NOTES:
This workbook contains **habitat functions** data downloaded directly from the Taurus database. Functions include those documented during the **Look Forward** process covering the **2016-2018** work window for Chinook.

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	75	75	75	100	75	100	number of existing structures	Camp Cr Culvert & EF Indian Ck Culvert projects located in steelhead habitat so no benefits estimated for Chinook. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	65	65	65	75	65	85		Little Indian Ck. projects not located in CCC1 - no benefits estimated. NF Clark Ck not part of Chinook population. Not enough project information about USFS Riparian Mtnce & Thinning to estimate benefits at this time. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	4.2: Riparian Condition: LWD Recruitment	10.00%	65	65	65	65	65	70		2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	6.1: Channel Structure and Form: Bed and Channel Form	15.00%	65	65	65	70	65	75	change based on improving river processes	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	65	75	65	85		Little Indian Ck. project not located in CCC1 - no benefits estimated. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	55	55	55	65	55	75		NF Clark Ck. not included in Chinook population - no benefits estimated. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	8.1: Water Quality: Temperature	20.00%	60	60	60	60	60	65	benefits accrue from channel complexity actions	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC1	Indian Creek	9.2: Water Quantity: Decreased Water Quantity	10.00%	50	50	50	55	50	55		2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	90	90	90	95	90	95	lower Willow Cr diversions; marginal Chinook habitat.	Passage issues above Huber project. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	2.1: Injury and Mortality: Predation	0.00%			0		0		small mouth bass; invasive spp noted, but impacts unknown	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%			0		0		altered food web-carp, panfish impacts unknown	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	50	45	60		ONLY 1.2 RIPARIAN MILES TREATED FROM WEST LEVEE SETBACK PROJECT CONSIDERED FOR ESTIMATE AT 2012 WORKSHOP. McKenzie Project not considered in estimate - in marginal Chinook habitat. Some upstream/downstream benefits. Primary improvements from West Levee Project. / 2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45.1	45	50		WEST LEVEE PROJECT LARGE WOOD STRUCTURES & RIPARIAN PLANTING CONSIDERED IN ESTIMATE. MCKENZIE PROJECT BENEFITS STEELHEAD ONLY. / 2016 EP LF: No actions, no change. - MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	20	20	20	35	21	40	High percentage levies; many oxbows have been truncated	2016 EP LF: No actions, no change. - MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	20	20	20	30	20	35	many oxbows have been truncated	2016 EP LF: No actions, no change. - MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40	40	40	50	40	55	many oxbows have been truncated	2016 EP LF: No actions, no change. - MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	25	25	25	35	25	40	REACH LENGTH >14 MILES (20 mi including Willow)	ESTIMATE BASED ON WEST LEVEE SETBACK PROJECT; DRY CREEK PROJECT NOT CONSIDERED IN 2012 WORKSHOP ESTIMATE. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	60	60	60	65	60	65	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	ESTIMATE BASED ON WEST LEVEE SETBACK PROJECT; DRY CREEK PROJECT NOT CONSIDERED IN 2012 WORKSHOP ESTIMATE. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	8.1: Water Quality: Temperature	10.00%	40	40	40	40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a chance in temp	ONLY WEST LEVEE PROJECT CONSIDERED FOR 2012 WORKSHOP ESTIMATE. DRY CREEK PROJECT NOT INCLUDED IN ESTIMATE AT THAT TIME & no temperature effects expected from water transactions./ 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	8.2: Water Quality: Oxygen	5.00%	40	40	40	45	40	45	Links to flow & temp	2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2A	Lower Catherine Creek (Mouth of Indian Ck to State Ditch Diversion)	9.2: Water Quantity: Decreased Water Quantity	10.00%	40	40	40	45	40	45	m/s migration corridor; refugia @ mouths of tribs	Estimate assumes 3 cfs water transactions are not protected. Greater benefits if water is protected. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	90	90	90	100	90	100	Elmer	small diversions remain; Mill Cr. not a Chinook stream so no benefits. Mill Crk Project is located in CCC2b but benefits occur in CCC2C. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	2.1: Injury and Mortality: Predation	0.00%			0		0		small mouth bass; invasive spp noted, but impacts unknown	2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	3.3: Food: Altered Prey Species Composition and Diversity	0.00%			0		0		altered food web-carp, panfish impacts unknown	2016 EP LF: No actions, no change. - MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	50	45	60		LITTLE EFFECT FROM WATER TRANSACTION PROJECTS; ESTIMATE BASED MOSTLY ON BOYD PROJECT. / 2016 EP LF: No actions, no change. - MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45.1	45	50		2016 EP LF: No actions, no change. - MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	20	20	20	35	20	40	<25 percentage levies; many oxbows have been truncated	Estimate based on approx. 0.5 miles side channel enhancement from Wilson Wetland Project. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	40	40	40	50	40	55	many oxbows have been truncated	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40	40	40	50	40	55	many oxbows have been truncated	2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	25	25	25	35	25	40		Estimate based on treatment of 0.75 miles in 15-20 MILES of reach needing treatment. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50	50	55	50	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	8.1: Water Quality: Temperature	10.00%	40	40	40	40	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a change in temp	Estimate showing no improvement based on EP judgement that 3 CFS is not enough water to make a difference yet. If more water is secured over time then increments would be expected to improve temperature. / 2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	8.2: Water Quality: Oxygen	5.00%	40	40	40	45	40	45	Links to flow & temp	2016 EP LF: No actions, no change. - MAH5.2.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2B	Lower Catherine Creek (State Ditch Diversion to old Grande Ronde River confluence)	9.2: Water Quantity: Decreased Water Quantity	10.00%	31.9	31.9	31.9	35	31.9	35	m/s migration corridor; refugia @ mouths of tribs	2016 EP LF: No actions, no change. - MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	80.8	80.8	80.8	95	80.8	95	undersized culvert on Ladd Cr, @ RM 1; numerous passage issues in Gekeler's Slough & Little Cr diversions	Estimate includes effects of Mill Ck Project, which is located in CCC2B but Mill Ck travels back into CCC2C upstream from diversion. Little Cr. diversions partially block juvenile access to about 3.4 miles (from mouth to Hwy) - each diversion abt. 1/2 mile apart. / 2016 EP LF: No actions, no change. - MAH.5.3.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	2.1: Injury and Mortality: Predation	0.00%			0		0		small mouth bass; invasive spp noted, but impacts unknown	2016 EP LF: No actions, no change. -MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	3.2: Food: Food-Competition	0.00%			0		0		altered food web-carp, panfish impacts unknown	2016 EP LF: No actions, no change. -MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	50	45	60		Conservative estimates due to uncertainty of implementation timing; AU is large area & these projects don't address everything. / 2016 EP LF: No actions, no change. -MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	45	45	50		Estimate considers projects under LF 4.1 that would provide some recruitment improvements in the longer term. / 2016 EP LF: No actions, no change. -MAH.5.3.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	40.7	40.7	40.7	50	40.7	55	>75 percentage levies from Pyles to Godley Ln; many oxbows have been truncated	2016 EP LF: No actions, no change. - MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	40.7	40.7	40.7	50	40.7	55	many oxbows have been truncated	2016 EP LF: No actions, no change. - MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	40.1	40.1	40.1	50	40.1	55	many oxbows have been truncated	2016 EP LF: No actions, no change. - MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	25.1	25.1	25.1	35	25.1	40		2016 EP LF: Per EP, Rearing habitat improvements are needed, but no actions planned now. No actions, no change. -MAH.5.3.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	50	50	50	55	50	55	more of a non-point issue, many uncontrolled contributions, but bank erosion issue also contributes	2016 EP LF: No actions, no change. - MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	8.1: Water Quality: Temperature	10.00%	40	40	40	40.1	40	45	thermal barrier for adult passage; combination of other LFs over time will be needed to affect a change in temp	2016 EP LF: No actions, no change. - MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	8.2: Water Quality: Oxygen	0.00%	40	40	40	45	40	45	Links to flow & temp; decreasing concern progressing upstream- flow most important in this reach	2016 EP LF: No actions, no change. - MAH.5.3.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC2C	Lower Catherine Creek (old Grande Ronde River confluence to Pyles Cr)	9.2: Water Quantity: Decreased Water Quantity	20.00%	32.5	35	36.1	35	36.1	35	Overwinter habitat and m/s migration corridor; refugia @ mouths of tribs	Conservative estimate - assumes 3 cfs from water transactions. / 2016 EP LF: CCC2C calculations list is based on upstream flow projects lists, and modified based on location. Becker Little Creek easement now has become permanent transfer (0.21 cfs). With weightings, panel determined 3.6% uplift for 2018. Some permanent leases in table, but renewal of others is unknown at this time. Update on 3-27-16: After Panel, panel members decided that 2033 flow estimates should be eliminated due to uncertainty in leases. -MAH.5.3.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	95	95	95	100	95	100	increased from 80 partial juvenile barrier at mouth of Pyles Ck	10th street diversion doesn't pass juveniles. / 2016 EP LF: No actions, no change. -MAH.5.3.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	4.1: Riparian Condition: Riparian Vegetation	6.50%	45	45	45	47	46.3	60		Estimate based on about 3.5 miles riparian treatment. / 2016 EP LF: CC38 fish habitat enhancement project planned for 2017: 1,600 ft. (0.32 miles). No functional uplift expected in 2018. Prorated growth to 2033, resulting in 1.3% uplift in 2033. -MAH.5.3.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	4.2: Riparian Condition: LWD Recruitment	6.50%	45	45	45	45.1	45.7	60		Estimate considers that improvements from LF 4.1 projects. / 2016 EP LF: No functional uplift in 2018. Used half of LF4.1 proration for 2033, for a 0.7% uplift. -MAH.5.2.2016

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	22.2	22.2	23	30	23.1	35	Potential upstream of Union (confined and semi-confined reaches); less below Union (unconfined)	CC-37, 38 & 39 PROJECTS PROVIDE CHANNEL ADDITION AND WETLAND CONNECTION; / 2016 EP LF: CC38 fish habitat enhancement project planned for 2017 is projected to treat 0.11 miles. A 25% improvement factor for 2018 results in a 0.8% uplift, and another 5% (to 30%) realized change by 2033 results in an additional 0.1% uplift in 2033. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	22.1	22.1	22.2	30	22.3	35		Implementation planned for CC 37 in 2012, CC 36 in 2014, 38 & 39 in 2015/16. / 2016 EP LF: CC38 fish habitat enhancement project planned for 2017 is projected to treat 100 feet of side channel, resulting in 0.1% uplift. The EP calculated an additional 0.1% uplift by 2033. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	48.1	48.1	49	45	49	50	33% of channel within Union ; 67%: downstream of Union; channelized throughout reach	2016 EP LF: CC38 fish habitat enhancement project planned for 2017: 1,197 feet to be treated, resulting in 0.9% uplift. No additional uplift was estimated for 2033. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	50.1	50.1	56.9	65	56.9	80		2016 EP LF: CC38 fish habitat enhancement project planned for 2017: an estimated 21 pieces per 100 meters in 7 complexes and 8 smaller 2-3 log apex jams (compare to 27 pieces as properly functioning condition; most of Catherine Creek only has 5 pieces per 100 m). Panel expected 6.8% uplift, with no additional uplift in 2033. -MAH.5.4.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	45.7	45.7	48.1	45	48.8	50		2016 EP LF: CC38 fish habitat enhancement project planned for 2017: expected to benefit sediment. For 2018, improvement prorated at 28%; for 2033, at 36%, resulting in 2.4% uplift for 2018 and 3.1% uplift total by 2033.
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	8.1: Water Quality: Temperature	15.00%	20	20	20	41	20	42	lower third temp limited;	Estimate considers benefits from CC-44 & other upstream projects plus conservative assumption of 3 cfs for upstream water transactions. / 2016 EP LF: No uplift expected, as per the rationale from the Look Back. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	8.2: Water Quality: Oxygen	0.00%							Associated w/flow/temp; non-point sources need more info to quantify	2016 EP LF: No actions. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	8.4: Water Quality: Turbidity	0.00%							Point discharge between RM 38-39; need more info to quantify impact	2016 EP LF: No actions. -MAH.5.4.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC3A	Middle Catherine Creek (Pyles Cr. To Swackhammer Diversion)	9.2: Water Quantity: Decreased Water Quantity	20.00%	25	25	34.3	50	34.3	55	Many Diversions in this reach, base flow is about 5 cfs	Conservative estimate based on 3 cfs. / 2016 EP LF: Same project calculation and proration structure as for Look Back. Calculations table lists flow lease projects, which includes applicable upstream AU projects. It accounts for lease years and permanent water acquisitions. Most flow projects measured at Davis Dam. [NEED TO ASK FRESHWATER TRUST RE: "LEASING GENERAL RM 15-11" " GRCC Malmberg" DETAILS]. After weighting, yields 9.3% uplift. The EP determined it was not possible to project out to 2033 at this point. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	1.1: Habitat Quantity: Anthropogenic Barriers	2.00%	57.9	98	100	100	100	100	one diversion structure ~ rm 41 impedes juvenile movement; reach is summer/winter rearing & spawning habitat	5 pushup dams/diversions are barriers, esp. during low flow; 6 water right holders; only 1 remaining known barrier (private pushup) after this project; / 2016 EP LF: The uplift was too high, according to the Look Back expert panel. Makary Hutson (BPA, 5-4-2016) revised the low bookend from over 100% (102.3%) down to 57.9%, assuming the uplift from the proposed Project of 43.1% would achieve 100% functionality for this limiting factor in this AU. -MAH.5.4.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	4.1: Riparian Condition: Riparian Vegetation	6.50%	60	60	60	65	63.1	75		Hall Ranch & CC44 projects would address about 1/2 of reach. Slow growth makes 2018 Hi bookend difficult to achieve. / 2016 EP LF: Panel considered projects and prorations: CC44 Phase 4 2016, Hall Ranch 2017 (side channel and mainstem), Southern Cross. These 4 projects would not realize a functional change for 2018, but the EP calculated a 3.1% uplift based on vegetation growth by 2033. -MAH.5.4.2016

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	4.2: Riparian Condition: LWD Recruitment	6.50%	60	60	60	60	61.6	70		Estimate considers long term recruitment improvement from 4.1 LF projects. / 2016 EP LF: Panel considered projects and prorations: CC44 Phase 4 2016, Hall Ranch 2017 (side channel and mainstem), Southern Cross. These 4 projects would not realize a functional change for 2018, but the EP calculated a 1.6% uplift (half of LF4.1) based on vegetation growth by 2033. - MAH.5.4.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	15.00%	71.3	71.3	88.2	70	88.2	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Estimate based on CC44 project - 5.5 miles restoration potential. Little benefit from water transactions until channels are formed. / 2016 EP LF: Panel considered projects and prorations: CC44 Phase 4 2016, Hall Ranch 2017 (side channel and mainstem), Southern Cross. These 4 projects would have an immediate benefit, resulting in a 16.9% uplift for 2018, but no additional uplift by 2033. -MAH.5.4.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	65.5	66	74.7	70	74.7	75	lower 4 miles channel anthropogenically altered; naturally constrained upstream	Conservative estimate due to uncertain designs, etc. / 2016 EP LF: Panel calculations table were based on limiting factor 5.1. Adjusted length for main channel (same as riparian length). Same uplift for both time periods, 9.2%. - MAH.5.4.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	63.6	63.6	73.2	70	73.2	75		Conservative estimates due to uncertain designs, etc. / 2016 EP LF: EP calculations were the same as limiting factor 5.1: Adjusted length for main channel (same as riparian length). Same uplift for both time periods, 9.6% uplift. - MAH.5.4.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	66.9	66.9	87.1	70	87.1	75		7 of 9 miles treated; conservative estimate due to uncertainty of design. / 2016 EP LF: EP calculations prorated based on percentage of Properly Functioning Condition (27 pieces per 100 m). Hall: 30 pieces per 100 m. Panel expects 20.2% uplift in 2018, with no additional uplift through 2033. -MAH.5.4.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	68.6	68.6	72.7	65	75	75		conservative estimate due to uncertain designs. / 2016 EP LF: Low spawning habitat quality above Ricker (embedded). Planting projects: no benefit in 2018, but instream projects will aid sorting of substrates. In 2018 panel expects 4.1% uplift and in 2033, 6.4% uplift. -MAH.5.4.2016
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	8.1: Water Quality: Temperature	10.00%	60	60	60	65	60.9	75	upper 2/3 in good condition	2016 EP LF: No benefit from flow projects, as per Look Back rationale, but riparian projects and channel form changes will benefit temperature, especially from forks down to Union. 3.5 degrees C would be expected if all 14 miles were treated (from C. Justice results), so 0.5 degree expected from these actions. Calculations table yields 0% change in 2018, but riparian vegetation growth will result in 0.9% uplift by 2033. -MAH.5.4.2016

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC3B	Middle Catherine Creek (Swackhammer Diversion to N. & S Forks)	9.2: Water Quantity: Decreased Water Quantity	20.00%	42.8	42.8	44.4	50	44.4	50	30 cfs baseflow Aug-Sep; 10 cfs of this diverted	CC-44 Project indirectly addresses this LF but not considered in estimate. Assume 3 cfs permanent lease/acquired for estimate. (10% imp based on 3 of 30 cfs). / 2016 EP LF: Same project calculation and proration structure as for Look Back: Calculations table lists flow lease projects, which includes applicable upstream AU projects. Accounts for lease years and permanent water acquisitions. Prorated based primarily on location of point of diversion. Yields 1.6% uplift. Panel determined they could not predict 2033 at this time. -MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	4.1: Riparian Condition: Riparian Vegetation	20.00%	45	45	45	50	45	70		2016 EP LF: No actions, no change. -MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	4.2: Riparian Condition: LWD Recruitment	5.00%	45	45	45	50	45	70		2016 EP LF: No actions, no change. -MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	45	45	45	65	45	70		2016 EP LF: No actions, no change. -MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	60	60	60	65	60	70		2016 EP LF: No actions, no change. -MAH.5.5.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	8.1: Water Quality: Temperature	15.00%	50	50	50	52	50	60		2016 EP LF: No actions, no change. - MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC4	Lower & Middle Catherine Cr. Tributaries	9.2: Water Quantity: Decreased Water Quantity	15.00%	40	40	40	41	40	41	minimal withdrawals on L. Cath (timber harvest, grazing)	2016 EP LF: No actions, no change. - MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	98.4	100	100	100	100	100		Estimate assumes 2 miles improved access from N FK Catherine Ck Ford Project; last remaining barrier for Chinook. / 2016 EP LF: Benefit from downstream Adult Weir project. EP calculated an uplift of 25%, which results in 100% function. The low bookend may need to be adjusted if barriers remain in the system. - MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	4.1: Riparian Condition: Riparian Vegetation	10.00%	80	80	80	90	80	95		Not enough info about USFS Project to estimate benefits at 2012 EP Workshop. / 2016 EP LF: No actions, no change. - MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	4.2: Riparian Condition: LWD Recruitment	10.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. - MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	89.2	89.2	89.2	90	89.2	95		2016 EP LF: No actions, no change. - MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	85.3	85.3	85.3	85	85.3	95		NOT ENOUGH PROJECT INFO TO ESTIMATE BENEFITS AT 2012 WORKSHOP. / 2016 EP LF: No actions, no change. -MAH.5.5.16

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
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	8.1: Water Quality: Temperature	10.00%	80	80	80	90	80	95		2016 EP LF: No actions, no change. -MAH.5.5.16
Snake River Spring/Summer Chinook	Catherine Creek	CCC5	N. & S. Forks Catherine Cr.	9.2: Water Quantity: Decreased Water Quantity	10.00%	85	85	85	90	85	90		NOT ENOUGH PROJECT INFO TO ESTIMATE BENEFITS AT 2012 WORKSHOP. / 2016 EP LF: No actions, no change. -MAH.5.5.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	1.1: Habitat Quantity: Anthropogenic Barriers	0.00%	20	20	100	95	100	100	2016 EP LF: LF1.1 is left as a placeholder only. Essentially DELETED. No other Chinook barriers are left to fix in this AU. Redistribute weight to other limiting factors. barrier a couple miles u/s from mouth just inside USFS boundary	2016 EP LF: 100% complete, no longer a limiting factor. Overall in the AU, Panel concerned about all-terrain vehicle (ATV) use in floodplain and side channels. Panel added limiting factors and weights: limiting factors 5.1 (5%), 5.2 (5%). This matches ATLAS weightings.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	4.1: Riparian Condition: Riparian Vegetation	15.00%	75	75	75	75	84.5	80	2016 EP LF: Limiting Factor weight adjusted from 10 to 15% to accommodate changes to other limiting factor weights.	2016 EP LF: Five Points Wood and Planting 2016: 7 miles. Prorated in table based on growth rates. No uplift in 2018. 2033 estimate of 9.5% uplift based on 15% proration of growth to 2033. -mah.4.12.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	4.2: Riparian Condition: LWD Recruitment	15.00%	75	75	75	75	79.8	80	2016 EP LF: Limiting Factor weight adjusted from 10 to 15% to accommodate changes to other limiting factor weights.	2016 EP LF: Same project as for limiting factor 4.1, but half of prorate factor. No uplift by 2018. 2033 uplift is 4.8%. -mah.4.12.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	5.00%	50	50	50		53.2		Added by EP on 8 March 2016 Added "50" as 2018 estimate that is "no change" (null) from low bookend and needs to be populated to generate HQIs RM 5/31/2016.	2016 EP LF: Five Points Wood and Planting 2016. No uplift in 2018. For 2033, panel assumed a 5% proration resulting in 3.2% uplift. -MAH4.25.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	5.00%	50	50	50		53.2		Added by EP on 8 March 2016 Added "50" as 2018 estimate that is "no change" (null) from low bookend and needs to be populated to generate HQIs RM 5/31/2016.	2016 EP LF: Five Points Wood and Planting 2016. No uplift in 2018. For 2033, panel assumed a 5% proration resulting in 3.2% uplift. -MAH4.25.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	6.1: Channel Structure and Form: Bed and Channel Form	5.00%	70	70	70	75	76.4	85	Pelican Ck and lower Five Points conditions worse than remainder of Five Points	2016 EP LF: Five Points Wood and Planting 2016: 7 miles. No change in 2018. For 2033, 10% prorate factor leads to 6.4% uplift expected from changes in bed form morphology (changes in width to depth ratio). -mah4.25.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	30	30	58.6	75	58.6	85	2016 EP LF: EP reduced low bookend to 30%, based on change seen and assessment of what needs to be done to reach properly functioning condition (PFC), considering wood loading and other metrics. Currently we have 15 pools per mile. Should have over 20 pools per mile. Width to depth ratio is far from PFC. / 2012 LF: Remote area- bed and channel form OK	2016 EP LF: 1,003 key pieces proposed. Properly Functioning Condition wood loadings based on stream width: 21 pieces per 100 m. Proposed: 89.5 pieces per km, or 8.9 pieces per 100 m. Prorated accordingly, this results in 28.6% uplift. EP reduced low bookend to 30%, based on change seen and assessment of what needs to be done to reach properly functioning condition (PFC), considering wood loading and other metrics. Currently we have 15 pools per mile. Should have over 20 pools per mile. Width to depth ratio is far from PFC. -mah4.25.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	70	70	70	75	74.8	85	Travel MgmtPlan to manage ATV use	2016 EP LF: Travel management plan to manage ATV use is unlikely to be fully implemented. Five Points Wood and Planting 2016: cattle and ATV trail exclusion. No functional change in 2018. For 2033, Using 2% and 10% prorate in calculation table for 2033 results in 4.8% uplift, including riparian growth. -mah4.25.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	8.1: Water Quality: Temperature	25.00%	80	80	80	80	83.2	85	2016 EP LF: Limiting Factor weight adjusted to accommodate changes to other limiting factor weights.	2016 EP LF: See calculations table for Five Points Wood and Planting 2016. No flow projects. No change in function predicted for 2018. For 2033, proration based on riparian shade effectiveness, gravel bar sorting increasing hyporheic exchange results in 3.2% uplift by 2033. -mah4.25.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1A	Middle GR Mainstem (Five-Points Cr)	9.2: Water Quantity: Decreased Water Quantity	5.00%	80	80	80	80	80	85	Forest mgmt/succession conditions	2016 EP LF: No actions, no change. -mah4.25.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	85	85	85	100	86	100	Riverside Park/Spruce St Bridge, trib through tunnel@ Perry	2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	4.1: Riparian Condition: Riparian Vegetation	10.00%	45	45	45	55	50	60		Estimate based on about 4.5 MI riparian planting./ 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	4.2: Riparian Condition: LWD Recruitment	10.00%	45	45	45	55	46	60		2033 estimate based on long term recruitment improvements from Greenway, Nilson, & Gooderham projects listed in LF 4.1. / 2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	30	30	30	35	40	40		Estimate considers Greenway, Nilson, & Gooderham projects - ABT 4 miles treatment of 19 miles in AU. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	6.2: Channel Structure and Form: Instream Structural Complexity	10.00%	30	30	30	35	35	40		2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	30	30	30	32	35	35		Estimate considers Voetz, Gooderham & Nilson & Greenway projects. / 2016 EP LF: No actions, no change. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	8.1: Water Quality: Temperature	30.00%	30	30	30	31	30	32		Water in reach is too warm to estimate benefits from water transaction project at this time. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC1B	Middle GR Mainstem (Mouth of State Ditch to Five-Points Cr)-excludes Five-Points Ck	9.2: Water Quantity: Decreased Water Quantity	20.00%	30	30	30	40	40	40	base flow less than 20 cfs	Assumes Voelz provides 0.5 cfs w/ 1863 water right and 3 cfs from FWT project. / 2016 EP LF: No actions, no change. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	1.1: Habitat Quantity: Anthropogenic Barriers	1.00%	95	95	95	100	95	100	Whiskey Ck culvert (small effect for ck?)	Jordan, Lowe, Whiskey Cr diversion projects located in this AU but don't apply to Chinook. / 2016 EP LF: Not discussed, no changes. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	4.1: Riparian Condition: Riparian Vegetation	13.00%	50	50	50	60	51.7	70	2016 EP LF: Weight adjusted to match 13% in Atlas. - MAH5.2.16	Estimate considers improvements from listed projects and Rock Ck Fish Habitat Enhancement & Lowe Ranch projects. / 2016 EP LF: Hilgard not expected to happen (indefinitely delayed), Tier 3 in Atlas, so should be removed from database. Bird Track Springs should be in this AU. No riparian functional uplift expected to 2018. Calculation table broke Bird Track into phases (length adjusted) to account for the fact that part of it will be after 2018. For 2033, 15% proration to 2033 for riparian growth results in 1.7% uplift -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	4.2: Riparian Condition: LWD Recruitment	10.00%	50	50	50	60	50.8	70	2016 EP LF: Weight adjusted to accomodate changes to other limiting factor weights. - MAH5.2.16	2016 EP LF: See LF4.1. Used half of limiting factor 4.1 functional change, a total of 0.8% for 2033. - MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	5.1: Peripheral and Transitional Habitats: Side Channel and Wetland Conditions	10.00%	50	50	58.3		60		Added by EP on 3/8/2016. Also included in Atlas. Added "50" as 2018 estimate that is "no change" (null) from low bookend and needs to be populated to generate HQIs RM 5/31/2016.	2016 EP LF: Based on 1.91 miles of side channel proposed. Used same prorations as per limiting factor 6.1. Total uplift of 8.3% by 2018. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	5.2: Peripheral and Transitional Habitats: Floodplain Condition	10.00%	50	50	58.3		60		Added by LF EP on 3/8/2016. Also included in atlas. -MAH5.2.16 Added "50" as 2018 estimate that is "no change" (null) from low bookend and needs to be populated to generate HQIs RM 5/31/2016.	2016 EP LF: Based on 1.91 miles of side channel proposed. Used same prorations as per limiting factor 6.1. Total uplift of 8.3% by 2018. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	50	53	58.3	60	60	70		Estimate based on total of abt. 6 miles improved channel, floodplain connectivity, morphology. /2016 EP LF: Bird Track Springs project will add 1.2 miles of channel plus peripheral channel. Current length is 1.59 miles. Changing width to depth ratio closer to Properly Functioning Condition. Panel calculated 75% prorate to 2018, resulting in 8.3% uplift. 19% of function expected by 2033, resulting in 10% uplift by 2033. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	6.2: Channel Structure and Form: Instream Structural Complexity	15.00%	50	56	58.3	60	60	70		Estimate considers about 20 miles total improved complexity (does not include USFS LGR Project). / 2016 EP LF: Bird Track Springs project will add 1.2 miles of channel plus peripheral channel. Current length is 1.59 miles. Changing width to depth ratio closer to Properly Functioning Condition. Panel calculated 75% prorate to 2018, resulting in 8.3% uplift. 19% of function expected by 2033, resulting in 10% uplift by 2033. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	7.2: Sediment Conditions: Increased Sediment Quantity	5.00%	70	72	75.6	75	76.7	80	8% in Atlas, but adjusted from 10% down to 5% during EP LF. -MAH5.2.16	Rock Ck is main sediment producer. / 2016 EP LF: Bird Track Springs project will have immediate effect on sediment sorting due to channel changes. Treated length = ~10% of AU mileage. Less than 15% fines shown in CHaMP and Aquatic Inventories, but that does not account for embedded armoring, which reduced rearing habitat quality. Bird Track Springs is expected to improve this, but construction will mobilize some embedded fines. Most of fine sediment is coming from Rock Creek. Prorating to 50% for 2018 results in 5.6% uplift. Prorating to 60% for 2033 results in 6.7% uplift.-MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	8.1: Water Quality: Temperature	25.00%	40	40	40	41	41.1	45	Adjusted from 20% to 25% during EP LF 3/8/16	Estimate considers improvements from projects listed under other UGC2 LFs. / 2016 EP LF: Will be in construction through 2018 period, so no change. 2033 estimate: Hyporheic flow benefits to temperature should happen quickly, so panel prorated to 10%, resulting in 1.1% uplift. Temperature problems come from upstream. Project will protect and expand cold water refugia in reach and reduce heating by changing channel geometry. There is uncertainty regarding how exactly it will perform. Most of the cold water seeps are in the Longley Meadows reach. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC2	Middle GR Mainstem (Five-Points Cr. To Meadow Cr.)	9.2: Water Quantity: Decreased Water Quantity	1.00%	50	50	50	51	50	52	2016 EP LF adjusted weight from 20% down to 1%. -MAH5.2.16 / some small diversions; general watershed conditions/function impacted by timber harvest/veg mgmt/lack of fire/natural succession stages.	Conservative estimate based on 3 cfs permanent acquisition. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	75	75	75	90	75	90	La Grande reservoir + a couple diversions u/s and d/s of reservoir	Little Beaver Ck high in system & not a Chinook stream. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	3.3: Food: Altered Prey Species Composition and Diversity	0.00%			0		0		PLACEHOLDER: invasive spp- brook trout	2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	4.1: Riparian Condition: Riparian Vegetation	10.00%	65	65	65	70	65	80	reluctance to include LW on private property	Estimate considers Lowe Ranch - small portion of Beaver Cr. so minimal benefits. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	4.2: Riparian Condition: LWD Recruitment	25.00%	65	65	65	70	65	80	riparian disturbance on 5 mi of private property; USFS property in confined reaches	Estimate considers Lowe Ranch Project - small portion of Beaver Cr. so provides some improvement. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	6.2: Channel Structure and Form: Instream Structural Complexity	25.00%	65	65	65	75	65	85		Estimate considers Lowe Ranch Project - small portion of Beaver Ck so provides some improvement. / 2016 EP LF: No actions, no change. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	75	75	75	75	75	80	most roads closed	Lowe Ranch Project - only small portion in Beaver Cr. so no improvement estimated. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3A	Beaver Creek	8.1: Water Quality: Temperature	15.00%	75	75	75	75	75	80	good upstream; not bad below	Lowe Ranch - only small portion in Beaver Cr so no improvement estimated. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek	4.1: Riparian Condition: Riparian Vegetation	15.00%	65	65	65	65	65	70		2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek	4.2: Riparian Condition: LWD Recruitment	20.00%	65	65	65	70	65	75		2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	75	75	75	80	75	85	USFS added wood to lower 4 miles	2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek	7.2: Sediment Conditions: Increased Sediment Quantity	15.00%	40	40	40	55	40	70	Fly meadows-related riparian/streambank condition	2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC3B	Fly Creek	8.1: Water Quality: Temperature	30.00%	45	45	45	46	45	50		2016 EP LF: No actions, no change. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	1.1: Habitat Quantity: Anthropogenic Barriers	1.00%	98	98	98	100	98	100	one culvert high in system; may have limited effect for juvenile chinook (?)	Juvenile chinook in lower portion of basin; limited Chinook use otherwise. / 2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	4.1: Riparian Condition: Riparian Vegetation	10.00%	60	60	60	70	60	80		Not enough info on USFS Riparian Thinning project to estimate improvements at 2012 EP workshop. / 2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	70	60	80		2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	6.1: Channel Structure and Form: Bed and Channel Form	10.00%	65	65	65	80	65	85		2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	65	65	65	80	65	85		2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	70	60	80		Not enough info available on USFS projects to estimate improvements at 2012 EP Workshop. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	8.1: Water Quality: Temperature	24.00%	40	40	40	45	40	50	still high	2016 EP LF: No actions, no change. - MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC4	Meadow Cr. and Tributaries	9.2: Water Quantity: Decreased Water Quantity	5.00%	60	60	60	65	60	75		2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	1.1: Habitat Quantity: Anthropogenic Barriers	10.00%	85	85	85	95	85	95	CTUIR weir changed protocol to improve passage	2016 EP LF: Starkey will not happen before 2018. No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	4.1: Riparian Condition: Riparian Vegetation	10.00%	65	65	65	70	65	80		2016 EP LF: No actions, no change. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	4.2: Riparian Condition: LWD Recruitment	10.00%	65	65	65	65	65	70		2016 EP LF: No actions, no change. - MAH5.2.2016 Note: Estimate does not consider potential Starkey Project for 2033 improvement.
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	70	72	83.9	75	83.9	80	USFS work 2010-12	2016 EP LF: Added USFS wood project, resulting in 13.9% uplift. See steelhead UGS17 rationale. Prorated for 2033. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	7.2: Sediment Conditions: Increased Sediment Quantity	10.00%	65	65	65	70	70.6	80		2016 EP LF: Added USFS wood project resulting in 5.6% uplift for 2033. See steelhead UGS17 rationale. -MAH5.2.16

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	8.1: Water Quality: Temperature	25.00%	50	50	50	52	50	55	temp wt should be higher than structure	2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC5	UGR Mainstream (Meadow Cr. To Sheep Cr.)	9.2: Water Quantity: Decreased Water Quantity	15.00%	70	70	70	75	70	75	no irrigation withdrawals mix of USFS/private lands	Note: benefits from Aquifer Storage project to be determined; not estimated at 2012 EP Workshop./ 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)	4.1: Riparian Condition: Riparian Vegetation	20.00%	50	50	50	60	50	80		Aquifer Storage Project implementation too late in cycle to improve riparian condition. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)	4.2: Riparian Condition: LWD Recruitment	4.00%	50	50	50	60	50	80		2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)	6.2: Channel Structure and Form: Instream Structural Complexity	24.00%	50	50	50	60	50	80		2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)	7.2: Sediment Conditions: Increased Sediment Quantity	24.00%	30	30	30	45	30	80		2016 EP LF: No actions, no change. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)	8.1: Water Quality: Temperature	24.00%	30	30	30	35	35	70		assumes Aquifer project implemented by 2018, estimates conservative due to early stages of project design. / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC6	UGR Mainstem (Sheep Cr. To Meadowbrook Cr.)	9.2: Water Quantity: Decreased Water Quantity	4.00%	75	75	75	80	76	80	changed high bookends (from 76/77) in 6/20/2012 workshop due to emerging water opportunities. Base flow approx. 20 cfs	Assumes Aquifer project by 2018; Estimate assumes 3 cfs (early project design stage). / 2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)	4.1: Riparian Condition: Riparian Vegetation	30.00%	75	75	75	85	81	95		2016 EP LF: Added elk deterrent spray project: Plant Skydd 2016, 2017. 2.5 miles to be treated. No percent function improvement expected by 2018. Using 15% proration for 2033, but experimental. Panel expected 6% uplift for 2033.-MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)	4.2: Riparian Condition: LWD Recruitment	30.00%	75	75	75	85	78	95		2016 EP LF: Added elk deterrent spray project: Plant Skydd 2016, 2017. 2.5 miles to be treated. No percent function improvement expected by 2018. Using 15% proration for 2033, but experimental. Panel expected 3% uplift for 2033, half of LF4.1 change.-MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	85	85	85	90	85	95		2016 EP LF: No actions, no change.-MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC7	UGR & Tribs. (Meadowbrook Cr. To E. Fk.; Clear Cr. & E.Fk.)	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	60	60	60	80	60	90	New TMP & significant rd. work will reduce sediments.	2016 EP LF: No actions, no change.-MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC8	Sheep Cr. & Chicken Cr.	1.1: Habitat Quantity: Anthropogenic Barriers	5.00%	90	90	91.6		91.6		Added "90" as 2018 estimate that is "no change" (null) from low bookend and needs to be populated to generate HQIs RM 5/31/2016.	2016 EP LF: 2 projects with 2 culverts each considered (moved from limiting factor 4.1). Improvement prorated based on life stages affected. Only a velocity barrier during spring high flows, but juveniles will generally only be moving upstream in summer. Can move through culverts at other times of year (e.g., June) when temperatures would make them move, so marginal benefit if not known which life stages would benefit from being able to move upstream during time of year when culvert is a velocity barrier (spring only). EP prorated to 5% function for 2018 and 2033, resulting in 2.2% uplift. Then, panel revised because Chicken Creek culvert projects are for 2019. Final expected uplift is 1.6%. -MAH5.2.16
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC8	Sheep Cr. & Chicken Cr.	4.1: Riparian Condition: Riparian Vegetation	10.00%	50	50	50	60	57.7	80		Vey Mdws & Chicken Cr projects not considered in estimate. / 2016 EP LF: Plant Skydd project: 5 miles total treated on Sheep and Chicken Creeks. Added 2017 Sheep Creek exclosure fencing project: 3 miles. No change to 2018. Prorated 2033 resulted in 7.2% uplift. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC8	Sheep Cr. & Chicken Cr.	4.2: Riparian Condition: LWD Recruitment	10.00%	60	60	60	75	63.8	80	Per Paul B. - significant opportunities for LWD recruitement.	Vey Mdws not considered in estimate. / 2016 EP LF: Plant Skydd project: 5 miles total treated on Sheep and Chicken Creeks. Added 2017 Sheep Creek exclosure fencing project: 3 miles. No change to 2018. Prorated 2033 was half of LF4.1, resulted in 3.6% uplift. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC8	Sheep Cr. & Chicken Cr.	6.2: Channel Structure and Form: Instream Structural Complexity	20.00%	50	50	50	60	50	80		2016 EP LF: No actions, no change. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC8	Sheep Cr. & Chicken Cr.	7.2: Sediment Conditions: Increased Sediment Quantity	25.00%	30	30	30	45	33.8	80	Paul B. - fine sediment primarily a road issue. UGC8 has roads w/in riparian area & along stream that will be removed under the new TMP.	Not enough known about USFS Sheep Cr rd decommissioning project for estimate to be made at 2012 EP workshop. / 2016 EP LF: 2 projects, 3 miles each. 0% uplift in 2018, and calculated 3.8% uplift for 2033. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC8	Sheep Cr. & Chicken Cr.	8.1: Water Quality: Temperature	30.00%	70	70	70	75	72.6	80	Check w/CRITFC for thermographs. high meadow area (4100')- limited support for riparian veg ~25C (Vance) Per Paul B. - UGC8 has roads w/in riparian area & along stream that will be removed under the new TMP. Area wiil be planted and will address high water temp.	2016 EP LF: 2 projects, 3 miles each. 0% uplift in 2018, and calculated 2.6% prorated uplift for 2033. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC9	Limber Jim & Tribs. & Meadowbrook Cr.	4.1: Riparian Condition: Riparian Vegetation	20.00%	50	50	50	55	58.3	60	2016 EP LF: LF Weight adjusted up from 10 to 20%	Project addresses almost all of impaired Chinook habitat in this AU. / 2016 EP LF: Limber Jim planting and seeding: 2 miles of wood placement with spanners and beaver analogs (2017). Plant Skydd: 2 miles (might not be as effective as exclusion). Projects overlap spatially, so combined in calculations table. No functional change within 2018 period. Improvement prorated for 2033, resulting in 8.3% uplift. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC9	Limber Jim & Tribs. & Meadowbrook Cr.	4.2: Riparian Condition: LWD Recruitment	20.00%	60	60	60	75	64.2	80	2016 EP LF: LF weight adjusted up from 10 to 20%. / Per Paul B. - significant LWD opportunities.	2016 EP LF: Same projects as LF4.1. Limber Jim planting and seeding: 2 miles of wood placement with spanners and beaver analogs (2017). Plant Skydd: 2 miles (might not be as effective as exclusion). Projects overlap spatially, so combined in calculations table. No functional change within 2018 period. Improvement prorated for 2033 was half of the LF4.1 uplift, resulting in 4.2% uplift. -MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC9	Limber Jim & Tribs. & Meadowbrook Cr.	6.2: Channel Structure and Form: Instream Structural Complexity	30.00%	60	65	85	65	85	70	2016 EP LF: Adjusted weight up from 20 to 30%.	2016 EP LF: Limber Jim Planting and Wood project: treated 2 miles. Prorated to 45% in 2018 and 2033, resulting in 25% uplift. 25% total uplift is not additive for 2033, which stays the same. -MAH5.2.2016

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
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC9	Limber Jim & Tribs. & Meadowbrook Cr.	7.2: Sediment Conditions: Increased Sediment Quantity	20.00%	55	55	55	65	60.1	80	2016 EP LF: Adjusted LF weight down from 30% to 20%. / Fine sediments primarily from road system. No USFS grazing allotments in UGC9. Increase to 2033 High Bookend reflects potential from recently approved USFS Travel Management Plan.	2016 EP LF: Limber Jim Road decommissioning 2017: 0.82 mile, but upstream of Chinook presence. Direct benefits to steelhead, but only downstream benefits to Chinook, so improvement prorated to 10%, could result in 2.3% uplift. But based on Beeechie and Roni's 5- to 20-year benefit horizon, no near-term benefit in 2018. 0% uplift in 2018, however, 2033 prorated estimate is 5.1% uplift. - MAH5.2.2016
Snake River Spring/Summer Chinook	Grande Ronde River upper mainstem	UGC9	Limber Jim & Tribs. & Meadowbrook Cr.	8.1: Water Quality: Temperature	10.00%	75	75	75	80	77.8	85	2012: Reassess bookends in next cycle - UGR not temperature limited. / 2016 EP LF: EP noted that temperature is not limiting in this AU. Weight was decreased from 30% to 10%, and redistributed among AUs. ChaMP data show no exceedances. - MAH5.2.16	2012: Estimate considers improvements from Limber Jim project. / 2016 EP LF: Limber Jim project riparian effects expected to be 0% by 2018. Temperature data show that there are rarely days over 18 degrees C. 2033 prorated estimate yields a 2.8% uplift. - MAH5.2.16