project work and adjusted stream miles for treated area. Based on this the Yakama Nation suggested an uplift of 0.3. Comments entered RM 5/25/2016. June 2016: Based on further input by Yakama Nation, and discussion by Full Expert Pane, the improvement was modified to account for projects not considered before. Therefore 6 projects effectively treated 0.1135 stream miles (after proration). Relative to the 23.9 steelhead bearing stream miles in the assessment unit, there was a 0.5% improvement. EWW 8.3.16
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	25.00%	55	57	66.5	70	57	70	Most sidechannels in the lower have been cutoff, filled, and developed 10/4/12: I disagree with this comment: Some side channels may have been filled by deposition of fine sediment mainly as a natural process; not many, if any, have been developed or filled in by people	We need to better understand the 9.8 mile denominator. We understand the number was taken from Reclamations Tributary Assessment database but we could not locate the number in that database. So, the Yakama Nation used the aggregate of side channel project miles (1.13 miles) and divided that by 9.8. We added the miles treated between Chewuch RM 13 and 15.5. The Yakama Nation thinks that an 11.5% uplift is high. Comments entered RM 5/25/2016

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Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	6.1: Channel Structure and Form: Bed and Channel Form	2.50%	75	77	77	90	77	90		Relocations in eight-mile or 20-mile would provide benefits (not cub or boulder- above barriers)- improvements apply to tribs, mainstem in good shape. 2015 Most projects addressed 6.2. The Yakama Nation based the calculation of uplift on the stream miles between Chewuch RM 10 and 13-15.5 due to effects of apex structures on channel geometry. The Yakama Nation changed the proration to 100%. Comments entered RM 5/27/2016.
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	60	60	78.1	80	70	80		We need to better understand the 22.4 mile denominator. We understand the number was taken from Reclamations Tributary Assessment database but we could not locate the number in that database. So, the Yakama Nation used the aggregate of side channel project miles (1.13 miles) and divided that by 9.8. We added the miles treated between Chewuch RM 13 and 15.5. The Yakama Nation thinks that an 18.1% uplift is high. Comments entered RM 5/25/2016.
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	50	50	50	52	50.3	55	High bookend assumes some riparian improvement	No actions. No change. Yakama Nation confirmed no actions for this LF. Comments entered RM 5/27/2016.
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	8.1: Water Quality: Temperature	2.50%	40	40	40	60	44	60		No actions. No change. Yakama Nation confirmed no actions for this LF. Comments entered RM 5/27/2018,

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES6	Lower Chewuch	9.2: Water Quantity: Decreased Water Quantity	10.00%	80	80	80	90	85	90	Used 09 EP Lower Chewuch value	Original 2018 estimate doesn't include the Fulton pipe project. Changes from fall to spring diversion to refill Perrygin Lake improves conditions for salmon/steelhead. 5%= 10cfs aquisition/40 cfs diverted to get from 80 to 100%. 2015 No actions. No change. Yakama Nation confirmed no actions for this LF. Comments entered RM 5/27/2016.
Upper Columbia Steelhead	Methow River	MES7	Lower Methow	4.1: Riparian Condition: Riparian Vegetation	25.00%	80	80	80	82	81	85		10/4/12: Riparian Conditions in the Lower methow have not been formally assessed so this is actually an unknown. 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES7	Lower Methow	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	20.00%	80	80	80	81	80	81	Riparian and floodplain combined in 09 EP; Casey - I donâ€™t think there are any sidechannels that are cut off due to human features, but maybe????	10/4/12: This has not been assessed so is actually an unknown - there appear to be a few off channel areas that may have been lost to small push up levees. 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES7	Lower Methow	6.1: Channel Structure and Form: Bed and Channel Form	25.00%	80	80	80	81	81	81		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Methow River	MES7	Lower Methow	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	75	75	75	80	76	80	Casey - I am not sure we want to go here in the lower methow, but maybe so. It likely has less wood than it did historically and we know that a lot of juvenile salmonids rear in canyon habitat in other areas (Tumwater)	01/4/12: Has not been assessed and so is an unknown - large wood sources from uspream and riparian areas is likley lower than historic conditions 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES7	Lower Methow	9.2: Water Quantity: Decreased Water Quantity	5.00%	93	93	93	93	93	93		10/4/12: Needs further assessment. Low bookend is way to high. The lower Methow is likely flow impaired. Diversion rate from all tribs upstream is over 140cfsâ€¦Base flow condition at Pateros is around 480 cfs - this is nearly a 30% diversion rateâ€¦ 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	60	60	60	95	95	95		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	2.3: Injury and Mortality: Mechanical Injury	0.00%								10/4/12:MVID West push up dam, dewatereing and stranding of redds and individuals. EP to consider adding this LF to 2016 Look Forward 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	3.1: Food: Altered Primary Productivity	8.00%	75	75	75	85	75	85		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	64	64.3	64	75	75	Used lower twisp values, riparian and floodplain combined in 09 EP	Basis: 43 acres improved 2015: Two projects treated 0.85 miles, but recognizing that vegetation takes a while to reach its full potential, the stream miles treated were adjusted to reflect growth by 2018 = 0.005. Therefore improvement = 0.03% (0.005/18.6*100). EWL 3.19.16 June 2016: Stream lengths and proration factors were modified during full expert panel meeting. Updated realized improvement was across 0.796 stream miles. Relative to the 18.6 steelhead bearing stream miles in the assessment unit, there will be a 4.3% improvement by 2018. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	50	50	51.7	60	60	60	(below Buttermilk Creek)	2012: Include MVID-W RM 4.6 project & Elbow Coulee Side Channel and Elbow Coulee Right 2015: One project treated 0.3 miles of side channel. The Expert Panel anticipates the project to be 75% realized by 2018, therefore the treatment length was reduced to 0.225 side channel miles treated. Considered over all the side channel miles in the Assessment Unit (18.6; Streamnet), this project improved conditions for this limiting factor 1.2% (=0.225/18.6*100). EWL 3.15.16 June 2016, during the full expert panel meeting, the "denominator" was changed to reflect the total side channel miles in the assessment unit (13.5 miles). Therefore the realized improvement in side channels is 0.225 relative to 13.5 side channel miles = 1.7%. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	50	50	50	60	51	60		2012: Bridge Creek beaver relocation Include MVID-W RM 4.6 project 2015: The three projects considered treated bed form, all added instream structures. The value of the 0.32 river miles treated was adjusted by project to estimate how much improvement will be realized by 2018. Relative to the 18.6 steelhead bearing river miles in the Assessment Unit (from Streamnet), there was a 0.4%% improvement (0.08/18.6*100). EWL 3.15.16 June 2016: After further discussion among the full expert panel;, it was agreed that the projects previously considered really do not improve channel structure and form. Therefore, there were no actions and no change to low bookend. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	50	50	51.6	60	55	60	(below Buttermilk Creek)	2012: Basis: 3 miles & 20 acres improved 2015: Three projects treated 0.32 miles of stream, which was then adjusted to reflect the anticipated realized improvement to instream complexity by 2018 (=0.16). Relative to all steelhead bearing stream miles in the Assessment Unit (18.6; streamnet), there was a 0.9% improvement (0.16/18.6*100). EWL 3.15.16 June 2016: after discussion among full expert panel, adjustments to stream miles treated and prorations were made. Thus, 0.29 stream miles were effectively treated and relative to the 18.6 steelhead bearing stream miles in the assessment unit, there was a 1.6% improvement. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	8.1: Water Quality: Temperature	7.00%	25	25	25.1	40	30	40		major flow improvement (9.2), 5.1 actions 2015: The Expert Panel recognize putting water back into the system provides some localized thermal improvement, therefore they considered the uplift from 9.2 (water quality; 9.3%) and adjusted the value fractionally to reflect relative gains = 0.5% improvement (9.3%*5%=0.5%). EWL 3.19.163 June 2016: After discussion among the full expert panel, this calculation was modified because the estimated improvement for 9.2 changed (from 9.3% to 2.3%). Therefore 2.3%*5% (proration factor) = 0.1% improvement. **Note, the Expert Panel expressed desire for Steve H. to comment on the 5% proration value. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES8	Lower Twisp	9.2: Water Quantity: Decreased Water Quantity	30.00%	40	40	42.3	75	67	75		3400 AF/yr (15cfs) Poorman + Devaney also include screens 15 cfs is about half the current diversion of 33 cfs moving almost 50% from 40 to 100 (67%) Water transactions obtained by TU/YN for CBWTP 2015: One permanent acquisition for 4 cfs was considered against 43 cfs base flow = 9.3% improvement. EWL 3.19.16 June 2016: the Full Expert Panel discussed the question raised by Yakama Nation about the "nature of the water purchased - is this consumptive use? If not, the 4 cfs may not really be as valuable through the entire AU.". The panel agreed and adjustments to the improvement calculation was made. Thus, one cfs in permanent acquisition relative to the 43 cfs in the assessment unit, yields an improvement of 2.3%. EWW
Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	85	85	85	98	90	98		2012 LF EP: 1 mi TOTAL access from BOTH projects remaining barriers on Bear Ck open to (currently) low intrinsic potential habitat. 2015 LB EP: The temporary Barkley project did not alleviate any significant passage barrier. The final removal of the diversion may have more impact. No uplift to LF1.1, but there is a benefit for injury/mortality from push up dam construction (LF2.3), based on current action. 0% uplift. - MAH2.25.2016

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Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	2.3: Injury and Mortality: Mechanical Injury	8.00%	80	80	81.5	95	95	95		2012 LF: Eliminate need for heavy equipment maintenance of push-up dams & eliminate fish accessibility to intake at Barkley diversion. Collaboration among WDFW screen shop/TU/Reclamation & YN Addresses all known issues. Other projects would improve from 95-100%. 2012 EP: No project listed, but estimate based on opportunity to eliminate heavy equipment maintenance of push-up dams & eliminate fish accessibility to intake at Barkley diversion. Collaboration among WDFW screen shop/TU/ Reclamation & YN. Projects listed would address all known issues. Other projects would improve from 95-100%. / 2015 LB EP: The temporary pump station Barkley project did not alleviate all injury/mortality from the channel, but the permanent change should alleviate all mortality and injury from stranding. Panel determined that, based on the 15% difference between the low bookend and high

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Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	4.1: Riparian Condition: Riparian Vegetation	15.00%	48	48	48.9	50	55	55	Riparian and floodplain combined in 09 EP, 09 EP LB 45 increased to 48 in 2012 EP	75 acres from projects listed in 2012- 2015: Eight projects treated 3.03 stream miles, but recognizing that vegetation takes time to grow, the treatment lengths were adjusted to better represent improvement to 2018 (=0.924 stream miles). Relative to the 25.2 stream miles in the Assessment Unit (from Streamnet) there was 0.4% improvement (0.0924/25.2*100). EWL 3.19.16 June 2016: Full Expert Panel modified project extents, therefore improvement value changed slightly. 0.217 effectively treated stream miles relative to 25.2 steelhead bearing stream miles in the assessment unit = 0.9% improvement. EWW 8.3.16
Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	25.00%	55	55	63	70	68	70		Include 3R, Barkley, Whitefish, WDFW Floodplain -5 mi total improvement. / 2015 LB EP: 7.3 % uplift based on denominator. - MAH.2.25.2016 June 2016: Four projects treating 1.59 side channel miles and all prorated 100% were made relative to the 20 side channel miles in the assessment unit (from Bureau of Reclamation tributary Assessment database) = 8% improvement. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	50	51.8	70	55	70	Focus of much of M2 work	2012: all 4.1/5.1 actions EXCEPT Silver (Consider in 2015 look back for anything that happens there) 2015:Five projects treated 0.83 river miles, and those treated miles were adjusted to reflect action effectiveness by 2018 (=0.415 miles). Relative to the 25.2 miles of steelhead bearing stream miles in the Assessment Unit (from Streamnet), there was a 1.6% improvement for this limiting factor (0.415/25.2*100). EWL 3.15.16 June 2016: Full expert panel discussed and modified slightly.- removed eagle rocks project. Miles treated were prorated to reflect realized change in 2018 = 0.445 stream miles. Relative to the 25.2 steelhead bearing stream miles in the assessment unit, there will be a 1.8% improvement. EWW 8.3.16

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Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	50	50	54.2	70	60	70		2012 Basis: 4.05 mi + 118 structures (includes 8 for Lewisia * 12 for SIlver Reach) 50 to 60% treats half reach covered by existing RA; remaining 60-70% to be treated by actions from the RA to be completed 2015: Seven projects treated 2.41 miles of stream and those miles were adjusted based on anticipated improvement by 2018. Most were 100%. Therefore, the total stream miles treated was 2.13. Relative to the 25.2 steelhead bearing stream miles in the Assessment Unit (from Streamnet), there was a 8.6% improvement (2.16/25.2*100). EWL 3.15.16 June 2016: full expert panel review projects and modified miles treated/proration factors. Seven projects treated 1.8 stream miles and prorated for effectiveness to 2018 (=1.055 stream miles).

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Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	8.1: Water Quality: Temperature	5.00%	75	77	77.2	85	77	85		all 4.1/5.1 + 9.2actions EXCEPT Silver (Consider in 2015 look back for anything that happens there) Does not include BArkley or MVID- Considers that actions identified in RA cover 1/2 needs- other half to be covered by next RA 2015: , and prorated . Yields a 1.9% uplift. Three projects treated, which treated 1.16 stream miles, created thermal heterogeneity and refuge, and increases survival. Treated stream miles were adjusted based on estimated thermal benefits, previous functional condition, and location in relation to where fish are known to be (=0.49 stream miles). Relative to the 25.2 stream miles in the Assessment Unit (from Streamnet) there was 1.9% improvement (0.049/25.2*100). EWL 3.19.16 June 2016: After discussion among full expert panel, slight modifications were made to
Upper Columbia Steelhead	Methow River	MES9A	Middle Methow	9.2: Water Quantity: Decreased Water Quantity	10.00%	75	75	75	85	75.2	85	This is look at the cummulative effect to this reach of water savings upstream.	2012: Basis- does not include MVID/M2 BArkley; beavers in upstream areas- no effect on flow downstream 2015: No actions were undertaken during the 2012-2015 time frame to address this limiting factor, therefore there was no change from the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	85	85	85	85	85	85	Foghorn	2015: No actions were undertaken during the 2012-2015 time frame to address this limiting factor, therefore there was no change from the low bookend. EWL 3.11.16
Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	3.1: Food: Altered Primary Productivity	5.00%	75	75	75	85	76	85		2012: Implement Hancock nutrient treatment plan 2015: No actions were undertaken during the 2012-2015 time frame to address this limiting factor, therefore there was no change from the low bookend. EWL 3.11.16
Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	62	60.2	65		2012: includes Big Valley project 2015: No actions were undertaken during the 2012-2015 time frame to address this limiting factor, therefore there was no change from the low bookend. EWL 3.11.16
Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	65	65	68.4	80	80	80		2012: progress from 80-100% are actions around hatchery & WInthrop Include Heath/Big Valley RIGHT (FWS w/funding from BPA) in 80% total 2015: One project restored 0.52 side channel miles, which will be fully realized by 2018 (100% adjustment for improvement factor). Relative to the 15.1 side channel miles in the Assessment Unit (from BOR tributary assessment project), the benefit of this project is 3.4% (0.52/15.1*100). EWL 3.15.16

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Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	6.1: Channel Structure and Form: Bed and Channel Form	23.00%	65	65	65	75	70	75		2012: includes Heath/Big Valley RIGHT 2015: No actions were undertaken during the 2012-2015 time frame to address this limiting factor, therefore there was no change from the low bookend. EWL 3.11.16
Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	6.2: Channel Structure and Form: Instream Structural Complexity	22.00%	65	65	65	75	70	75		2012: Includes Heath/Big Valley RIGHT. / 2015: One project that treated 0.5 stream miles was considered fully effective by 2018 (100% adjustment for improvement factor). Relative to the 10.8 steelhead bearing stream miles in the Assessment Unit (Streamnet), the improvement for this limiting factor is 4.6% (0.5/10.8*100). EWL 3.15.16 June 2016: Full expert panel agreed there should be no actions counted toward improvements for this limiting factor. Therefore, there was no change to low bookend. EWW 8.3.16
Upper Columbia Steelhead	Methow River	MES9B	Upper-Middle Methow	9.2: Water Quantity: Decreased Water Quantity	20.00%	80	80	80	85	80	85	Foghorn	2012: No effect UNLESS beaver reintroduction occurs in Hancock 2015: No actions were undertaken during the 2012-2015 time frame to address this limiting factor, therefore there was no change from the low bookend. EWL 3.11.16
Upper Columbia Steelhead	Methow River	MES10	Upper Chewuch	4.1: Riparian Condition: Riparian Vegetation	10.00%	90	90	90	92	90	95	Early recovery from burning	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

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Upper Columbia Steelhead	Methow River	MES10	Upper Chewuch	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	90	90	90	93	90	95		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES10	Upper Chewuch	6.2: Channel Structure and Form: Instream Structural Complexity	70.00%	80	80	80	85	80	90		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES10	Upper Chewuch	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	90	90	90	92	90	95	Sediment condition is mostly natural	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	75	75	90	75	90		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	3.1: Food: Altered Primary Productivity	5.00%	75	75	75	85	75	85	Water quality in 09 EP no values	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	4.1: Riparian Condition: Riparian Vegetation	10.00%	70	70	70	72	70.5	75	From Weeman up to Mazama (associated with development); includes Goat Creek	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	60	60	60	75	65	75	Some opportunity between Goat Creek and Lost River.; includes Goat Creek	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	75	75	75	85	77	85	Localized severe incisions, channel straightening. Most actions would occur from Lost River down to Weeman Bridge.; includes Goat Creek	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	75	75	75	85	77	85	Most actions would occur from Lost River down to Weeman Bridge.; includes Goat Creek	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	85	85	85	85	85	85	Goat creek off of White Face Mountain. Not an issue in the main channel.	2012: minimal impact from beaver 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	9.1: Water Quantity: Increased Water Quantity	0.00%								2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11A	Upper Methow	9.2: Water Quantity: Decreased Water Quantity	40.00%	30	30	30	40	30.5	40	Dry in most years from Early Winters down to Weeman. In dry years from just below Lost River. Not entirely anthropogenic - is a losing reach and would go dry in some years anyway. Not lethal at the AU scale - fish get above, live, and leave in spite of sections that go dry.; includes Wolf Creek	2012: most beaver relocation in Goat Ck- 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES11B	Lost River	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	75	75	75	98		98		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11B	Lost River	3.1: Food: Altered Primary Productivity	20.00%	75	75	75	85	75	85	Used same values as Early Winters	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11B	Lost River	4.1: Riparian Condition: Riparian Vegetation	25.00%	85	85	85	87	85	90	Lost river combined with early winters in 09 EP	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11B	Lost River	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	85	85	85	85	85	85	Evaluated for watershed	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11B	Lost River	6.1: Channel Structure and Form: Bed and Channel Form	25.00%	85	85	85	85	85	85	Sugar Dike ~RM1.5(?); Evaluated from watershed perspective (LBE would be lower if look at % opportunity)	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11B	Lost River	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	60	60	60	90		90		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES11B	Lost River	9.1: Water Quantity: Increased Water Quantity	0.00%								2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	93	93	93	94	93	96		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	3.1: Food: Altered Primary Productivity	20.00%	75	75	75	85	77	85		2012:YN- implement nutrient enhancement assessment uncertain of potential benefits- low initial est. 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	4.1: Riparian Condition: Riparian Vegetation	15.00%	85	85	85	88	85	92		2012: release upstream from disturbed area 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	85	85	85	88	85	92		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	6.1: Channel Structure and Form: Bed and Channel Form	20.00%	90	90	90	93	90	95		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	92	92	92.5	95	93	95		2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16 June 2016: Yakama Nation added one project and it was discussed during full expert panel meeting. 0.1 stream miles were fully and effectively treated. Relative to the 21.4 steelhead bearing stream miles across the assessment unit, there will be a 0.5% improvement. EWW 8.3.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	90	90	90	95	90.5	95		2012: beaver release likely in tribs (Buttermilk Ck)- tribs are sediment source; small % of issue 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES12	Upper Twisp	9.1: Water Quantity: Increased Water Quantity	0.00%								2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES13	Wolf Creek	2.3: Injury and Mortality: Mechanical Injury	10.00%	75	75	75	90	90	90	need to evaluate status of screens in Wolf Ck	2012: fix Wolf Ck ID screen (in wilderness) 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES13	Wolf Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	80	80	80	82	80	85	Lower 2 miles; RM 0-2.5	2012: release site likely upstream from private land (where direct fish benefits would accrue) 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES13	Wolf Creek	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	75	75	75	80	75	80	Lower 2 miles; RM 0-2.5	2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Methow River	MES13	Wolf Creek	6.2: Channel Structure and Form: Instream Structural Complexity	35.00%	75	75	75	80	75	80	Focus on low 3-4 miles	2012: release upstream from impacted reach 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Methow River	MES13	Wolf Creek	9.2: Water Quantity: Decreased Water Quantity	30.00%	65	65	65	70	70	70	Wolf Creek Irrigation Diversion; Biddle Ponds(?)	2012; TU worked w/I.D. to lower target from 7.5 to 7 cfs in late season (Aug-Sep)- .5 cfs improvement 2015: No actions relevant to this limiting factor were accomplished from 2012-2015, therefore, there was no change from the low bookend. EWL 3.15.16
Upper Columbia Steelhead	Okanogan River	ORS1	Loup Loup Creek	4.1: Riparian Condition: Riparian Vegetation	13.00%	50	50	50	60	50	75	High: Old values=LB-50%, 2018=75% & 2033=80% which represents a 25% to 30% change??? Riparian benefits will be small initially then grow over time. 10% increase from action in the 10-12 period with benefits from these same actions improving to 25% by 2033. ; %: o be accomplished in lower reach, adjacent to bottomless box culverts. OCD will plant during spring of 2012, benefits from perenial flows being reestablished beginning in 2011.	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS1	Loup Loup Creek	6.2: Channel Structure and Form: Instream Structural Complexity	12.00%	70	70	70	80	80	80	%: Wood recruitment not likely to occur in the next 50 years due to past development. Adding wood in short term mayâ€¦.	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS1	Loup Loup Creek	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	80	80	80	80	80	80	Low: Based on OBMEP data and EDT values of 14% fines in spawning gravels???	2016: no actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS1	Loup Loup Creek	9.2: Water Quantity: Decreased Water Quantity	55.00%	50	50	50	70	70	70	High: Old values=LB-10%, 2018 & 2033=70% which represents a 60% change??? 10 to 50 for current actions during the 10-12 period with potential for another 20% ; Low: Barrier half of the habitat for all the fish ; %: Increase irrigation efficiency or alternative water source, (lease)	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	2.1: Injury and Mortality: Predation	15.00%	57	57	57	90	57	90	High: Old values=LB-30%, 2018&2033=50% which represents a 20% change??? ; Low: Bird predation from Grant PUD studies is 14% assumed at least an equal impact from Piscivor predation plus another 5% to account for other sources (i.e. bear, otter, pelican, unknown).	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	2.3: Injury and Mortality: Mechanical Injury	3.00%	80	87.5	98	98	87.5	98	High: If all pump screens meet NOAA criteria. Number based on original EP table. ; Low: Unknown but also unlikely to have much impact on listed stocks with the exception of emergant summer steelhead. LOW BOOKEND CHANGED FROM 96 TO 80%	EACH SCREEN IS 1/130 (TREATED/OUT-OF-COMPLIANCE SCREENS) 2016: All known out of compliance screens will be replaced by 2018, therefore 18% improvement

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	3.2: Food: Food-Competition	1.00%	95	95	95	95	95	95	Low: This impact would be limited to actively rearing summers steelhead at time of release.	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	4.1: Riparian Condition: Riparian Vegetation	0.00%	70	70	70	85		90		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	60	60	60	80		85		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	8.1: Water Quality: Temperature	4.00%	35	35	35	35	35	35	Low: Makes these habitats largely uninhabitatable from July to October in most years. (ie habitable 75% of year)	2016: no actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS2A	Wells Pool (inundated-Confluence to Chilliwist Creek)	9.3: Water Quantity: Altered Flow Timing	77.00%	25	25	25	25	25	25	Low: Habitat ranges from roughly 100% to 50% altered from the historic as you move upstream estimate of 75% alteration and 25% function. ; % Altered hydrograph has affected fine sediment, temperature, wood accumulation, and habitat complexity. If not going to change the hydrograph (i.e. remove Wells Dam), then the only actions that should occur are predation reduction and fixing pump screens. 1-1D combined for 1 EP%	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	2.1: Injury and Mortality: Predation	5.00%	60	60	60	65	60	65	Low: Most predation in this reach would be limited to mostly emergent summer steelhead fry by SMB??? Potential 5% increase related to potential removal of some portion of SMB population.	2016: no actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	2.3: Injury and Mortality: Mechanical Injury	3.00%	80	87.5	98	98	87.5	98	High: If all pump screens meet NOAA criteria. Number based on original EP table. ; Low: Unknown but also unlikely to have much impact on listed stocks with the exception of emergant summer steelhead. LOW BOOKEND CHANGED FROM 95 TO 80%	2016: All out of compliance screens will be replaced by 2018
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	3.2: Food: Food-Competition	1.00%	85	85	85	85	85	85	Low: Based upon EDT outputs related to actively rearing NOR's	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	4.1: Riparian Condition: Riparian Vegetation	1.00%	60	60	60	62	60	65		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	7.00%	50	50	55.5	65	60	65	Low: (85% based upon linear length impacted) - LBE based calibrated agains Bed and Channel Form. UBEs based on opportunity for large project. Think that the Conservancy Island project may be worth 10%. May be other opportunities. ; %:	2016: Two projects treated 1.13 stream miles and was prorated to reflect realized improvements by 2018 (=0.351 stream miles). Relative to the 6.33 steelhead bearing stream miles in the assessment unit, there will be a 5.5% improvement. EWW 8.3.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	50	50	50	50	50	Low: (90% based upon linear length impacted) - 50% as calibrated by WG ; %: Covers habitat complexity, overstabilization from riprap, and channel incision.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	6.2: Channel Structure and Form: Instream Structural Complexity	2.00%	70	70	70	75	70	75	Low: Not a single log jam of any consequence exists within this reach although several LWD collection sites do exist. Loss of upstream wood sources. ; %: Although wood will increase ambush opportunities for predators the literature suggests that woody habitats benefit the prey more than the predator (Robertson and Crook 1999, Roni and Quinn 2001).	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	7.2: Sediment Conditions: Increased Sediment Quantity	37.00%	80	80	80	80	80	80	Low: Based on OBMEP data and EDT values of 14% fines in spawning gravels??? ; %: What spawning is occurring in this reach is being rapidly reduced by fine sediments claiming spawning gravels	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	8.1: Water Quality: Temperature	29.00%	35	35	35	40	36	40	Low: Makes these habitats largely uninhabitatable from July to October in most years. ; %: High summer temperatures HIGH BOOKEND FORM 35 TO 40%	Conservancy Island temp benefit-similar to Peterson 10/5/12: New information suggests this could be a lot more beneficial based on groundwater influence in sidechannel----might need to readjust during 2015 look back. 2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS2B	Okanogan River 01 (Chilliwist to Salmon)	9.2: Water Quantity: Decreased Water Quantity	5.00%	95	95	95	95	95	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	2.1: Injury and Mortality: Predation	4.00%	60	60	60	65	60	65	Low: Most predation in this reach would be limited to mostly emergent summer steelhead fry by SMB???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	2.3: Injury and Mortality: Mechanical Injury	1.00%	80	87.5	98	98	87.5	98	High: If all pump screens meet NOAA criteria. Number based on original EP table. ; Low: Unknown but also unlikely to have much impact on listed stocks with the exception of emergant summer steelhead. CHANGE LOW BOOKEND FROM 95 TO 80%	2016: 100% of screens are scheduled to be fixed by Oct. 2016. Therefore assigned high bookend value. EWW 8.3.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	3.2: Food: Food-Competition	1.00%	80	80	80	80	80	80	Low: Based upon EDT outputs related to actively rearing NOR's	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	4.1: Riparian Condition: Riparian Vegetation	1.00%	60	60	60	62	60	65	Low: (35% based upon % alteration of aerial images along length of the reach) ; % Riparian habitat has been substainially disturbed by reduced floodplain interaction and agricultural development and land clearing. However, benefits to fish on a stream this wide are marginal at best.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	20.00%	60	60	60	75	60	75	Low: Based upon linear length impacted ; %: Railroads, highways, and dikes cutting off lateral migration and interaction with floodplain	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	60	60	60	75	60	75	Low: Based upon linear length impacted ; %: Railroads, highways, and dikes cutting off lateral migration and interaction with floodplain	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	60	60	60	75	60	75	Low: Based upon linear length impacted ; %: Riprap reducing channel migration zone - Railroads, highways, and dikes cutting off lateral migration and interaction with floodplain	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	6.2: Channel Structure and Form: Instream Structural Complexity	1.00%	70	70	70	75	70	75	Low: only 1 log jam of any consequence exists within this reach although several LWD collection sites do exist.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	90	90	90	90	90	90	Low: Based on OBMEP data and EDT values of 9% fines in spawning gravels???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	8.1: Water Quality: Temperature	30.00%	30	30	30	35	30	35	Low: Makes these habitats largely uninhabitatable from July to October in most years. ; %: Provide or augment flows in tributaries which would result in cold water refugia	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3A	Okanogan River 02 (Salmon Creek to Omak Creek)	9.2: Water Quantity: Decreased Water Quantity	2.00%	95	95	95	95	95	95	Low: Kistler & Arterburn 2006-OBMEP water quality and quanitity report.	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	2.1: Injury and Mortality: Predation	5.00%	60	60	60	65	60	65		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	2.3: Injury and Mortality: Mechanical Injury	3.00%	80	87.5	98	98	87.5	98	High: If all pump screens meet NOAA criteria. Number based on original EP table. LOW BOOKEND CHANGED FROM 95 TO 80%	2016: 100% of screens are scheduled to be fixed by Oct. 2016. Therefore assigned high bookend value. EWW 8.3.16
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	3.2: Food: Food-Competition	10.00%	85	85	85	85	85	85	Low: May be a bigger issue in the future because of location of Chief Joseph Hatchery acclimation ponds %: May be a bigger issue in the future because of location of Chief Joseph Hatchery acclimation ponds	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	4.1: Riparian Condition: Riparian Vegetation	1.00%	50	50	50	52	50	55		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	7.00%	60	60	60	62	60	62	Low: Based upon linear length impacted	2016: no actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	60	60	60	65	61	65	Low: Based upon linear length impacted ; %: Covers habitat complexity, overstabilization from riprap, and channel incision. HIGH BOOKEND CHANGED FROM 60 TO 65%	ACTION DESIGNED FOR FALL CHINOOK- SOME BENEFIT TO STEELHEAD 2016: no actions, therefore no change to low bookend. 10/5/12: if this benefit is tied to Hopkins sidechannel there will not be benefit summer/fall chinook. Hopkins is designed for summer thermal refugia for steelhead.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	6.2: Channel Structure and Form: Instream Structural Complexity	2.00%	70	70	70	75	70	75	Low: only 2 log jam of any consequence exists within this reach although several LWD collection sites do exist.	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	7.2: Sediment Conditions: Increased Sediment Quantity	28.00%	70	70	70	70	70	70	Low: Based on OBMEP data and EDT values of 24% fines in spawning gravels.	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	8.1: Water Quality: Temperature	29.00%	35	35	35	35	35	35		10/5/12: some small benefit (1%) should have been given to steelheadhere based on Hopkins sidechannel 2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3B	Okanogan River 03 (Omak to Riverside)	9.2: Water Quantity: Decreased Water Quantity	5.00%	95	95	95	95	95	95		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	2.1: Injury and Mortality: Predation	7.00%	60	60	60	65	60	65	High: Old values=LB-30%, 2018&2033=50% which represents a 20% change???	2016: no actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	2.3: Injury and Mortality: Mechanical Injury	12.00%	80	84	98	98	84	98	High: If all pump screens meet NOAA criteria. Number based on original EP table. CHANGED LOW BOOKEND FROM 95 TO 80%- more screens in this reach than others THAT ARE OUT OF COMPLIANCE AND NEED REPLACEMENT	2016: 100% of screens are scheduled to be fixed by Oct. 2016. Therefore assigned high bookend value. EWW 8.3.16
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	3.2: Food: Food-Competition	1.00%	85	85	85	85	85	85		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	4.1: Riparian Condition: Riparian Vegetation	5.00%	55	55	55	60	55	65		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	20.00%	55	55	55	75	56	75	High: No direct relationship to old EP tables ; %: What about Wilson's?	CONSIDERING PETERSON ALCOVE 8.1 ACTION 2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5.00%	55	55	56.2	75	55	75		June 2016: Full expert panel considered one project that treated 0.3 stream miles and was prorated 50% to reflect realized improvements by 2018. Relative to the 12.11 steelhead bearing stream miles in the assessment unit, there will be a 1.2% improvement. EWW 8.3.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	50	50	50	50	50	50	%: Railroad confines migration to a degree, but already confined	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	6.2: Channel Structure and Form: Instream Structural Complexity	1.00%	75	75	75	80	75	80	Low: No 2 log jam of any consequence exists within this reach although several LWD collection sites do exist.	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	85	85	85	85	85	85	Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels??? ; % Should be addressed upstream in source reaches	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	8.1: Water Quality: Temperature	30.00%	35	35	35	40	36	40	CHANGED HIGH BOOKENDS FROM 35 TO 40	Small part of total reach length. Monitoring will provide insight on benefits. Final value will be evaluated considering supplemental info tbd- also potential benefit to 5.1 tbd later 2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3C	Okanogan River 04 (Riverside to Janis Bridge)	9.2: Water Quantity: Decreased Water Quantity	4.00%	95	95	95	95	95	95		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	2.1: Injury and Mortality: Predation	10.00%	60	60	60	65	60	65	High: Old values=LB-30%, 2018&2033=50% which represents a 20% change???	2016: no actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	2.3: Injury and Mortality: Mechanical Injury	8.00%	92	96	98	98	96	98	High: If all pump screens meet NOAA criteria. Number based on original EP table. GROUP REEDUCED LOW BOOKEND FROM 95 TO 92 %	2016: 100% of screens are scheduled to be fixed by Oct. 2016. Therefore assigned high bookend value. EWW 8.3.16
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	3.2: Food: Food-Competition	3.00%	70	70	70	70	70	70	Low: Bonaparte Creek Acclimation site	2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	4.1: Riparian Condition: Riparian Vegetation	7.00%	45	45	45	47	45	50		2016: no actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	6.1: Channel Structure and Form: Bed and Channel Form	13.00%	80	80	80	85	80	85	%: Bank instability and riparian degradation	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	6.2: Channel Structure and Form: Instream Structural Complexity	1.00%	65	65	65	85	65	85	Low: No log jams of any consequence exists within this reach although several LWD collection sites do exist.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	7.2: Sediment Conditions: Increased Sediment Quantity	17.00%	85	85	85	85	85	85	Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	8.1: Water Quality: Temperature	36.00%	35	35	35	35	35	35	%: Note on difficulties when considering multiple species: Warm temperature could be beneficial for ocean-type salmonids because of reduced competition. But #1 limiting factor for stream-types.	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS3D	Okanogan River 05 (Janis to Siwash Creek)	9.2: Water Quantity: Decreased Water Quantity	5.00%	95	95	95	95	95	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	33	33	33	96		96		10/5/12: comment should be that mission falls is part of Upper Omak so there are no barriers in lower Omak 2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	3.2: Food: Food-Competition	30.00%	80	80	80	80	80	80	Low: Assumes ongoing stocking of 30,000 summer steelhead annually ; %: Could increase as potential exists for not only high quantiies to be stocked but also muiltiple species	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	4.1: Riparian Condition: Riparian Vegetation	5.00%	90	90	90	90	90	90	Low: Mostly degraded on private land in holdings %: Missing large wood	10/5/12: low bookend may need to be adjusted next time due to fire 2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	50	50	50	50	50	50		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	6.2: Channel Structure and Form: Instream Structural Complexity	8.00%	95	95	95.5	95	95	95		2016: Pool and bed creationover 0.04 stream miles. Prorated to 75% of properly functioning condition by 2018. Relative to the 5.66 steelhead bearing stream miles in the assessment unit (to falls), there will be a 0.5% improvement. EWW 8.3.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	75	75	75	85	75	85	Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	8.1: Water Quality: Temperature	12.00%	90	90	90	90	90	90		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4A	Lower Omak Creek (Mouth to Mission Falls)	9.2: Water Quantity: Decreased Water Quantity	15.00%	80	80	80	80	80	80	Low: Habitat in lower Omak Creek considered to be in excellent condition	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	1.1: Habitat Quantity: Anthropogenic Barriers	71.00%	20	20	38.2	60	40	60	Low: Currently, no access above Mission Falls ; %: Removed approximately 3,000 cubic yds of material in 2011; anticipate an additional 3,000 cubic yds in 2012, access to estimated 17 miles of spawning and rearing habitat	Several implemented projects have not resulted in passage yet. Full benefit depends on extent of success of project. Group chose mid-way to full success to be re-evaluated at next cycle. June 2016: Full expert panel discussed work conducted at Mission falls boulder rapids, where PIT tags indicate adults and some juveniles pass when flow velocities are between 25-40 cfs. This project, that treated 23.7 stream miles (but Expert Panel should verify this number) was prorated 20% to reflect is effectiveness toward properly functioning condition (=4.74 stream miles effectively treated). Relative to the 26.1 steelhead bearing stream miles in the assessment unit, there is a 18.2% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	3.2: Food: Food-Competition	1.00%	90	90	90	90	90	90	Low: Based upon past but no future hatchery stocking in this area.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	4.1: Riparian Condition: Riparian Vegetation	1.00%	70	70	70	75	70	80	High: Old values=LB-95%, 2018& 2033=96% which represents a 1% change??? Are there other oppertunities???? ; %: Plant vegetation along reactivated floodplain in Disatuel area	2016: No actions, therefore no change to low bookend

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	95	95	95	96	95	96	High: Old values=LB-95%, 2018& 2033=96% which represents a 1% change??? Are there other oppertunities???? : %: activate floodplain in Disautel Reach	2016: No actions, therefore no change to low bookend
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	6.2: Channel Structure and Form: Instream Structural Complexity	1.00%	80	80	80	85	80	85		2016: No actions, therefore no change to low bookend
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	7.1: Sediment Conditions: Decreased Sediment Quantity	0.00%	25	25	25	60		60	High: Old values=LB-30%, 2018=35% & 2033=60% which represents a 5% to 30% change??? Expected long-term benefits from past projects???? Past projects credited with 2% gain in 7-9 period with longer term gain of 14%. How much benefit for actions in 10 to 12?? and 13-15??? ; Low: Based on old values??? What would V-star suggest???? ; %: remove 18" culvert; replace with 36" culvert in 2012	2016: No actions, therefore no change to low bookend

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	25	25	25.3	60	27	60	High: Old values=LB-30%, 2018=35% & 2033=60% which represents a 5% to 30% change??? Expected long-term benefits from past projects???? Past projects credited with 2% gain in 7-9 period with longer term gain of 14%. How much benefit for actions in 10 to 12?? and 13-15??? ; Low: Based on old values??? What would V-star suggest???? ; %: remove 18" culvert; replace with 36" culvert in 2012 NOTE: GROUP CHANGED 7.1 TO 0 AND 7.2 TO 20%- TOO MUCH SEDIMENT IS THE LIMITING FACTOR	1%- road decommissioning; springs/fencing: 1%; culverts: pre-emptive protect from further degradation; more benefits to these actions in long term than short term; treating 5/247 mi of roads in this watershed June 2016: During a full expert panel discussion, it was recognized that benefits from actions were generally lost in degradation of watershed overall. Two projects treated 0.55 stream miles, but prorated to reflect effectiveness of actions toward properly functioning condition, 0.875 stream miles were treated. Relative to the 26.1 steelhead bearing stream miles in the assessment unit, there will be a 0.3% improvement by 2018. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	8.1: Water Quality: Temperature	0.00%	75	75	75	90		95		2016: No actions, therefore no change to low bookend
Upper Columbia Steelhead	Okanogan River	ORS4B	Upper Omak Creek (Upstream from Mission Falls)	9.2: Water Quantity: Decreased Water Quantity	1.00%	80	80	80	90	80	90	%: Only so much water to go around	2016: No actions, therefore no change to low bookend

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS5A	Lower Salmon Creek (OID to Mouth)	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	60	60	60	90		90		June 2016: The full expert panel discussed one barrier project that fixed stranding and passage problems at low flow, but because this limiting factor is weighted zero, there was no improvement attributed. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS5A	Lower Salmon Creek (OID to Mouth)	3.2: Food: Food-Competition	7.00%	100	100	100	100	100	100	High: No old values to consider ; Low: Based upon existing plans for continued stocking at 50,000/year	2016: No actions, therefore no change to low bookend
Upper Columbia Steelhead	Okanogan River	ORS5A	Lower Salmon Creek (OID to Mouth)	4.1: Riparian Condition: Riparian Vegetation	0.00%	60	60	60	90		95		2016: No actions, therefore no change to low bookend
Upper Columbia Steelhead	Okanogan River	ORS5A	Lower Salmon Creek (OID to Mouth)	6.2: Channel Structure and Form: Instream Structural Complexity	3.00%	25	25	29.1	70	25	70	High: These values are no longer relatible to the old EP tables as percentages were for the entire stream.	June 2016: Full panel discussed two projects that treated 0.238 stream miles. Mileage treated was prorated to reflect progress to Properly Functioning Condition by 2018 = 0.169 stream miles effectively treated. Relative to the 4.1 steelhead bearing stream miles in the assessment unit, there will be a 4.1% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS5A	Lower Salmon Creek (OID to Mouth)	8.1: Water Quality: Temperature	0.00%								2016: No actions, therefore no change to low bookend

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS5A	Lower Salmon Creek (OID to Mouth)	9.2: Water Quantity: Decreased Water Quantity	90.00%	39	39	39	65	39	65	High: These values are no longer relatible to the old EP tables as percentages were for the entire stream. Improvements in the 2010-2012 period would be 17% ; Low: 22% is based upon existing agreements (#days per year w/water from water lease)and is an increase from 1-5% resulting from overflows at Conconully Dam prior to this agreement. ; %: Increase lease amount, increase storage	10/5/12: Some benefit could be gained before 2018 but there is not enough information to make a change now. 2016: Credit already given for project in previous Expert Panels.
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	60	60	60	90		90		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	2.1: Injury and Mortality: Predation	6.00%	90	90	90	90	90	90	Low: Predation is closely tied to hatchery program resisuals plus eastern book trout and a few smallmouth bass	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	3.2: Food: Food-Competition	7.00%	72	72	72	72	72	72	High: No old values to consider ; Low: Based upon existing plans to continue annaul releases of 50,000 summer steelhead. ; %:	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	80	80	80		2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	65	65	65.2	75	66	75	High: Old values=LB-65%, 2018=75% & 2033=80% which represents a 10% to 15% change??? Based on existing numbers, No work during the 10-12 period how much is likely to occur in the 13-15 period??? ; %: Site specific to willing landowners (Knutson & McCormick - to be accomplished 2012)	10/5/12: benefits from McCormick and could be a little higher but can be adjusted later in the look back June 2016: Based on conversations among the full panel, McCormick project reconnected ponds and springs to Salmon Creek by creating 2 small spring channels. 0.03 stream miles were treated and prorated 100% for effectiveness. Relative to the 13.26 steelhead bearing stream miles in the assessment unit, there was a 0.2% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	6.2: Channel Structure and Form: Instream Structural Complexity	2.00%	90	90	91.4	90	90	90	Low: Stream structure is in pretty good shape	June 2016: Two projects treating 0.18 stream miles were prorated 100% to reflect full effectiveness by 2018. Relative to the 13.26 steelhead bearing stream miles in the assessment unit, there is a 1.4% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	80	80	81.4	85	80	85	High: No old values to consider ; Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels??? ; %: Site specific to willing landowners (Knutson & McCormick - to be accomplished 2012)	June 2016: Two projects treating 0.18 stream miles were prorated 100% to reflect full effectiveness by 2018. Relative to the 13.26 steelhead bearing stream miles in the assessment unit, there is a 1.4% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS5B	Upper Salmon Creek (OID to Conconully Dam)	9.2: Water Quantity: Decreased Water Quantity	35.00%	33	33	33	60	33	60	High: Assumes agreements can be secured to provide perenial flows in Lower Salmon Creek ; Low: Winter flows are 1/3rd of historic	2016: Benefits previously applied. No change from low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	2.1: Injury and Mortality: Predation	0.00%	30	30	30	50		50		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	2.2: Injury and Mortality: Pathogens	0.00%	90	90	90	90		95		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	4.1: Riparian Condition: Riparian Vegetation	25.00%	40	40	40	42	40	45		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	6.1: Channel Structure and Form: Bed and Channel Form	25.00%	70	70	70	75	70	75		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	70	70	70	75	70	75	Low: No log jams of any consequence exists within this reach although several LWD collection sites do exist.	2016: No actions, no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	70	70	70	75	70	75	High: Old values=LB-65%, 2018=75% & 2033=80% which represents a 10% to 15% change??? Less sure of 2033 values (will these actions persist?). ; Low: Based on OBMEP data and EDT values of 24% fines in spawning gravels. ; %: Similkameen River depositional zone.	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6A	Lower Similkameen (Confluence To Cross Channel)	8.1: Water Quality: Temperature	0.00%	47	47	47	65		75		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	2.1: Injury and Mortality: Predation	18.00%	85	85	85	85	85	85	Low: A lot of focused harvest on summer steelhead occurs in this reach ; %: poaching, and harrassment	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	2.2: Injury and Mortality: Pathogens	12.00%	45	45	45	45	45	45	Low: Hatchery activities have focused effort and spawner returns in this area. ; %: Location of Similkameen Acclimation site	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	3.2: Food: Food-Competition	12.00%	56	56	56	56	56	56	Low: Acclimatation pond here.	2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	4.1: Riparian Condition: Riparian Vegetation	4.00%	60	60	60	62	60	65		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	8.00%	40	40	40	50	40	50	%: Historic channels are plentiful	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	75	75	75	75		80		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	7.1: Sediment Conditions: Decreased Sediment Quantity	13.00%	70	70	70	75	70	75	%: Gravel recruitment and retention issues continue thorugh middle reaches.	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	7.2: Sediment Conditions: Increased Sediment Quantity	0.00%	65	65	65	75		80		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	8.1: Water Quality: Temperature	30.00%	45	45	45	50	45	50		2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS6B	Middle Similkameen (Cross Channel to Canyon)	8.3: Water Quality: Gas Saturation	3.00%	80	80	80	80	80	80	Low: Only an issue during high discharge	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	2.1: Injury and Mortality: Predation	15.00%	80	80	80	80	80	80	Low: Only an issue during high discharge ; %: poaching, and harassment	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	2.2: Injury and Mortality: Pathogens	9.00%	75	75	75	75	75	75		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	3.2: Food: Food-Competition	8.00%	77	77	77	77	77	77		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	4.1: Riparian Condition: Riparian Vegetation	0.00%	80	80	80	82		84		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	75	75	75	75		80		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	7.1: Sediment Conditions: Decreased Sediment Quantity	26.00%	40	40	40	40	40	40	%: Gravel recruitment is a problem in the upper portions (canyon section in particular).	2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	7.2: Sediment Conditions: Increased Sediment Quantity	0.00%	65	65	65	75		80		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	8.1: Water Quality: Temperature	30.00%	83	83	83	83	83	83		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS6C	Upper Similkameen (Canyon to Enloe Dam)	8.3: Water Quality: Gas Saturation	12.00%	75	75	75	75	75	75	Low: Only an issue during high discharge	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7A	Chiliwist Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	60	60	60	60	60	60	Low: Mostly due to naturally occuring conditions (including flow, gradient, culvert) ; %: Steep gradient prevents access	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7A	Chiliwist Creek	4.1: Riparian Condition: Riparian Vegetation	5.00%	25	25	25	30	25	35		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7A	Chiliwist Creek	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	55	55	55	60	55	90		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7A	Chiliwist Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	40	40	40	45	40	45	Low: Based on OBMEP data and EDT values of 18% fines in spawning gravels??? ; %: Consider reducing sediment sources from roads	2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7A	Chiliwist Creek	8.1: Water Quality: Temperature	0.00%	90	90	90	92	90	95		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7A	Chiliwist Creek	9.2: Water Quantity: Decreased Water Quantity	75.00%	70	70	70	80	70	80	Low: Unknown how many or magnetude of water withdrawls??? ; %: Consider options to minimze withdrawals and adjacent shallow wells	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	40	40	40	90	40	90		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	4.1: Riparian Condition: Riparian Vegetation	5.00%	50	50	50	52	50	55	High: Should this be 1.1 and related to flow??? ; Low: Little or no riparian vegetation exists along this stream	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	6.1: Channel Structure and Form: Bed and Channel Form	3.00%	60	60	60	60	60	60	High: How much of the lower 1/2 mile will be treated? ; Low: Lower half mile is wide and shallow with little complexity upper half mile is narrow deep and complex : ; %: In the lower reach (1.0 mile) consider instream structure to create pool habitat to increase rearing habitat	2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	6.2: Channel Structure and Form: Instream Structural Complexity	2.00%	50	50	50	60	50	60	High: How much of the lower 1/2 mile will be treated? ; Low: Lower half mile is wide and shallow with little complexity upper half mile is narrow deep and complex : ; %: In the lower reach (1.0 mile) consider instream structure to create pool habitat to increase rearing habitat	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	80	80	80	85	80	85	Low: Based on OBMEP data and EDT values of 14% fines in spawning gravels??? ; %: Prevent access by livestockâ€¦browsing of riparian vegetation, decreased bank stability	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	8.1: Water Quality: Temperature	15.00%	80	80	80	85	80	85	%: Input of groundwater will reduce water temperature	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7B	Wanacut Creek	9.2: Water Quantity: Decreased Water Quantity	50.00%	25	25	25	50	25	50	High: Old values=LB-50%, 2018& 2033=80% which represents a 30% change??? Will this restore perenial flows to the entire lower portion of the stream (100%)??? Are there other oppertunities for more water???? ; Low: Currently about 1/2 of the reach has intermittant flows. : ; %: Augment stream flow with groundwater from a well, max. flow 1 cfs	2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	40	40	40	90	40	90		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	85	85	85	85	85	85		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	6.1: Channel Structure and Form: Bed and Channel Form	2.00%	85	85	85	85	85	85		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	6.2: Channel Structure and Form: Instream Structural Complexity	3.00%	90	90	90	90	90	90		2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	75	75	75	80	77	80	High: Small initial impact but might have considerable longer term impact if project covers a large enough area??? ; Low: Based on OBMEP data and EDT values of 18% fines in spawning gravels??? ; %: reduce sediment sources associated with logging activities in the upper watershed (Browns Pass)	LT est of 2%; ST estimate tbd 2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	8.1: Water Quality: Temperature	5.00%	95	95	95	95	95	95	High: Not likely to impact temperature. ; %: relocate turbine well away from stream channel, predicted to result in increased flow and reduced stream temperature	2016: No actions, no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7C	Tunk Creek	9.2: Water Quantity: Decreased Water Quantity	50.00%	60	60	60	95	85	95	High: how much will this incease flows? ; Low: Many threats to flows in upper watershed, occassionally lower 1-mile becomes intermittent ; %: relocate turbine well away from stream channel	2016: No actions, no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	1.1: Habitat Quantity: Anthropogenic Barriers	71.00%	20	90	100	100	90	100	High: Will this address all barriers???? Will it persist??? ; Low: Only accessible habitat is currently contained withion the Okanogan River floodplain. ; %: Provide access to Aeneas Creek for juvenile and adults	June 2016: During full expert panel meeting, it was discussed that the breach of fish passage obstruction opened 0.74 mile to the culvert at top of assessment unit (project is at mouth), but other barriers exist, resulting in 80% uplift up to the high bookend. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	40	40	40	42	40	45	High: How much of the lower section will be treated???? Small initial impact with larger benefit over time. ; Low: Minimal riparian vegetation between mouth and falls ; %: plant vegetation along stream channel to deter avian predation	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	6.1: Channel Structure and Form: Bed and Channel Form	2.00%	70	70	70	80	75	80	High: Secondary benefit of improving access ; %: Secondary benefit of improving access	2016: No actions, therefore no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	6.2: Channel Structure and Form: Instream Structural Complexity	3.00%	50	50	50	70	50	70	High: How much of the lower section will be treated???? Will it persist??? ; Low: Current condition is a series of ponds rather than stream habitat ; %: Consider removing beaver dams, reducing W/D ratio, bank stability	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	8.1: Water Quality: Temperature	0.00%	90	90	90	92	90	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	8.5: Water Quality: pH	9.00%	90	90	90	90	90	90	High: Don't know the magnitude of the problem. Need to assess. ; Low: Water chemistry reduces disturbance and fills intersitial spaces but is a natural condition	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7D	Aeneas Creek	9.2: Water Quantity: Decreased Water Quantity	0.00%	50	50	50	80	50	80		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	40	40	40	90	40	90		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	65	65	65	70	65	75	Low: Under story missing in lower 1-mile however, most areas of major disturbance associated with ranching in upper watershed ; %: May collaborate with OCD on site specific location	2016: No actions, therefore no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	6.1: Channel Structure and Form: Bed and Channel Form	2.00%	70	70	70	70	70	70	High: how much area would or could you treat???? ; Low: Most areas of major disturbance associated with ranching in upper watershed. : %: site specific to will ing landowners, will collaborate with OCD on site specific locations	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	6.2: Channel Structure and Form: Instream Structural Complexity	3.00%	80	80	80	80	80	80		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	7.2: Sediment Conditions: Increased Sediment Quantity	35.00%	40	40	40	50	40	50	High: how much area would or could you treat???? ; Low: Based on OBMEP data and EDT values of 14% fines in spawning gravels??? ; %: site specific to willing landowners; will collaborate with OCD on site specific locations	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	8.1: Water Quality: Temperature	5.00%	95	95	95	95	95	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7E	Bonaparte Creek	9.2: Water Quantity: Decreased Water Quantity	40.00%	60	60	60	75	60	75	High: How much water can you get??? ; Low: Many threats to flows in upper watershed, occassionally lower 1-mile becomes intermittent ; %: would include alternative water sources, purchase, lease	2016: No actions, therefore no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7F	Siwash Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	20	20	20	70	20	70	High: What infrastructure will be removed??? The water is already covered under flow. ; Low: Additional stream length opened ; %: If water right is secured water, associated diversions will be removed	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7F	Siwash Creek	4.1: Riparian Condition: Riparian Vegetation	0.00%	60	60	60	90	60	94		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7F	Siwash Creek	6.2: Channel Structure and Form: Instream Structural Complexity	2.00%	60	60	60	70	60	70	Low: Minimal structural complexity currently exists. ; %: Channel complexity would be nice after water and barriers are addressed	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7F	Siwash Creek	7.2: Sediment Conditions: Increased Sediment Quantity	3.00%	50	50	50	60	50	60	Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels??? ; %: Mostly a result of dewatering and lack for riparian veg.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7F	Siwash Creek	8.1: Water Quality: Temperature	0.00%	90	90	90	92	90	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7F	Siwash Creek	9.2: Water Quantity: Decreased Water Quantity	75.00%	20	20	20	70	20	70	High: How much og the historic flows can you possibly restore? Are Perenial flows possible???? ; Low: At most this stream has discharge 2 month out of the year. : %: Study to be completed to determine water rights/use	10/5/12: some possiblity by 2018 but nothing concrete enough to speculate about benefits yet 2016: No actions, therefore no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	40	40	90	90	40	90		June 2016: Discussion by full expert panel: two projects that treated 1.25 stream miles but prorated 50% due to life stage uses and degree of former blockages. Relative to the 1.25 steelhead bearing stream miles in the assessment unit (EDT report), a 50% improvement is estimated. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	4.1: Riparian Condition: Riparian Vegetation	15.00%	60	60	60	63	60	65	High: Riparian area reduced due to agricultural land use.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	6.1: Channel Structure and Form: Bed and Channel Form	2.00%	80	80	80	80	80	80	High: Channel can not migrate. ; %: Dyked, relocated, straightened, and reinforced	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	6.2: Channel Structure and Form: Instream Structural Complexity	3.00%	70	70	70	75	70	75		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	85	85	85	85	85	85	Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	8.1: Water Quality: Temperature	5.00%	95	95	95	95	95	95		2016: No actions, therefore no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7G	Lower Antoine Creek (Mouth to Rock chute)	9.2: Water Quantity: Decreased Water Quantity	50.00%	33	33	33	95	33	95	High: How much of an increase can you get??? ; Low: Currently flows make this habitat inaccessible to summer steelhead in most years. ; %: Increase irrigation efficiency in 2011	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	1.1: Habitat Quantity: Anthropogenic Barriers	71.00%	20	20	61.5	80	80	80	High: How to measure increased passage if no fish make it to the barrier? What about other barriers further upstream??? ; Low: unknown how this project will improve passage as during most years summer steelhead do not reach to site anyway??? ; %: Chute has been modified during 2011/12 to facilitate fish passage	June 2016: Full Expert Panel discussed one project that opened 4.35 stream miles to next remaining barrier. Relative to the 10.48 steelhead bearing stream miles in the assessment unit (EDT report) , there is a 41.5% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	4.1: Riparian Condition: Riparian Vegetation	1.00%	70	70	70	72	70	75	Low: Most areas of major disturbance associated with farming and ranching in upper watershed.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	6.1: Channel Structure and Form: Bed and Channel Form	2.00%	80	80	80	85	80	85	Low: Some sections of stream have been all but abliterated by past land use activities. Remaining habitat is in excellent condition.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	6.2: Channel Structure and Form: Instream Structural Complexity	1.00%	70	70	70	75	70	75		2016: No actions, therefore no change to low bookend.

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Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	75	75	85.1	85	75	85	Low: Based on OBMEP data and EDT values of 11% fines in spawning gravels???	June 2016: Full expert panel discussion on two projects treating 1.75 stream miles and prorated to reflect progress toward properly functioning condition = 1.0625. Relative to the 10.48 steelhead bearing stream miles in the assessment unit, there will be a 10.1% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	8.1: Water Quality: Temperature	0.00%	90	90	90	92	90	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7H	Upper Antoine Creek (Rocks to Fancher Dam)	9.2: Water Quantity: Decreased Water Quantity	20.00%	40	40	40	95	50	95	High: How much of an increase can you get??? ; Low: Currently flows make this habitat inaccessible to summer steelhead in most years. ; %: possibility of portion of stored water to be dedicated to instream flow	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS7I	Wild Horse Spring Creek	1.1: Habitat Quantity: Anthropogenic Barriers	3.00%	60	62	78.5	80	62	80	High: Added roughly 20%?? to the existing habitat in 2011/2 leaving the potential for another 20% benefit by replacing the Highway 97 culvert???? (timeline???) ; Low: HWY 97 culvert is marginally passable by adults during high water and 100% barrier to upstream passage of juveniles. ; %: perched round cuvlert, replaced with a bridge in 2011/ replace a culvert in 2012	June 2016: Full expert panel discussion of two barrier removal projects that opened 0.5 miles of stream previously blocked.Both projects were prorated at 40%, as they were impediments rather than total blockages yielding a total of 0.2 stream miles effectively treated. Relative to the 1.08 steelhead bearing stream miles (EDT report) in the assessment unit, there was a 18.5% improvement. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS7I	Wild Horse Spring Creek	4.1: Riparian Condition: Riparian Vegetation	2.00%	65	65	65	66	65	70	High: How much of Accord's property can you change, small initial change could increase over time if change persists and trees grow??? ; Low: lower third of creek has little to no riparian buffer	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7I	Wild Horse Spring Creek	6.2: Channel Structure and Form: Instream Structural Complexity	5.00%	80	80	80	85	80	85	High: How much of stream will be impacted by this action? ; Low: Deep pools are lacking. ; %: possible installation of instream structures to create pool habitat for increased juvenile survival	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS7I	Wild Horse Spring Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	70	70	70	75	70	75	High: How much of accords property can you change, small initial change could increase over time if change persists??? ; Low: Based on OBMEP data and EDT values of 24% fines in spawning gravels. :	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7I	Wild Horse Spring Creek	8.1: Water Quality: Temperature	0.00%	90	90	90	92	90	95		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7I	Wild Horse Spring Creek	9.2: Water Quantity: Decreased Water Quantity	80.00%	50	50	50	60	50	60	High: Can you make this stream perenial???? ; Low: In most years this stream becomes intermittant by late summer. ; %: Reviewing water augmentation analysis, with potential well development	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	4.1: Riparian Condition: Riparian Vegetation	25.00%	40	40	40	40	40	40	Low: Intermittant sections have very limited riparian habitat.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5.00%	20	20	20	50	20	50	Low: Channel can not migrate along lower 1 mile. ; %: Dyked, relocated, straightened, and reinforced	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	6.1: Channel Structure and Form: Bed and Channel Form	3.00%	80	80	80	80	80	80	Low: Lower 1mile and isolated areas above falls where riparian habitat has been lost.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	6.2: Channel Structure and Form: Instream Structural Complexity	2.00%	75	75	75	80	75	80	Low: limited channel complexity in lower 1 mile.	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	75	75	75	80	75	80	Low: Based on OBMEP data and EDT values of 18% fines in spawning gravels???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	8.1: Water Quality: Temperature	5.00%	90	90	90	90	90	90		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7J	Tonasket Creek	9.2: Water Quantity: Decreased Water Quantity	45.00%	25	25	25	35	25	35	High: Will this make stream perenial from mouth to falls? ; Low: 1/2 of stream is intermittant for most of the year and the remaining habitat is limited during low flow periods. ; %: may secure property with water (artesian well); study to determine amount of water needed to provide continuous flow	PROJECT BEING WORKED ON NOW BUT MAY BE READY FOR 2015 CONSIDERATION 2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	1.1: Habitat Quantity: Anthropogenic Barriers	20.00%	67	67	92	100	67	100	High: Removal of the diversion would make all habitat accessible from the mouth to the falls???? Barrier completely removed during 13-15 period? ; Low: Diversion potential blocks access to 1/3 of available habitat.	10/5/12: should move to 85-90% once the TU project is implemented, might be all SRFB/TRIB June 2016: The full expert panel discussed a culvert removal project that opened 2 stream miles. There are no other barrier structures, but there is a dewatered reach that is a seasonal barrier. 25% uplift brings status up to 92%, which reflects the dewatered area as a barrier. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	4.1: Riparian Condition: Riparian Vegetation	8.00%	60	60	60	62	65	65	Low: Large section of riparian habitat missing on Eder property.	10/5/12: TU project will improve this as well, maybe another 1-2% by 2018 and 10% by 2033 2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	5.2: Peripheral and Transitional Habitats: Floodplain Condition	8.00%	70	70	70	80	75	80	Low: Channel can not migrate along lower 1 mile. ; %: Dyked, relocated, straightened, and reinforced	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	6.1: Channel Structure and Form: Bed and Channel Form	8.00%	60	60	60	65	60	65	High: How much area will this cover??? Small initial gain with increased benefits provided the action persists. : Low: Large section of riparian habitat missing on Eder property.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	6.2: Channel Structure and Form: Instream Structural Complexity	6.00%	60	60	60	65	60	65	Low: Large section of riparian habitat missing on Eder property.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	70	70	70	75	70	75	High: How much area will this cover??? Small initial gain with increased benefits provided the action persists. : Low: Based on OBMEP data and EDT values of 24% fines in spawning gravels. ; %: Installation of fencing during 2013 to limit livestock to hardened points for access	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	8.1: Water Quality: Temperature	0.00%	90	90	90	92	90	95		2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS7K	Nine Mile Creek	9.2: Water Quantity: Decreased Water Quantity	40.00%	50	80	92	100	80	100	High: How much of an increase can you get??? All the water by 2015????? ; Low: Existing water diversion reduce instream flows by as much as 50%. ; %: Alternative water source (well) delivers water to agriculutral fields in lieu of surface diversion 2013 2016: High book-end should be limited by this amount of the area* time (8%). Plus addition water withdrawals that are still occurring on Eater property (20%).	10/5/12: 2018 AND 2033 ESTIMATES CHANGED FROM 50. This was an error and should have been captured at the EP workshop. Some of the potential benefit is likely to come from the diversions in Canada that might be fixed via non AA projects There is also a 140 acre/ft increase from the TU project. The 2018 &2033 estimate could go to 80% with the CN project being the remaining 20%. June 2016: Discussion during full expert panel described the intermittent section of stream that covers 9.4% of the habitat between the mouth and the falls and only has water in it during runoff (2 months, 17% of the year). Improvement estimate to 2018 should be 92%, which allows for improvement to dewatered reach. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	2.1: Injury and Mortality: Predation	5.00%	60	60	60	65	65	65		2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	2.3: Injury and Mortality: Mechanical Injury	4.00%	80	85	98	100	85	100	High: If all pump screens meet NOAA criteria. Number based on original EP table.	June 2016: Full panel discussion of 7 screen projects bringing the status of the assessment unit to 98% of complete restoration for mechanical injury. EWW 8.5.16
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	3.2: Food: Food-Competition	2.00%	70	70	70	70	70	70	Low: Tonasket Acclimation pond	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	4.1: Riparian Condition: Riparian Vegetation	13.00%	25	25	25	30	25	40		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	6.00%	40	40	40	65	40	65	High: Old values=LB-90%, 2018&2033=95% which represents a 5% change???	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	40	40	40	50	40	50	High: Old values=LB-90%, 2018&2033=95% which represents a 5% change???	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	6.1: Channel Structure and Form: Bed and Channel Form	12.00%	40	40	40	50	40	50	High: Old values=LB-65%, 2018=75% & 2033=80% which represents a 10% to 15% change??? ; %: Function of lost riparian function	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	6.2: Channel Structure and Form: Instream Structural Complexity	3.00%	70	70	70	75	70	75	High: Old values=LB-70%, 2018=75% & 2033=80% which represents a 5% to 10% change??? Less sure of the 2033 value. (will this persist???) ; %: Pilot project evaluation to increase sediment transport at localized site	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	7.2: Sediment Conditions: Increased Sediment Quantity	30.00%	55	55	55	60	55	60	High: Values from old EP tables-these seem high to me especially the 2033 values. ; Low: (80% based on OBMEP data and EDT values of 14% fines in spawning gravels???)	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	8.1: Water Quality: Temperature	15.00%	35	35	35	35	35	35		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8A	Okanogan River 06 (Siwash to Confluence with Similkameen)	9.2: Water Quantity: Decreased Water Quantity	0.00%	95	95	95	96	95	96		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	2.1: Injury and Mortality: Predation	6.00%	60	60	60	70	60	70		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	3.2: Food: Food-Competition	5.00%	75	75	75	75	75	75	Low: Summer steelhead scatter plants into this area.	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	4.1: Riparian Condition: Riparian Vegetation	8.00%	50	50	50	52	50	55		2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15.00%	60	60	60	70	60	70	High: Old values=LB-70%, 2018 & 2033=80% which represents a 10% change??? ; % Confinement from roads and railroads	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	6.1: Channel Structure and Form: Bed and Channel Form	12.00%	85	85	85	85	85	85		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	6.2: Channel Structure and Form: Instream Structural Complexity	6.00%	70	70	70	75	70	75	High: Old values=LB-70%, 2018 & 2033=75% which represents a 10% change??? 70 to 80 for cross channel during the 10-12 period and another 5% for the Eyhot channel in the 13-15 period. ; Low: only 1 log jam of any consequence exists within this reach although several LWD collection sites do exist. ; %: Install instream structure in side channel at EYHOTT Island to prevent dewatering of maintstem channel	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	7.2: Sediment Conditions: Increased Sediment Quantity	8.00%	80	80	80	80	80	80	Low: Based on OBMEP data and EDT values of 14% fines in spawning gravels???	2016: No actions, therefore no change to low bookend.

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	8.1: Water Quality: Temperature	40.00%	35	35	35	40	35	40	High: Old values=LB-21%, 2018=67% & 2033=70% which represents a 46% to 49% change??? ; %: evaluation of ground water input at Driscoll Island	2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Okanogan River	ORS8B	Okanogan River 07 (Confluence with Similkameen to Z. Dam)	9.2: Water Quantity: Decreased Water Quantity	0.00%	95	95	95	96	95	96		2016: No actions, therefore no change to low bookend.
Upper Columbia Steelhead	Wenatchee River	WES1	Chiwawa	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	98	98	98	99	98	99		2015 LB EP: Panel determined Chiwawa diversion project was not a barrier and deleted. No action, no change. -MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES1	Chiwawa	3.1: Food: Altered Primary Productivity	60.00%	50	50	50	75	50	80	Not a lot of data. The gap between the low and high bookends reflects an assumed improvement(?)	2015 LB EP: No action, no change. -MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES1	Chiwawa	4.1: Riparian Condition: Riparian Vegetation	15.00%	90	90	90	92	90	95		2015 LB EP: No action, no change. -MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES1	Chiwawa	5.2: Peripheral and Transitional Habitats: Floodplain Condition	15.00%	95	95	95	97	95	97		2015 LB EP: No action, no change. -MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES1	Chiwawa	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	93	93	93	94	93	95		2015 LB EP: No action, no change. -MAH.2.24.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES1	Chiwawa	7.2: Sediment Conditions: Increased Sediment Quantity	0.00%	29	29	29	29	29	29	REMOVE THIS LF	2015 LB EP: No action, no change. - MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	1.1: Habitat Quantity: Anthropogenic Barriers	8.00%	80	85	99.4	95	85	95	2012: Mainstem Chumstick is close, but barriers on tributaries and Merry Canyon. 95% high bookend considers smaller tribs (eagle cr, etc.) steelhead spawning > chinook, but distribution similar for juvenile rearing	2012 EP: 3 barriers provide 1.5 mi access, 4th barrier improves partial barrier. 2015 LB EP: 4 partial barrier removals improved access to 3.0 miles of stream, but because they were partial barriers, the improvement was adjusted by 75%. Therefore, the realized improvement by 2018 = 2.25 stream miles. Relative to the 11.6 steelhead bearing stream miles in the Assessment Unit (from adjusted StreamNet data, based on local knowledge of steelhead distribution), the barrier removal resulted in a 19.4% improvement (2.25/11.6*100). MAH.2.24.16 and EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	4.1: Riparian Condition: Riparian Vegetation	14.00%	60	60	60.1	65	60	80		2015: One riparian planting project treated 0.1 stream miles, but was adjusted to reflect realized improvement by 2018 (recognizing that plants take time to grow). Therefore the stream miles improved by the project = 0.01. Relative to the 11.6 steelhead bearing stream miles in the Assessment Unit (from StreamNet, but adjusted based on local knowledge of steelhead distribution), there was a 0.1% improvement (0.01/11.6*100 - rounded up). EWL 3.16.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	5.00%	55	55	55	60	55	60		2015 EP LB: No actions, no uplift. -MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	6.2: Channel Structure and Form: Instream Structural Complexity	5.00%	55	55	55	60	55	60	bookend values are a remnant from the 2009 Workshop values and really don't apply; LF weight = 0%	2015 EP LB: No actions, no uplift. -MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	75	60	75		2015 EP LB: No actions, no uplift. -MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	8.1: Water Quality: Temperature	20.00%	75	75	75.1	77	75	85	Reflects growth of Populus species, but not reconnection of floodplain, etc.	2015 LB EP: No data for the temperature of the water input from the acquisition, so unclear if there is any significant effect on water temperature. Therefore, not clear whether there is a temperature benefit from the only action. Lease is 5-years only at this time, from 2014-2019. Panel determined some uplift was probable from leaving water in-stream, and decided to give the minimum uplift possible of 0.1% uplift . -MAH 2.24.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES2	Chumstick	9.2: Water Quantity: Decreased Water Quantity	28.00%	50	50	52	90	50	90		2015 LB EP: Point of diversion was near the mouth of Eagle Creek so definitely benefits steelhead. Panel considered 18 ac-ft is equivalent to .05-CFS for 180 days, or 0.1-CFS for 90 days. Chumstick flow is approximately 3CFS during lowest flows. This action was only during irrigation season, it is a 5-year agreement with a landowner to not use that water. There is at least 1 gauge in Chumstick, maybe 2. Benefit would be seasonal. Panel determined the benefit is 0.06 CFS average over 5-months (the length of the agreement), and main benefit is over 90 days (low flow summer). The baseflow is 3 CFS. Uplift is 0.06 CFS/3 CFS = 2.0%. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES3	Icicle	1.1: Habitat Quantity: Anthropogenic Barriers	35.00%	70	70	70	90	90	90	Look at relative AU weight for Icicle - evidence no historic passage of adult chinook above boulder field	2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES3	Icicle	2.3: Injury and Mortality: Mechanical Injury	5.00%	50	50	50	90	50	90	Reflects screening of 2 out of four diversions. Would still be some mechanical injury associated with irrigation.	2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES3	Icicle	4.1: Riparian Condition: Riparian Vegetation	10.00%	75	75	75	77	75	80	Averages conditions across Icicle (Lower is much worse than Upper)	2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES3	Icicle	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	21	21	21	21	21	21		2015 LB EP: No actions, no uplift. - MAH 2.24.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES3	Icicle	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	70	70	70	75	70	76	Conditions here improving naturally over time.	2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES3	Icicle	9.2: Water Quantity: Decreased Water Quantity	25.00%	55	55	55	65	55	65		2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES4	Little Wenatchee	3.1: Food: Altered Primary Productivity	25.00%	55	55	55	85	55	90		2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES4	Little Wenatchee	4.1: Riparian Condition: Riparian Vegetation	20.00%	85	85	85	85	85	90	Action is to allow natural improvements	2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES4	Little Wenatchee	5.2: Peripheral and Transitional Habitats: Floodplain Condition	30.00%	90	90	90	95	90	95	Berm at the gravel pits	2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES4	Little Wenatchee	6.2: Channel Structure and Form: Instream Structural Complexity	0.00%	97	97	97	98	97	99		2015 LB EP: LF is not weighted. No actions, no uplift. -MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES4	Little Wenatchee	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	75	75	75	85	75	90		2015 LB EP: No actions, no uplift. - MAH 2.24.16
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	98	98	98	99	98	99		2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	45	45	50		2015 LB EP: No action, no change. - MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	25.00%	65	65	65.5	80	66	80		2012: benefits estimates considers Lower Wenatchee instream flow project dam removal 2015: One project treated 0.65 stream miles. Effective improvement of those stream miles was adjusted based on anticipated results by 2018 = 0.065 (10% change). Therefore relative to all steelhead side channels in the Assessment Unit (12 miles; connected and disconnected from CMZ Report), the action resulted in a 0.5% improvement (0.065/12*100). EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	6.1: Channel Structure and Form: Bed and Channel Form	20.00%	60	60	60	65	60	65		2015:One project buried logs in bank, but they are not currently wetted, therefore, there is no instream benefit now, but potentially in the future. There was no change to the Low Bookend at this time. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	60	60	60	65	60.1	70		2015:One project buried logs in bank, but they are not currently wetted, therefore, there is no instream benefit now, but potentially in the future. There was no change to the Low Bookend at this time. EWL 3.16.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	8.1: Water Quality: Temperature	15.00%	65	65	65.1	70	65	70		2015: Temperature in lower river is often lethal in summer. Temperature in the lower river is controlled by the lake, so even if lower section was fully shaded, there would be no effect on overall function. Flow projects provide more volume (so possibly affecting daily range of temps), but return water is warm, so very limited measurable change. The Expert Panel used the improvement percentage from limiting factor 9.2 (water quantity) and adjusted it to reflect very limited change (1%). Therefore 1% of 5.2% is less than 0.1% and the Expert Panel rounded up to 0.1%. EWL 3.15.16
Upper Columbia Steelhead	Wenatchee River	WES5	Lower Wenatchee	9.2: Water Quantity: Decreased Water Quantity	20.00%	50	52	55.2	65	52	65		2012: summer flow benefits greater for steelhead 2015: Conservative estimate of 38.27 cfs savings from this permanent acquisition of water. Relative to 733 cfs (lowest mean daily baseflow during a 55-year period of record), flow improvement is 5.2% (38.27/733*100). EWL 3.15.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	82	82	82	85	82	85		2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	65	60	70	Most projects should be delayed until flow and water quality are addressed; Japanese knotweek removal; Restoration opportunistically between Cashmere and the USFS boundary.	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	25	25	25	25	25	25	Assess and reduce road impactsâ€¦.	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40	40	40	45	40	45	Lower 6 miles + FS Road	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	50	50	50	55	50	55	Worth adding complexity at the price of riparian?.	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	40	40	40	45	40	50	Assess and reduce road impactsâ€¦.	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	8.1: Water Quality: Temperature	10.00%	35	35	35	45	35	45	Mostly a product of flow Esp. the lower 4 miles	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES6	Mission	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30	60	30	60		2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	93	93	93	98	93	98		2015: The Expert Panel gave much deliberation to the two projects accomplished during 2012-2015 as follows: The projects should be credited for full 3.1 miles opened to fish passage. StreamNet miles don't accurately reflect steelhead distribution because it has fish above the dam, so the Expert Panel decided to Use Intrinsic Potential (NOAA): = 20.8 miles. This would have yielded a 14.9% improvement, but because the limiting factor is weighted at zero, the conversation was irrelevant. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	3.1: Food: Altered Primary Productivity	10.00%	60	60	60	80	60	85		2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50.03	55	52	60	Includes recruitment of LWM	2015: One action treated 0.13 river miles. Recognizing that vegetation takes time to grow, the Expert Panel assigned 1% improvement per year for this project (started in 2013) and assessed that by 2018, there would be a 5% improvement. Therefore, the realized change was over 0.0065 river miles. Relative to the 20.8 steelhead bearing river miles in the Assessment Unit, the improvement was 0.03% (.0065/20.8*100). EWL 3.20.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	25.00%	60	60	73	80	80	80	Increase LWD complexes; reconnect side channel habitat; 1.1, 1.2, and 1.3 scored together	2012: Coulter Ck, Lower White Pine, NI, & Upper White Pine assumed to achieve the 80% high bookend 2015: Four projects that among other things redid high and low flow channels through old parking lot, flew in logs and enhanced 207 oxbow, side channels created in marshy areas, removed old bridge abutment, treated 1.57 miles. The project lengths were adjusted to account for realized improvement by 2018 (0-85%) resulting in 1.07 miles treated. Relative to the 10.7 potential side channel miles in the Assessment Unit (connected and disconnected from CMZ study report), the projects yielded a 10% improvement (1.07/10.7*100). EWL 3.16.16 During the separate meeting with Yakama Nation (YN) on 27 April, 2016 and again the Lookforward meeting (June, 2016) the full panel discussed Lookback calculations and modified the calculation for this limiting factor. Based on input from YN, the White Pine project was prorated 100%

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	6.1: Channel Structure and Form: Bed and Channel Form	20.00%	60	60	61.3	65	63	65		2015: Two projects treated 0.19 river miles, and those river miles were adjusted to account for anticipated improvement success by 2018 (=0.107). Relative to the 20.8 steelhead bearing river miles in the Assessment Unit (NOAA Intrinsic Potential), the improvement for this limiting factor = 0.5% (0.107/20.8*100). EWL 3.16.16 Based on input from Yakama Nation during April 2016 meeting and June 2016 Lookforward meeting discussions, one project was added for a realized change of 0.278 stream miles treated. Relative to 20.8 steelhead bearing stream miles = 1.3% improvement. EWW 7.27.16
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	50	50	52.5	55	58	60		2015:. YN 2014 Lower Nason Instream project was not included in consideration because the Expert Panel had no information about it. Two projects that treated 0.86 miles were considered The project lengths were adjusted to account for anticipated improvement by 2018 (=0.51).Improvements were evaluated based on indicators such as # of wood pieces and pools per mile or 100 meter. Relative to the 20.8 steelhead bearing stream miles in the Assessment Unit (NOAA Intrinsic Potential), the conditions for this limiting factor improved 2.5% (0.51/20.8*100). EWL 3.16.16

ESU	Population	Code	Assessment Unit	2012 Standardized Limiting Factor	LF Weight	Low Bookend	Original 2018 Estimate	Updated 2018 Estimate	High 2018 Bookend	Original 2033 Estimate	High 2033 Bookend	LF Weight and Bookends Comments	Estimates Comments
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	65	65	65	70	65	75	May be short-term increases in sediment from opening up side channels. Increased sediment in Lower Nason	2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES7	Nason	8.1: Water Quality: Temperature	0.00%	80	80	80	80	80	80		2015: No actions undertaken to address this limiting factor in 2012-2015 time period, therefore no change to Low Bookend. EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	70	70	70.1	85	70	85		2015 LB EP: Panel confirmed the fishway repairs were applicable for LF1.1. Removal of barrier improved passage at low flow to access 0.06 miles of stream. Because it was only a low flow barrier, the Expert Panel adjusted the benefit 50%, so that the realized improvement was 0.03 stream miles. Over the 20.6 steelhead bearing stream miles in the Assessment Unit (from StreamNet but adjusted by Expert Panel local knowledge with some streams being removed and others being added), improvement was 0.1% (0.03/20.6*100). EWL 3.20.16
Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	65	60	70		2015 LB EP: Action not significant enough to have an impact, no uplift. -MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	20.00%	25	26	26.2	30	26	30		2012 EP: Estimate includes Peshastin RM 0.8 Project benefits. 2015 LB EP: Panel considered there was 0.2 miles of side channel treated x 50% seasonal prorate and divided by 8.4 miles of side channel/wetland potential in the reach = 1.2% uplift.

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Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	35	35	35	50	35	50	Bank hardening and incision all along the orchards	2015 LB EP: No actions, no uplift. - MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	55	55	55.4	75	56	75		2015 One project treated 0.15 stream miles, but the Expert Panel adjusted those miles by 50% based on anticipated realized improvement by 2018 = 0.075. Relative to the 20.6 steelhead bearing stream miles in the Assessment Unit (from NOAA Intrinsic Potential), there was a 0.4% improvement (0.075/20.6*100). EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	8.1: Water Quality: Temperature	0.00%	98	98	98	99	98	99		2015 LB EP: No action, no change. - MAH.2.24.2016
Upper Columbia Steelhead	Wenatchee River	WES8	Peshastin	9.2: Water Quantity: Decreased Water Quantity	35.00%	20	20	20	80	20	80		2015 LB EP: No action, no change. - MAH.2.24.2016
Upper Columbia Steelhead	Wenatchee River	WES9A	Middle Wenatchee	1.1: Habitat Quantity: Anthropogenic Barriers	50.00%	95	95	95	95	95	95		2015 LB EP: No action, no change. - MAH.2.24.2016
Upper Columbia Steelhead	Wenatchee River	WES9A	Middle Wenatchee	6.1: Channel Structure and Form: Bed and Channel Form	50.00%	85	85	85	85	85	85		2015 LB EP: No action, no change. - MAH.2.24.2016
Upper Columbia Steelhead	Wenatchee River	WES9B	Upper Wenatchee	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	95	95	95	98	95	98		2015 LB EP: LF is not-weighted, and EP determined no uplift. Uplift=0%

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Upper Columbia Steelhead	Wenatchee River	WES9B	Upper Wenatchee	4.1: Riparian Condition: Riparian Vegetation	33.00%	80	80	80.01	82	81	85		2015: One project from 2014 improved 0.1 river miles. Assuming 1% growth/year, the Expert Panel adjusted the improvement estimate more accurately reflect the improvement in 2018 (=0.004 river miles). Relative to total steelhead bearing river miles in the Assessment Unit (28.8; from StreamNet=Chinook miles plus steelhead bearing tributaries as assessed by the Expert Panel), this project resulted in a 0.01% improvement (.004/28.8*100). EWL 3.20.16
Upper Columbia Steelhead	Wenatchee River	WES9B	Upper Wenatchee	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	34.00%	70	70	70.3	90	85	90		2012 EP: Based on Reach Assessment projects would address everything in this reach except private lands. 2015: One project treated 0.1 stream miles. Relative to the 28.8 steelhead bearing stream miles in the Assessment Unit (StreamNet Chinook miles plus 2 miles of Beaver Creek and Chiwakum Creek), there is a 0.3% improvement (0.1/28.8*100). EWL 3.16.16
Upper Columbia Steelhead	Wenatchee River	WES9B	Upper Wenatchee	6.2: Channel Structure and Form: Instream Structural Complexity	33.00%	60	60	60.6	80	70	85		2012 EP: Estimate based on projects identified under LF 5.1 Side Channels that should have some effect on instream complexity; social constraints for long term. / 2015 LB EP: Determined that 0.17 mile action x 100% prorate divided by 28.8 total stream miles = 0.6% uplift. - MAH2.24.2016

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Upper Columbia Steelhead	Wenatchee River	WES10	White	3.1: Food: Altered Primary Productivity	20.00%	70	70	70	75	70	75		2015 LB EP: No action, no change. - MAH2.24.16
Upper Columbia Steelhead	Wenatchee River	WES10	White	4.1: Riparian Condition: Riparian Vegetation	25.00%	85	85	85	90	85	95		2015 LB EP: No action, no change. - MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES10	White	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	25.00%	90	90	90	95	90	95		2015 LB EP: No action, no change. - MAH.2.24.16
Upper Columbia Steelhead	Wenatchee River	WES10	White	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	85	87	93.7	90	87	95		2015 LB EP: Determined treated 1.7 miles, 19.5 mile denominator and 100% prorate = 8.7% uplift.